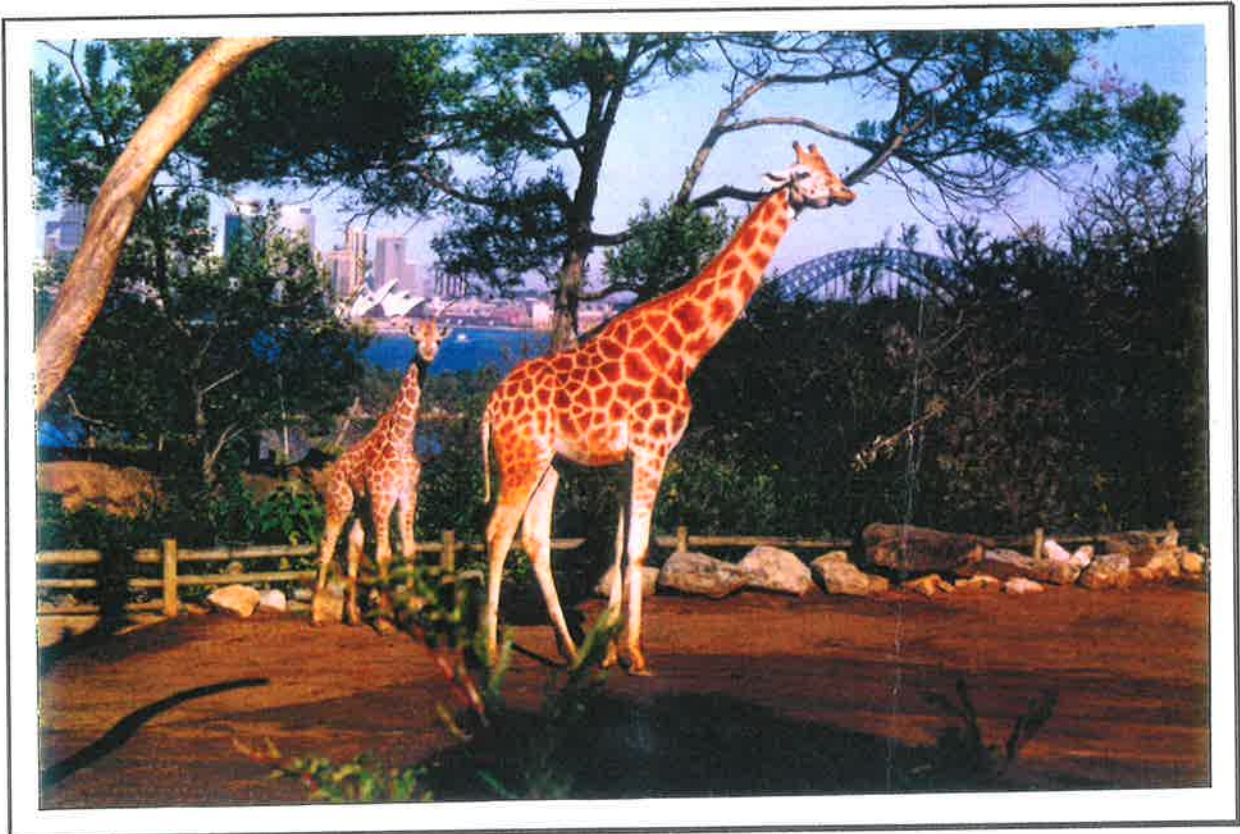




**CONTEXTUALISING THE ROLE OF ZOOS IN CONSERVATION:**

**AN AUSTRALASIAN EXPERIENCE**



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BSc, MEnvSt**

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## LIST OF ABBREVIATIONS

<b>AAEE</b>	Australian Association for Environmental Education
<b>AAZPA</b>	American Association of Zoological Parks and Aquaria
<b>ACTI</b>	Australian Conservation Training Initiative
<b>ANCA</b>	Australian Nature Conservation Agency
<b>ANZECC</b>	Australia and New Zealand Environment and Conservation Council
<b>ARAZPA/ ASZK</b>	Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keepers
<b>ARAZPA</b>	Australasian Regional Association of Zoological Parks and Aquaria
<b>ASMP</b>	Australasian Species Management Program
<b>ATCV</b>	Australian Trust for Conservation Volunteers
<b>AZDANZ</b>	Association of Zoo Directors of Australia and New Zealand
<b>CALM</b>	Department of Conservation and Land Management
<b>CBSG</b>	Captive/Conservation Breeding Specialist Group
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Flora and Fauna
<b>CMAG</b>	Captive Management Advisory Group
<b>COGBAZ</b>	Council of Governing Bodies of Australasian Zoos
<b>DOC</b>	Department of Conservation
<b>ESAC</b>	Endangered Species Advisory Committee
<b>ESU</b>	Endangered Species Unit
<b>FOTZ</b>	Friends of the Zoo
<b>IGAE</b>	Intergovernmental Agreement on the Environment
<b>IUCN</b>	International Union for the Conservation of Nature
<b>IUDZG</b>	World Zoo Organisation
<b>IZE</b>	International Association of Zoo Educators
<b>IZY</b>	International Zoo Yearbook
<b>NPWS</b>	National Parks and Wildlife Service
<b>NTQ</b>	National Trust of Queensland
<b>NYZS</b>	New York Zoological Society
<b>SMP</b>	Species Management Plan

<b>SSC</b>	Species Survival Commission
<b>SSP</b>	Species Management Programs
<b>TAG</b>	Taxon Advisory Group
<b>WPA</b>	Wildlife Protection Authority
<b>ZPB of NSW</b>	Zoological Parks Board of New South Wales
<b>ZBV</b>	Zoological Parks Board of Victoria
<b>ZSL</b>	Zoological Society of London

## ABSTRACT

The 'zoo' is an enduring human institution. Yet its form and purpose have been subject to numerous changes through the ages. As smaller collections of animals, menageries fulfilled the often frivolous whims of powerful elites from the time of ancient societies up until the French Revolution. Eventually, these private collections became public domain and zoos gained an educational purpose. By the middle of this century when public concerns were growing about animal welfare and environmental degradation, zoo professionals began promoting conservation as the new *raison d'être* for their organisations. The alleged transformation of zoos serves as initial point of departure for this research which explores numerous factors influencing how conservation in Australasian and overseas zoos is constructed and realised.

Most western zoos address the problem of global (and regional) extinctions through their participation in endangered species conservation and by educating the public about this issue. Zoo-based breeding programs can assist with species restoration by placing individuals from captive populations into the wild to sustain the size and genetic variability of natural populations. Education in zoos includes formal and informal programs designed to increase visitors' knowledge about conservation problems and solutions. Recently, zoo conservation expanded to include, in some cases, field conservation projects and conservation outreach programs.

These activities are undertaken by a community of dedicated and resourceful zoo professionals who are eager to transform zoos into effective and influential conservation organisations. Such ambitions, however, are realised in particular ideological and practical contexts. Many zoo professionals have embraced certain contemporary administrative trends that confine zoo conservation policy to the realm of conventionality. Highly-ordered zoo structures inhibit creative problem-solving. Corporate management systems accompanying these bureaucratic arrangements infuse zoo conservation principles and practices with a paradigm of economic rationality.

The example of zoo conservation principles and practices demonstrates that traditional institutional settings tend to be dominated by technocentric - rather than ecocentric - environmental values. Consequently, zoo conservation programs fall far short of solving ecological dilemmas. Captive breeding and species management schemes shift attention away from habitat conservation; incur enormous costs; can compromise the welfare of individual animals; and require extraordinary levels of inter-organisational coordination and cooperation for success. Educational programs are often limited in scope and effectiveness by an insufficient allocation of financial and organisational resources. Finally, the primacy of business imperatives in many Western zoos delimits conservation ideals to economic terms.

That the zoo community can boast some admirable conservation achievements is not in doubt. Nonetheless, modern zoos remain predominantly devoted to ideals that are profoundly similar to those embodied in the royal menageries and zoological gardens of previous centuries. The supremacy of technocentric ideologies in zoo principles and practices is testimony to similarities between the conservation role of zoos and broader trends in contemporary environmental policy. Reductionist, fragmented, economic and short-term perspectives abandon progressive approaches to resolving ecological dilemmas in favour of supporting the status-quo. The degree to which the conservation role of zoos can promote progressive environmental knowledge remains an important point of debate for the zoo community and general public. This research has generated data that the Australasian and international fraternity of zoo professionals can apply to future problem-solving and to increasing the relevance and effectiveness of zoo conservation policies for modern-day ecological problems.

## DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any University or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I consent to copies of this work, when deposited in the University Library, being made available for loan and photocopying.

Nicole Mazur  
30 April, 1997

## ACKNOWLEDGEMENTS

*While writing may be a solitary pursuit, it is never accomplished in isolation. The influence of others is vital, and any writer is indebted to a considerable variety of people.  
(Evernden 1984 as cited in Evernden 1993:x)*

I am grateful to a great number of people who have given me their advice, criticism, support, and criticism and fellowship.

First, I must thank my principal supervisor Dr. Timothy J. Doyle who, in addition to lending me his invaluable academic insights, encouraged me to celebrate my intellectual achievements and shared his friendship with me. I will continue to treasure those gifts.

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The Mawson Centre was far more than merely an office to conduct my research in. It was almost another home to me, brimming with friends and colleagues, all of whom made the doctoral journey more fulfilling. I am so much the richer for the time shared with my fellow 'PhDers' and close friends: Denise Noack, Marg Cameron, Stephen Darley, Patricia Carvalho, and Jason Ting. I am grateful to Pam Keeler and Kris James for their friendship and administrative assistance, and number of past Mawson students and friends: Diane Favier, Stevie Austin, Adam Simpson, Fiona DeRose, Sue Dunn, Simone Burzacotte, Steve Baker, Rob Resson, and many others.

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## CHAPTER ONE: INTRODUCTION



*... we are challenging the industry to take a critical look at itself and debate the future direction of zoos into the next century. Clearly zoos have evolved enormously since the dreadful days of animals kept in row upon row of concrete cages, but what are we evolving into? What are the new horizons for zoos into the twenty-first century? We talk readily about "conservation" and "education" but what do we really mean - and is it enough? (Healesville Sanctuary Staff 1996)*

### **1.1 ZOO FEATURES**

The 'zoo' is a monument to a long standing human tradition of maintaining wild animals in captivity. Since the early societies of the Egyptians, Greeks and Chinese, people have attempted to satisfy their curiosity of animals as well as their need to confirm human superiority over nature by sustaining menageries. Despite considerable variations in form among zoos today, there are two fundamental features that characterise any zoo:

1. Zoos possess and manage collections that primarily consist of wild (non-domesticated) animals, of one or more species, that are housed so that they are easier to see and to study than in nature.
2. Zoos display at least a portion of this collection to the public for at least a significant part of the year, if not throughout the year  
(Captive Breeding Specialist Group [CBSG] & The World Zoo Organisation [IUDZG] 1993:3)

Zoos are constituted primarily by the animals retained in captive conditions and remain a popular form of entertainment.

Societal values, however, have changed considerably since zoos came into being (Hancocks 1995a; Hargrove 1995; Mitchell 1994). Thus zoos are now expected to demonstrate, beyond reasonable doubt, their worth to society and how pertinent, if at all, their actions are towards arresting the loss of biodiversity. Zoos' new ethic of concern for nature also exists in the context of growing public scrutiny (eg Bell 1993; Gatland et al 1994; McKenna et al 1987; World Society for the Protection of Animals & The Born Free Foundation 1994). When a powerful moral concern for all sentient beings accompanied the reappearance of environmental issues on the public agenda in the 1960s, zoos began to incorporate a conservation ethic into their principles and practices. Today the international zoo community, and the Australasian zoo community in particular, remain determined to discard their old uni-dimensional image as 'entertaining menageries' and are now intent on becoming a major conservation force with which to be reckoned (eg CBSG & IUDZG 1993).

The formation and implementation of these conservation-oriented policies exist in the context of unprecedented levels of destruction of the biotic world: entire biomes are endangered and whole ecosystems are threatened due to human-induced pressures on biodiversity in many areas (CBSG & IUDZG 1993; Primack 1993). Most western zoos are seeking a more central role in solving this problem of global (and regional) extinctions by participating in endangered species conservation and by educating the public about biodiversity loss.

While conservation in zoos also includes education, the zoo community's most visible and direct contribution to addressing biodiversity loss has been through ex-situ conservation. This method refers to maintaining viable populations of species *off site* in artificial conditions under human supervision. Botanic gardens, game farms and gene banks use this technique as well as captive breeding programs in zoos. In some cases human disturbance has so seriously compromised the habitat of rare species that removing part of or a whole population from the wild becomes the only means for ensuring its survival (Groombridge 1992; McNeely et al 1990; Primack 1993). Zoo-based ex-situ conservation programs can help to preserve species in the wild by periodically reintroducing individuals from captive populations into the wild in order to maintain numbers and genetic variability in natural populations. Research on captive populations can also provide additional insight into the biology and behaviour of an endangered species (Primack 1993).

Internationally, zoo community leaders often cite the industry's greatest strength as the collective potential of the world's zoos to contribute to conservation (eg CBSG & IUDZG 1993; Conway 1978, 1986, 1995; Rabb 1994). Hundreds of zoos are organised in regional and national zoo associations which administer coordinated regional breeding programs for both endangered species and other non-threatened zoo animals (see CBSG & IUDZG 1993). These projects are often conducted in support of government wildlife agency and non-government conservation group efforts. Additionally, zoos have an impressive potential for influencing public opinion through their education programs, by virtue of their access to large segments of the world's total population. Globally, there are approximately 1200 zoos which annually have approximately 600 million visitors - some 10% of the world's population. Annually in Australasia, 6 million visitors attend at least 40 zoos organised in a regional network, the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) (CBSG & IUDZG 1993; Larcombe 1995)<sup>1</sup>.

Zoos' widespread popularity and regional organisation, however, do not occur uniformly across the globe. Sixty-five percent of zoos are found in the 'developed' world and are often more modern and better-funded than their counterparts in locations such as Africa, South America, Central America, and Asia (CBSG & IUDZG 1993). Many western zoos command multi-million dollar budgets and have access to considerable resources to develop programs. As public institutions, zoos represent approximately US\$5 billion in capital investment, manage combined annual operating budgets of US\$2 billion (Seal 1991), and spend US\$3 billion annually (Magin et al 1994). Despite the relative wealth of their institutions, Western zoo professionals are still faced with managing formidable financial, political and social pressures that constrain both the design and implementation of conservation principles and practices (Bell 1990; Sabag-Montefiore 1993; Weigel 1992; Wheeler 1994).

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<sup>1</sup> These figures do not fully represent all the establishments in Australasia that are licensed to display animals. For example, in the state of New South Wales there are over 60 licensees for animal display that are not necessarily ARAZPA members.

## 1.2 EXPLORING ZOOS' ENVIRONMENTAL RESPONSIBILITIES AND VALUES

To what extent are zoos socially responsible and relevant institutions that fulfil their alleged potential to assist endangered species conservation and educate the public about the need for such actions? Are zoos accountable for the substantial amount of public financial resources that are spent enabling these institutions to fulfil their educational and conservation imperatives? Animal welfare and anti-zoo lobbyists insist that zoos' current justifications for maintaining 'wild' animals in captivity no longer suffice. They also accuse zoos of subjecting animals to cruel and inhumane conditions. Can zoos be sure they are meeting the needs of the animals they retain? Conversely, some zoos' park-like settings and recreational atmosphere have the potential to provide unique opportunities for educating people about animals, ecosystems, evolution, and how humans are related to the natural world, thereby engendering positive and caring attitudes towards wildlife. Indeed, they bring a bit of 'nature' to our highly urbanised lives. Yet we may rightly ask whether this is what people truly experience in zoos, and whether zoos merely increase "the sense of human separation and alienation from wild animals, encouraging feelings of superiority and alterable difference" (Kellert 1987:9). It can be suggested that zoos have a special responsibility to demonstrate, both to the societies they serve and the animals they retain, that they are doing everything within their power to advance progressive conservation principles and practices.

Recent introspection among zoo communities and new found opportunities in endangered species conservation and public education are likely to be closely linked to worsening environmental degradation and a growing public awareness of such a decline. Hence, the environment movement may be providing an important impetus for change in the zoo community. Environmentalism can be interpreted (simplistically) as a general interest in the state of the 'natural' environment, as well as 'human-made environment' and recognition that our relationship has, in some ways, to be 'improved'. The zoo community has primarily identified itself as having a role in *conservation* as opposed to *environmentalism* per se, yet this interest remains relevant to a discussion of environmentalism.

Public awareness about environmental problems is encouraging. Yet this mindfulness should not be equated with a homogeneous social movement that steadily progresses towards healing society's environmental ailments. On the contrary, we are currently witnessing unprecedented levels of environmental decline and species extinctions. The belief in a unified environmental movement which serves only 'nature's' best interests misses the fact that intricate power structures in Western society systematically favour particular interests, and in so doing, contribute significantly to continuing erosion of the physical and social environment. The popularity of environmental concern disguises the confusion resulting from the proliferation of individuals, groups, and organisations employing varying definitions of and approaches to environmental problems (O'Riordan 1981, Pepper 1986)<sup>2</sup>.

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<sup>2</sup> This uncertainty may have rather grave consequences. Doyle & Walker (1996) and Fox (1990) assert that increased awareness of environmental problems has given rise to a range of popular, but rather ineffectual, official measures for arresting environmental decline.



Hence, a more informed interpretation of environmentalism would account for the diversity of interests embodied in modern environmental concern. Environmentalism is constituted by human beliefs and value systems (Evernden 1993). It incorporates a range of ideologies and prescribed solutions for resolving perceived environmental problems. The philosophical divergences underlying these ideas have been conceptualised through the use of dualistic frameworks<sup>3</sup>. At opposite ends of O'Riordan's (1981) environmental spectrum are two primary ideological themes: Technocentrism or Technological Environmentalism and Ecocentrism or Ecological Environmentalism (Figure 1). In modern Western societies, technocentrism represents the dominant set of attitudes towards the environment. The natural environment is largely seen as neutral by professional elites who apply rational and 'value-free' scientific and managerial techniques to problem-solving. Technocentrism assumes that humans are ultimately able to understand and control all events to suit their purposes. Credence is lent to the assumption by the notion of efficient environmental management techniques for solving problems. Those operating under technocentric principles place their faith in the notion of 'progress' which is equated with material advancement, the superiority of 'high' technology over 'low' technology, the sustainability of economic growth, and in the ability of advanced capitalism to maintain itself (O'Riordan 1981; Pepper 1986).

In an ecocentric position, non-human nature is respected for its own sake, above and beyond its usefulness or relationship to humans. Hence, humans are morally obligated to respect non-human nature. While non-human nature may not need humans, our emotional, spiritual, and physical well-being is highly dependent upon a functioning (if not totally healthy) environment. Moreover, because humans are part of nature, we must consider any ramifications our actions might have for the ecological systems in which we live. Hence, ecocentric environmentalism values the natural order of things and preaches the virtues of reverence, humility, responsibility and care. An ecocentrist argues for low impact technology; decries bigness and impersonality in all forms; and demands a code of behaviour that seeks permanence and stability based on ecological principles of diversity and homeostasis (O'Riordan 1981; Pepper 1986).

While technocentrism and ecocentrism may represent two opposite ends of a theoretical spectrum, in day-to-day life these concepts are not necessarily mutually exclusive (O'Riordan 1981; Pepper 1986). Individuals, groups, and organisations will favour elements from both categories. Their choices are often influenced by particular issues at hand and/or the

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<sup>3</sup> Cotgrove and Duff (1980) suggest that environmentalist thought can be divided into a dominant social paradigm and an alternative environmental paradigm. The former embodies a conservative, protectionist stance towards environmental matters. The latter includes those who are opposed to the dominant values and institutions of industrial society and wish to change them. Young (1992) depicts environmentalism as a philosophy of change whereby some distinguish between the human species and others perceive humanity as inextricably linked with the rest of the biosphere. Similarly, Dyer & Gunnell (1993) offer a spectrum of environmentalism which accounts for a range of values embodied in human views of nature, with anthropocentric attitudes on one end of the spectrum and biocentric attitudes at the other.

**FIGURE 1: The greening of zoos: where do they sit on the spectrum of environmentalism?**



**Technocentric Environmentalism**

- a rational, scientific approach;
- neutral value for nature;
- economic rationalism;
- material advancement;
- economic growth;
- 'high tech' over 'low tech'

**Ecocentric Environmentalism**

- nature respected for its own sake;
- moral obligation towards nature;
- limits based on ecological laws;
- small scale production/development, low impact technology, communities

institutional context. This variance and fluctuation illustrate how environmentalism embodies:

... neither reconciliation nor peaceful resolution, but rather a set of tantalising contradictions or divergent patterns of belief and action which constantly defy solution, yet persistently invites a striving for mediation (O'Riordan 1976: vi).

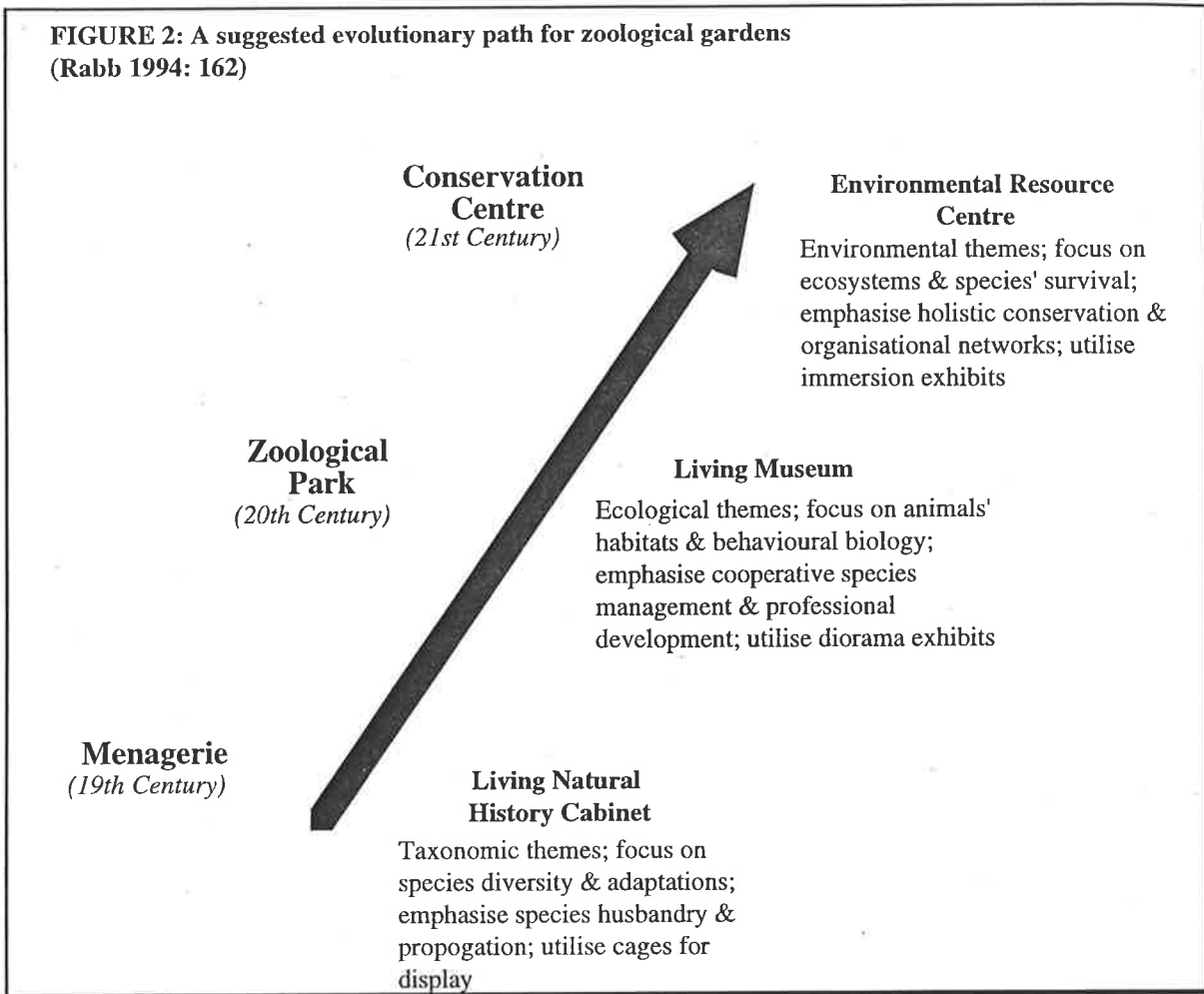
Zoos' relatively recent alliance with conservation may represent a complex array of human conceptions of and feelings towards non-human nature, particularly animals. These attitudes could be considered to be a function of long-held traditions, as well as the incorporation of contemporary environmental concerns into zoo principles and practices.

George Rabb (1994: 162), a prominent leader of the international zoo community, asserts that zoos of the 20th century will move beyond their role as "living museums" to become "environmental resource centres" (Figure 2). Rabb's vision is representative of some of the dramatic changes that have taken place in zoos. Missing from such a depiction, however, is an account of the myriad principles and practices that could be influencing these institutions. Far from being homogeneous, zoological parks probably must answer multiple imperatives which often conflict with one another. In short, some zoo goals and activities are likely to be greener than others.

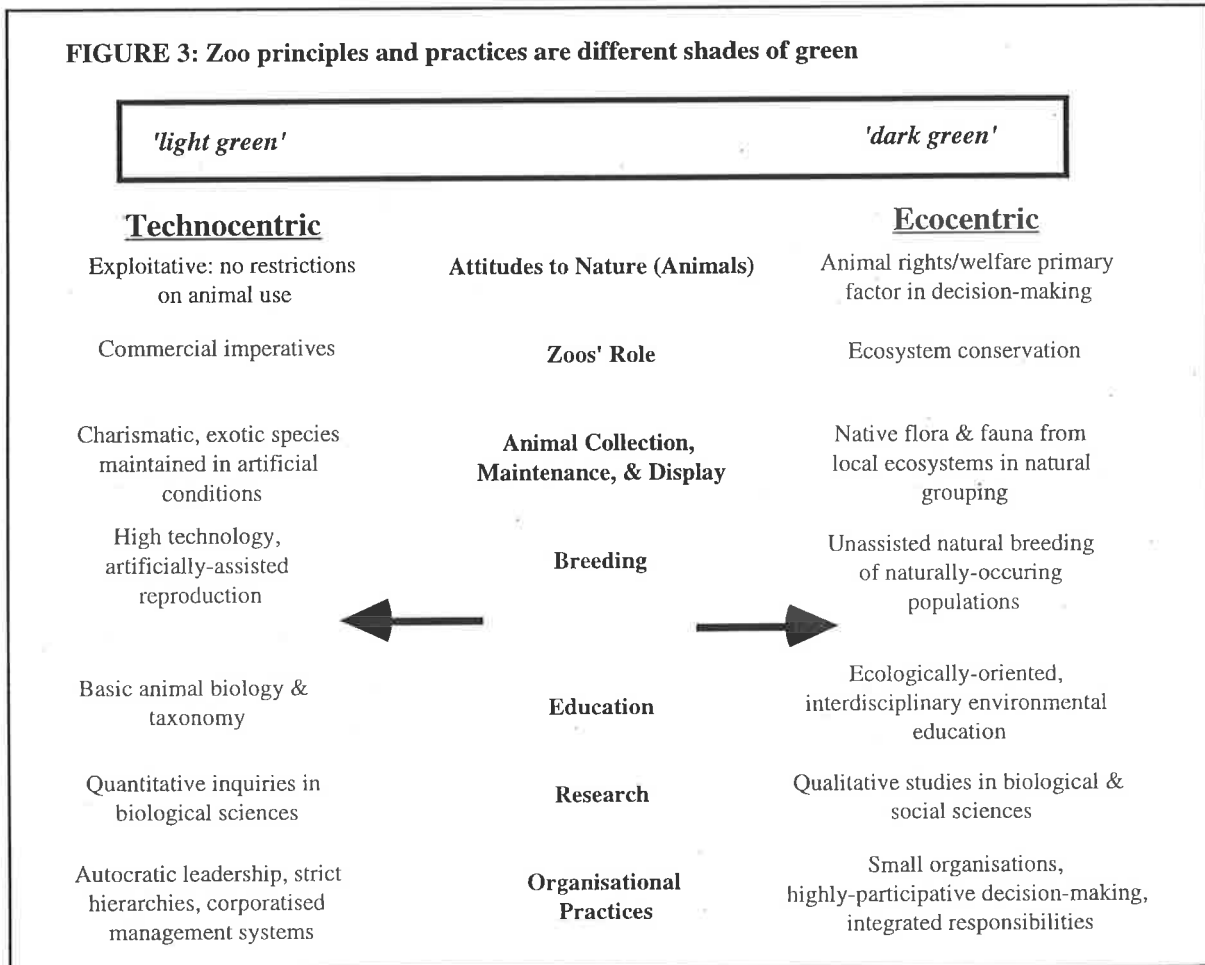
Figure 3 illustrates how zoo principles and practices might span the environmental spectrum, from the management-oriented goals of technocentrism to the more ecologically-inspired ideals of ecocentrism. This conceptualisation suggests that, both collectively and in individual institutions, not all zoo practices further the same environmental objectives or interests to the same degree, nor in a similar manner. Nonetheless, the current trend in most Western zoos appears to be the use of a generic version of 'conservation' to refer to a wide range of zoo activities, irrespective of whether these programs service conservation objectives directly or indirectly. Such applications belie the complexity of motivations and methods inherent in 'conservation,' a culturally-constructed notion.

Zoos may be important sites for research in environmental studies, because they conceivably offer a stage for viewing changes in individual, organisational and societal attitudes towards conservation (or the lack of it). The introduction of a conservation ethic into the philosophies and operations of zoos may partly be a question of how a social movement such as environmentalism can influence institutional practices in what have traditionally been largely conservative organisations. Zoos embody particular attitudes towards non-human nature; exhibiting wildlife for what can be considered to be largely utilitarian purposes. Understanding the role of zoos in conservation might elucidate the ways in which individuals and organisations are defining conservation and the implications that varied understanding has for environmental policies.

**FIGURE 2: A suggested evolutionary path for zoological gardens**  
(Rabb 1994: 162)



**FIGURE 3: Zoo principles and practices are different shades of green**



### 1.3 ENVIRONMENTAL AND WILDLIFE POLICIES IN A TECHNOCENTRIC WORLD

The design and implementation of environmental policies entails a high degree of complexity and conflict. Disparate values and ideologies cause individuals and groups to disagree over what constitute important issues and/or prescriptions for action. All public policies, such as zoos' conservation policies, are more than neutral tools that people use to solve problems or to assist them in realising plans. Policies are constituted both by goals and the means for achieving them. Decisions about what courses of action should be taken (or not taken) involve both a choice of values and a consideration of the means advancing those values (Doyle & Kellow 1995). As public policy issues, *environment* and notions of *conserving* the environment encompass many interconnecting problems constituting an aggregate of dimensions, levels of significance, and uncertainties. While complexity characterises most public policy problems, the composite nature of environmental problems presents policy makers with unique societal, scientific, economic, and political challenges (Caldwell 1993; Doyle & Kellow 1994; Mangun & Mangun 1993). Caldwell (1993: 114) lists six factors which contribute to the vexatious nature of environmental policy-making:

1. Incompatible concepts of human relationships to the natural world expressed in conflicts between perceived facts and values;
2. Multiple, complex and interrelating elements in nature and their inadequate or erroneous perception by humans;
3. Sectoral subdivisions of knowledge;
4. Situations and motives in environmental politics;
5. A government structure for policy and administration that serves and perpetuates a fractionated approach to environmental problems;
6. The perception of time.

The predominance of modern reductionist, economic and technocratic views in environmental policy reduces the potency of environmental problem solving. An overriding insistence on locating conclusive and simple facts about environmental problems fails to acknowledge the elusive and complex character of these dilemmas. By virtue of this considerable oversight, nature is devalued and displaced. The divergent motivations and situations of politicians, administrators, and conservationists also hamper the development of consistent and cohesive environmental policies. Moreover, administrative structures facilitate a special interest approach to environmental policy whereby different government department policies often conflict with one another. The fragmented, piecemeal character of bureaucratic approaches and the short-term 'here-and-now' perspectives that attend these approaches may confound the discovery of appropriate solutions for environmental problems (Caldwell 1993; Paehlke & Torgerson 1990; O'Riordan 1981).

Environmental policies thus tend to deal more with managing human actions than with managing non-human nature -- which seems to defy our attempts at 'fixing it'. What may be missing is a more systemic and systematic acknowledgment of human agency in the policy process at both an institutional and interpersonal level<sup>4</sup>. With respect to wildlife policies there

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<sup>4</sup> What may also be lacking is widespread acknowledgement in Western society that people are not separate from, but are part of 'nature' or 'the environment'.

are myriad methods by which animals and their habitats are manipulated, yet ultimately strategies to conserve endangered species concern the control of human actions towards various flora and fauna (Mangun & Mangun 1993). The decisions we make about allocating resources for saving certain species and the institutional settings in which those choices take place reflect certain values. Our decisions regarding endangered species are also highly political (Yaffee 1994). Clark & Kellert (1989:19) maintain that wildlife policy is constituted by the "interactive relationship of various constituencies in an exchange of information, values, and efforts to control wildlife resources". That is, wildlife policies encompass many issues - not least about 'who gets what and when'. Zoos' endangered species activities function as a subset of broader wildlife policies and may therefore be as complex and value-laden.

#### **1.4 RESEARCH ASPIRATIONS AND DIRECTIONS**

The inherently subjective nature of all decision-making ensures the complexity of any environmental research or problem-solving exercises. While the main focus of this research is to examine the role of zoos in conservation, such an allegedly clearcut sounding aim belies its truly composite nature. This research exposes and considers various issues relating to zoos and conservation, but it also generates information which has been and will continually be fed back to the zoo community for the express purpose of assisting with problem-solving and increasing the relevance and effectiveness of zoo-based conservation principles and practices.

Zoos and conservation have yet to be considered from an environmental studies perspective. Doyle and Walker (1996) list several features that characterise environmental studies:

- it is fundamentally informed by ecology and attendant principles of holism, integrity, diversity, and interconnectedness;
- its emphasis on holism mandates considering an extensive range of issues;
- it is connected to a social and political movement that acknowledges the need for advocacy and strategic problem-solving with regards to environmental issues;
- it supports eclectic methodological approaches and necessarily values interdisciplinarity;
- it endorses the use of a critical approach which often facilitates radical thought and political action.

Using this standpoint in the present context ensures originality and provides a particular ideological, conceptual, and methodological approach that is dissimilar to past treatments of zoos. A fundamental tenet of this research is that zoos' association with conservation is a complex environmental issue. The central hypothesis of this research is that zoos largely represent Western society's dependence on conventionally technocratic approaches to resolving environmental problems. This postulate will be tested through an exploration of: 1) the presence of different environmental values in zoos; 2) what degree of influence such principles have on zoo policies and programs; and 3) whether the role of zoos in conservation is linked to a host of contextual factors (such as social, political, economic and ecological). Several disciplines and techniques such as policy analysis, organisational diagnosis, social surveys and literature reviews are used to conduct this inquiry and are outlined in greater detail in Chapter Two. Should problematic policy biases be detected, the zoo community can use the findings of this research to become more relevant and effective advocates for alleviating the demise of our

environment. Before moving on to exploring these matters in greater detail, it is worth briefly visiting the major theoretical sites that have informed this research.

## 1.5 ZOO POLICY

Policy matters are central to a discussion of zoos' role in conservation. The word 'policy' is heterogeneous of meaning. It is simultaneously familiar and obscure; it is recognised by some but remains incompletely expressed (Cunningham 1963). 'Policy' conjures up images of lengthy documents or official statements that promise particular actions or programs. For example, zoo administrators, collectively and individually, have produced numerous documents stating their intent to assist wildlife conservation. Table 1 lists the current mission statements of several zoological associations and institutions that are important foci of this research: the World Zoo Conservation Strategy, the ARAZPA, and several Australasian zoos. There is a striking similarity in the way members of the zoo community articulate their desire to be aligned with a conservation cause. While 'policies' may be conceived of as broad strategic statements of intent designed to accomplish specified aims (Brewer & deLeon 1983), one should avoid limiting the conceptualisation and structure of any 'policy' to the physical realm. Viewing official mission statements as the primary example of zoo policy provides only a limited perspective and belies the full range of activities that actually constitute zoos' conservation policies. These mission statements represent merely the *formalised* wishes of zoos. Hence, it is more appropriate to recognise that the meaning of 'policy' can be extended to include a wide array of both practices *and underlying principles*.

Policies necessarily have far-reaching implications for our existence. Lasswell (1951:4) uses the term 'policy' to designate "the most important choices made either in organised or private life". More specifically, policy has been depicted by Anderson (1984) as a purposive course of action followed by an actor or set of actors in dealing with a problem or matter. Hecló (1972) suggests that policy represents patterns of decisions, as well as non-decisions, which, by virtue of their selection, allocate values. As the foregoing suggests, the conservation role for zoos is not simply a matter of determining these organisations' ability to employ specific techniques for restoring endangered wildlife or educating the public about the need for conservation. Nor does this role merely concern official strategies imbued with conservation rhetoric. Conservation in zoos exists both as a product (the concrete statements and programs offered) and as processes (*how* decisions are made within and among those organisations) - it is a question of policy. Hence, when referring to policy it is vital to consider the abstract - policy as a process of decision-making - and the more concrete - the product of those processes (Wildavsky 1979).

Formal mission statements, such as those mentioned in Table 1, are one product of untold processes that comprise zoos' conservation policies. For example, contemporary zoo programs are further illuminated in part by understanding what has preceded them. Zoos' formalised conservation aims and objectives are more visible and concrete manifestations of a shift in policy that has been emerging over the course of several centuries.

**TABLE 1: Recent mission statements representing the formalised wishes of the international and Australasian zoo communities.**

<p><b>World Zoo Conservation Strategy</b>  <i>to identify the areas in which zoos and aquaria can make a contribution and determine how zoos can support and consolidate the processes leading to nature conservation and sustainable use of natural resources</i></p>	<p><b>ARAZPA</b>  <i>to promote and maintain professional standards of operation in the zoological industry and to maximise its collective resources for the conservation of biodiversity</i></p>
<p><b>Australasian Species Management Plan (ASMP)</b>  <i>to contribute to conservation regionally and internationally by assisting in the preservation of biodiversity and the prevention of species extinction through the cooperative management of wildlife in the Australasian region.</i></p>	
<p><b>Adelaide Zoo</b>  <i>to assist the conservation of the natural diversity of life on earth.</i></p>	<p><b>Auckland Zoo</b>  <i>to provide for the citizens of Auckland and its visitors an animal-focused recreational and educational facility which takes an active role in the long-term conservation of wildlife, with emphasis on that of New Zealand</i></p>
<p><b>Currumbin Sanctuary</b>  <i>to care and conserve for Australia's wild species and to show them to visitors in a way which offers both the viewer and the viewed an enjoyable experience</i></p>	<p><b>Melbourne Zoo, Healesville Sanctuary, Werribee Zoo</b>  <i>to create positive attitudes towards wildlife and conservation of the world's natural living resources</i></p>
<p><b>Taronga Zoo/Western Plains Zoo</b>  <i>conservation of life on earth and the promotion of positive community attitudes towards wildlife and the environment.</i></p>	<p><b>Perth Zoo</b>  <i>to contribute to the conservation of wildlife and to encourage the development of positive community attitudes towards the conservation of life on earth</i></p>



Where zoos (or menageries)<sup>5</sup> once held wild animals purely for exercising human power and pleasure, wild animals are now contained for their own benefit, as well as the benefit of society at large<sup>6</sup>. We have already seen how Rabb (1994) envisages that the progression of zoos through the last two centuries will eventually culminate in a new identity for zoos - that of environmental resource centres (Figure 2).

These visions of institutional transformation are actualised (or not) through a series of individual and collective decisions made by zoo professionals. A common denominator in any decision-making is the act of choosing among alternatives which are usually different strategies of solving problems or achieving goals (Lerner 1976). Choice is central to any analysis of policy processes. Zoos are faced with many choices about how best to find purpose and meaning for their institutions in a rapidly changing world. The zoo community's most significant gesture of late has been designating conservation as a primary policy objective. Subsequent animal collection and corporate plans, business and marketing strategies, and mission statements that purportedly support conservation aims imply that the zoo community has made reasonable and informed choices, and will achieve what it set out to do. In reality, however, are those choices informed as much by emotive values, incomplete information, and the forces of power and wealth as they are by 'rationality' ?

### **1.5.1 Rational Decision Making Models and Incremental Policy Advances**

In advancing clearer understandings of policy processes, Wildavsky (1979: 25) admonishes that "we must first exorcise the ghost of rationality, which haunts the house of public policy". Most administrative structures and ideologies endorse the notion that humans can master all things through calculation when, in fact, there are many issues and problems that elude our control. On this matter, there are two prominent models of decision-making which have direct implications for general policy processes, as well as for more specific environmental, wildlife, and zoo conservation policies, as we will see in later chapters. The 'rational comprehensive model', as first described by Lindblom (1959: 79), suggests that professionals tend to follow a sequence of stages in the decision-making process whereby they:

1. start by identifying general goals which are then translated into specific objectives;
2. then rank all possible policy outcomes in order of their potential for meeting the specified objectives;
3. outline all possible policy *alternatives* for achieving objectives;
4. systematically compare on the basis of which have the greatest potential for fulfilling the most objectives;
5. finally, choose and implement a course of action.

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<sup>5</sup> The term menagerie has been traditionally used in reference to private animal collections of monarchs and aristocrats kept in enclosures close to palaces. Menagerie is derived from the French term 'menager' which connotes a number of activities related to management of family and care of household (Zuckerman 1979). By the time animal collections were opened up to the general public by the 18th century, the term 'zoo' had been coined. These events are explored further in Chapter Three.

<sup>6</sup> Some might argue that not much has changed, that zoos, despite their conservation imperatives, are still largely about human domination over and abuse of wild animals (eg. Bell 1993; World Society for the Protection of Animals & The Born Free Foundation 1994; Davis 1993; Gatland et al 1994; Grandy 1992; Jamieson 1985; Ormrod 1994; Seidman 1993; Singer 1985; Sussman 1991; Swanson 1993; Wright 1993; Mullan & Marvin 1987; McKenna et al 1987). In this case, zoo policies may be serving largely symbolic purposes, giving the impression of action and maintaining political support rather than taking any 'real' action to solve the problem (Edelman 1971).

The 'rational' policy-making process depicted by this model requires extensive intelligence gathering; identifying all options; assessing consequences of options; relating consequences to values; and choosing preferred options. There are also extensive problems with this model. It fails to appreciate psychological limitations of individuals, conflict over multiple values, organisational dynamics, time and resource constraints, and situational limits (Hogwood & Gunn 1984; Doyle & Kellow 1995). It assumes objectivity is not only necessary but fully achievable, rendering the bureaucrat or administrator a mere technician implementing the objectives of policy. An over-emphasis on positivist models of administrative behaviour negates the importance of normative value judgements, ethics, justice and reason that people employ in decision-making processes (Van DeVen 1983). Lindblom (1951: 84) does acknowledge the constraints - even the impossibility - of such an approach:

Limits on human intellectual capacities and on available information set definite limits to man's [sic] capacity to be comprehensive. In actual fact, therefore, no one can practice the rational-comprehensive method for really complex problems, and every administrator faced with a sufficiently complex problem must find ways to drastically simplify.

Given these widely applicable conditions, it is feasible to suggest that the zoo community faces considerable time and resource (financial and human) constraints that limit the degree to which it can fully contemplate *all* possible courses of action and *every* potential consequence generated by those choices. Hence, the probable reality of zoo policy is likely to be that it too is bounded. Lindblom (1959: 79-80) offers an alternative model which acknowledges the marginal progression of most policy development. The 'incremental model' asserts that policy makers:

1. either explicitly or implicitly set a principal (and relatively simple) objective which is not usually ranked in comparison to other social values, even if they are immediately relevant;
2. they then outline those relatively few policy alternatives that occur to them;
3. these alternatives are compared, most of which would be familiar to the policy maker from past experience, as there are not likely to be theories precise enough to allow for a full analysis of the alternatives. Instead, decisions rely heavily upon past experience with making small policy steps which are extended into the future;
4. the last step entails the final selection of one option. This choice may represent a consolidation of various ends and means which have not previously been ranked.

Lindblom (1959) articulates the key differences between the rational comprehensive and incremental models of decision-making. While the former comprises a mechanical process of choosing means that best satisfy ranked goals, the latter is less ambitious. Practitioners of the incremental approach envisage only a partial fulfilment of their goals and expect continually to repeat the process as conditions and goals change and as accuracy of prediction is improved.

While the incremental model may offer a more realistic means for coping with decision-making, such a means of proceeding is still limited by the extent to which those implementing it can cope with problems. The incremental model's reliance upon agreement as a criterion for successful policies tends to reinforce the status quo. Yet, the complex, dynamic environment of zoos probably offers challenges that quickly overtake previous issues. Zoo professionals'

task of managing multi-faceted institutions and assisting in endangered species problem-solving conceivably requires expeditious and comprehensive answers.

Dror (1971) asserts that the kind of marginal change endorsed by the incremental model will only be most effective where societal values are stable, and where there is a high degree of continuity in the problems occurring and the means available for coping with those problems. More often than not, however, restoring species is a process that embodies high rates of change and complexity. Similarly, attempting to engender an ethic of care for nature in the public consciousness eludes simplicity. Hence, the issues in question are perhaps not suited to traditional response modes such as those embodied in either the rational comprehensive or incremental approaches<sup>7</sup>. Incrementalism is somewhat more reliable than the rational model. It more accurately describes certain policy-making realities, and its use can help decision-makers avoid big mistakes. As a prescription, however, incrementalism provides "ideological reinforcement of the pro-inertia and anti-innovation forces prevalent in all human organisations" (Dror 1971: 260). Hancocks (1995a & b) suggests that zoos have made only marginal contributions to arresting the decline in biodiversity, are hard pressed to show tangible benefits of education programs, and individual institutions are still managed in a largely conventional fashion. Perhaps the zoo community's continued reliance upon incremental forms of decision-making may ensure that only negligible levels of true policy reform are achieved.

### **1.5.2 Bureaucratic Structures and Conservative Policies**

Conservative policies resulting from rational and incremental models of decision-making are also a function of the type of organisational arrangements in which they take place. Organisational forms in which policies are created have important ramifications for environmental policy-making, fundamentally influencing means and ends. While there are myriad structural dynamics relevant to zoo policy, of particular importance are the bureaucratic structures and practices which may function to both enhance and impede the development and implementation of appropriate and practical conservation programs. Elucidating the development and machinations of bureaucratic structures will further clarify this point.

Modern bureaucratic forms of organisations have their roots in elements of the Scientific and Industrial Revolutions. A mechanistic world view originated during the 17th century Scientific Revolution. This reductionist perspective entailed viewing the world (and all that lies therein) as a machine made up of interchangeable and interrelated parts. In a manner similar to industrial machines, the 'parts' of the global machine could be replaced or repaired

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<sup>7</sup> In order to cope more adequately with high degrees of uncertainty and complexity, Dryzek (1987a) offers *communicative* rationality as an alternative to instrumental analytic strategies embodied by the incremental model. Decision-making proceeds by considering the viewpoints of all interested parties; accepting the inevitability of some degree of conflict as values clash; using the mediating skills of a facilitator; encouraging face-to-face discussions in an atmosphere that discourages threats, concealing information, or embarrassment; working towards consensus; and recognising that such forums not be conducted beyond a particular problematic situation. Hence, this form of problem-solving is oriented more towards the *process* of policy rather than its content and encourages individuals to recognise the limits of personal wisdom.

by people as needed. The mechanistic world view was inclusive of non-human nature as well. Prior to this way of thinking, nature was typically perceived to be a living organism whose relationship with people was based on reciprocity. Mechanism and the later development of industrialised capitalism, resulted in the entrenchment of a world view where nature became the object of control and domination. It became a commodity which should be managed in an orderly and rational fashion in the name of progress and development (Merchant 1992).

This ordered world view provided a fitting rationale for the way in which Western society began to organise itself. Bureaucratic forms of organisation proliferated during industrialisation. The state, economy, public and private institutions became increasingly formalised and structured by an administrative apparatus that was (and still is) designed for calculability and efficiency. Humanity appeared to be advancing by virtue of the value it placed on securing and sustaining an exacting order through perfecting administrative control. Paelkhe & Torgerson (1990: 116) assert that "the mastery of nature ... has depended upon a mastery of human nature". McGinnis (1994) expands on this relation by suggesting that bureaucracies' technocentric orientation dehumanises the human character of administrative process while simultaneously (and somewhat paradoxically) seeking to bring nature under control for human benefit. Conventional organisational structures and rigid taxonomic ordering of zoo animals suggest the influence of bureaucratic thought in zoos.

A need for control still dominates contemporary life and notions of progress. Modern organisations offer a prime example of how Western society increasingly utilises the machine as a metaphor by which society is then shaped in accordance with mechanical principles (Morgan 1986). Bureaucratic forms aim to routinise the administrative processes in much the same way as machines routinise production. Accuracy, clarity, order, speed, and reliability are revered and actively encouraged in this type of organising. These goals are supposedly achieved by creating a fixed division of tasks, hierarchical supervision and intricate systems of rules and regulations (Emy & Hughes 1991; Gerth & Wright Mills 1953). Zoos' functional specialisation of departments, top-down management approaches, and intricate systems of governance suggest to some that zoo conservation goals (such as restoring endangered species and educating the public) will be fulfilled.

Such standardised means and ends, however, show a especially bounded conceptualisation of the world. The focus of administrative problem-solving in bureaucracies concentrates on compartmentalising issues into distinctive units, thereby rendering problems more 'manageable'. Implicit in this method of organising is the erroneous assumption that 'the problem' is now under the control of an all-knowing and all-powerful force, an "administrative mind" (Paehlke & Torgerson 1990: 17). Not only does such a reductionist perspective necessarily diminish, if not totally eliminate, an appreciation of context, it is overly optimistic about human intellectual and administrative capabilities. These principles, however, belie the fact that knowledge is as imperfect as those institutions we have created for problem-solving and decision-making. On the contrary, western society's attempts to impose

a rational order on the world has in fact propagated some of our worst environmental problems. And what if the highly orchestrated captive-breeding programs in zoos consistently fall short of their goals? Perhaps the zoo community's continued reliance upon ex-situ conservation as a means for rejuvenating biodiversity, to the near exclusion of other options, is characteristic of the problematic policy choices which partly result from a bureaucratic context?

Bureaucracies have other important dysfunctions. Weber argued that formal rationality was bureaucracy's main strength, and was the most efficient form of organisation. He did so, however, at a time when there was an increase in the power and discourse of rationalisation and industrialisation in Western society. This form of organisation is perhaps less appropriate for contemporary society. Bureaucratic dysfunctions such as inefficient rigidity, conservatism and resistance to change, or the perpetuation of social class differences (Blau & Meyer 1987) inhibit the formulation of equitable and appropriate policies. By virtue of an insistence on maintaining order and control, members of the bureaucracy negate an open airing of conflicts based in different interests. Thus, we can see that organisational forms are biased insofar as they allow for the expression of particular interests at the exclusion and expense of others (Paehlke & Torgerson 1990). There are bound to be numerous values embodied by the opinions of various zoo staff. The degree to which official zoo policy is representative of those views, however, is questionable.

Hence, 'bureaucracy' is not merely a term denoting a neutral structure designed to ensure technical efficiency. Blau (1963) speaks of bureaucracy as both a social mechanism designed to maximise efficiency and as a form of social organisation with specific characteristics. Moreover, this social tool and collective form pervades nearly every aspect of human society. Bureaucratic administration is a significant part of the governing apparatus of virtually every country in the world (Peters 1976). An overwhelming proportion of public policies are carried out by large organisations, so much so that it is not uncommon to speak of the *bureaucratisation* of society (Jacoby 1973). Bureaucratic forms and thought have permeated both public and private sectors to such an extent that it is possible to refer to the 'administrative state'. In this world, the 'state' conventional approaches to administration take as a given, centralised planning and control (Paehlke & Torgerson 1990; Emy & Hughes 1991).

This centrality of control is highly politicised. Hence, bureaucracies may also be viewed as a political phenomenon unto themselves, constituted by different groups whose members actively utilise power resources in defence of their interests (Morgan 1986; Smith 1988). Power is integral to understanding the political functioning of organisations. Morgan (1986) stresses how competition and cooperation can exist simultaneously. Order and direction among people with potentially diverse and conflicting interests is established and maintained by particular organisational structures. Power is imparted through the command over organisational resources such as: determining specifics of organisational structure, rules,

regulations; decision processes; knowledge and information; inter- and intra-organisational boundaries; managing uncertainty; technology; interpersonal alliances and networks - the informal organisation; counter-organisations; and symbolism. It could be inferred from this information that power is expressed in myriad ways in zoos, and that, ultimately, policies will be most representative of those who govern zoo resources.

Inflexible hierarchical structures and adherence to rules in bureaucracies ensure that senior levels of administration have ultimate control over organisational resources. Accordingly, the flow of information from lower to higher organisational levels is often problematic, especially where that information is technically oriented (Hogwood & Peters 1985). Consequently, be they government employees or staff members of private companies or universities, bureaucrats play an important part in policy making, not least in mediating social and economic influences (Ham & Hill 1993; Paehlke & Torgerson 1990). By virtue of their positions of authority, they are empowered in ways that ensure the advancement of their interests. The presence of commercial overtones in zoo policy may be indicative of the primacy of an economic rationality that is often beholden to senior administrators.

The current socio-economic climate of modern western society dictates that at the highest levels in the bureaucracy economic rationalism, commercialisation, privatisation, and corporatisation are pre-eminent influences on decision-making. At middle levels of bureaucracy, decision-making models (eg rational comprehensive and incremental) illuminate the implementation processes and subsequent inter-departmental politics which characterise policy-making. Activities within lower levels of bureaucracy are characterised by intra-departmental negotiations in the making of policy. Consequently, any analysis of policy should account for not only the nature of the institutional environment in question (collective forms), but consider the cognitive structures of key actors and the characteristics of the issues under investigation as well (O'Riordan 1981). The need for this type of inclusive inquiry applies to zoo policy as well.

### **1.5.3 Organisational Deliberations**

Traditional research agendas on and in zoos have largely neglected organisational considerations. Yet any zoo's capacity to deliver effective conservation and education programs depends on a host of organisational variables. That is, what is the nature of the collective form in which zoo professionals make an aggregate of decisions that constitute zoo conservation policy? The suitability of organisational features, modes of organisational learning and change, staffing patterns, and use of staff have a significant bearing on the nature of zoos' conservation policy and role. In short, good policy is a reflection of an effective organisation (Mazur & Clark, In Review). Different aspects of organisational theory provide an appropriate framework for understanding zoos.

Many organisational theorists depict organisations as social systems, collections of individuals who communicate with each other where there are collective objectives and a functional

division of labour set in place to pursue these goals. Hellreigel & Slocum's (1976) depiction of an organisation being similar to an iceberg has strongly influenced the nature of my inquiry (Figure 4). Preliminary examination shows the formal aspects of an organisation, such as its design and structure. Like an iceberg, however, a surface examination hides larger and more significant processes operating below. The informal components of an organisation can and often does represent a deeper and larger reality.

The interaction between the formal and behavioural processes of zoos has been an important focus of this research. Superimposed on the official blueprint of the organisation and its environment is a much subtler, much less visible network of human groups, with their loyalties, prejudices, antipathies and codes of behaviour (Berger 1979). A cultural analysis allows a researcher to attribute meaning to factors behind the more observable elements - the physical structures. It adds the colour and depth to the issues in question. Corporate (or organisational) culture has been defined as the shared philosophies, ideologies, values, assumptions, attitudes, norms, and symbols that hold a group together (Gummeson 1991; Sinclair 1989). Sackmann's (1991) notion of a cognitive perspective of culture has been especially instructive for my research. She believes that the essence of organisational culture can be conceptualised as the collective construction of social reality and emphasises those mechanisms that people use to attribute meaning to events and to make sense out of their worlds. The perceptions, existing knowledge and judgements that influence their actions are 'cultural' by virtue of their collectivity.

My pursuit of certain collective knowledge in zoos has entailed identifying cultural groupings as they pertain to a conservation role for zoos within the zoos. Sackmann's (1991) conceptualisation of culture is very important to analysing conservation strategies of zoos. How do people's beliefs and ideas about what are appropriate conservation activities for zoos compare and contrast and what effect does this have on the design and implementation of policies and strategies in the Australasian zoo community? There are distinctive reciprocal relationships that exist between strategic issues and cultural knowledge, between cultural knowledge and organisational processes and between organisational processes, and strategic issues. These interactions are also informed by different forms and uses of power. Taken to their fullest extent, most zoo conservation strategies prescribe extensive change to traditional practices. Strategies in and of themselves do not necessitate change. They must be closely aligned with an organisation's culture in order to be effective. Hence, my research seeks to uncover zoo professionals' beliefs about what are appropriate conservation policies for zoos; what is being promoted in official documents in actual practice; and what organisational processes create and sustain any discrepancies between principles and practices.

A zoo, however, does not exist in a vacuum and, like any other organisation, it also interacts in various modes of exchange with its political, social, economic, and ecological environment (Jackson & Morgan 1982) (Figure 5). Hence, analysis of the role of zoos in conservation has

FIGURE 4: The organisational iceberg (Hellreigel & Slocum 1976: 7)

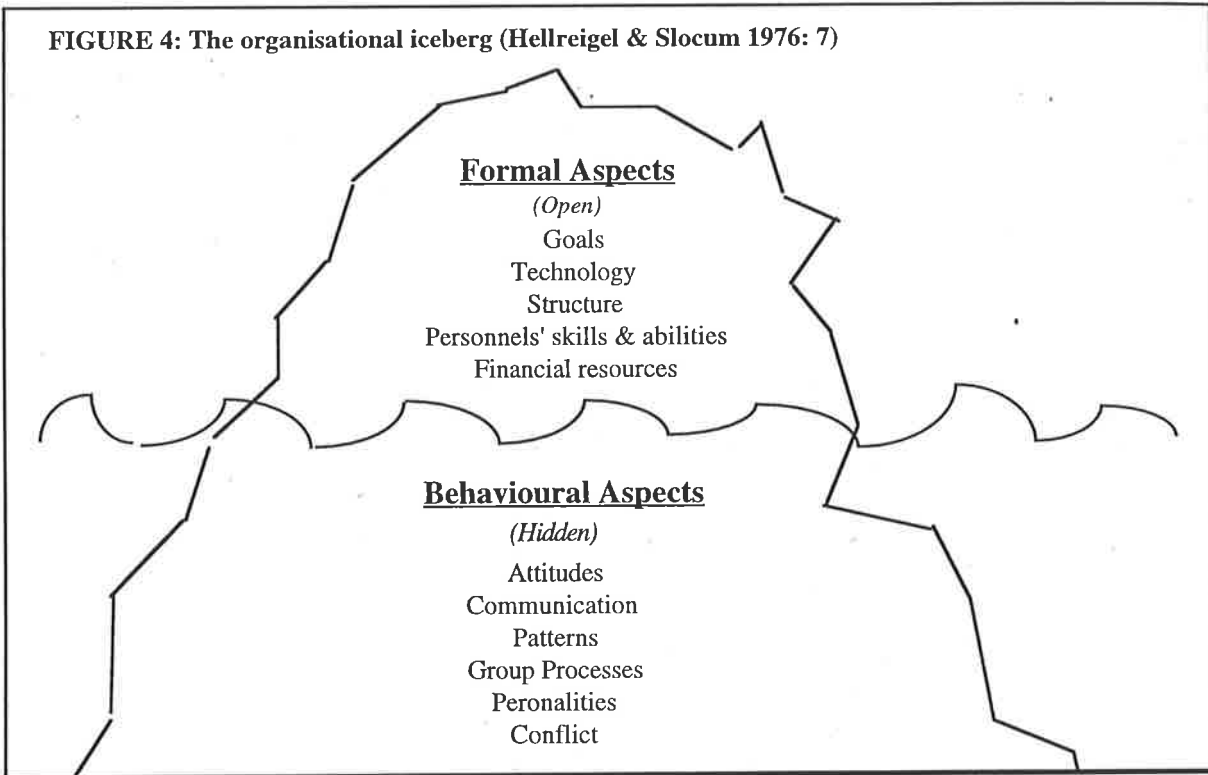
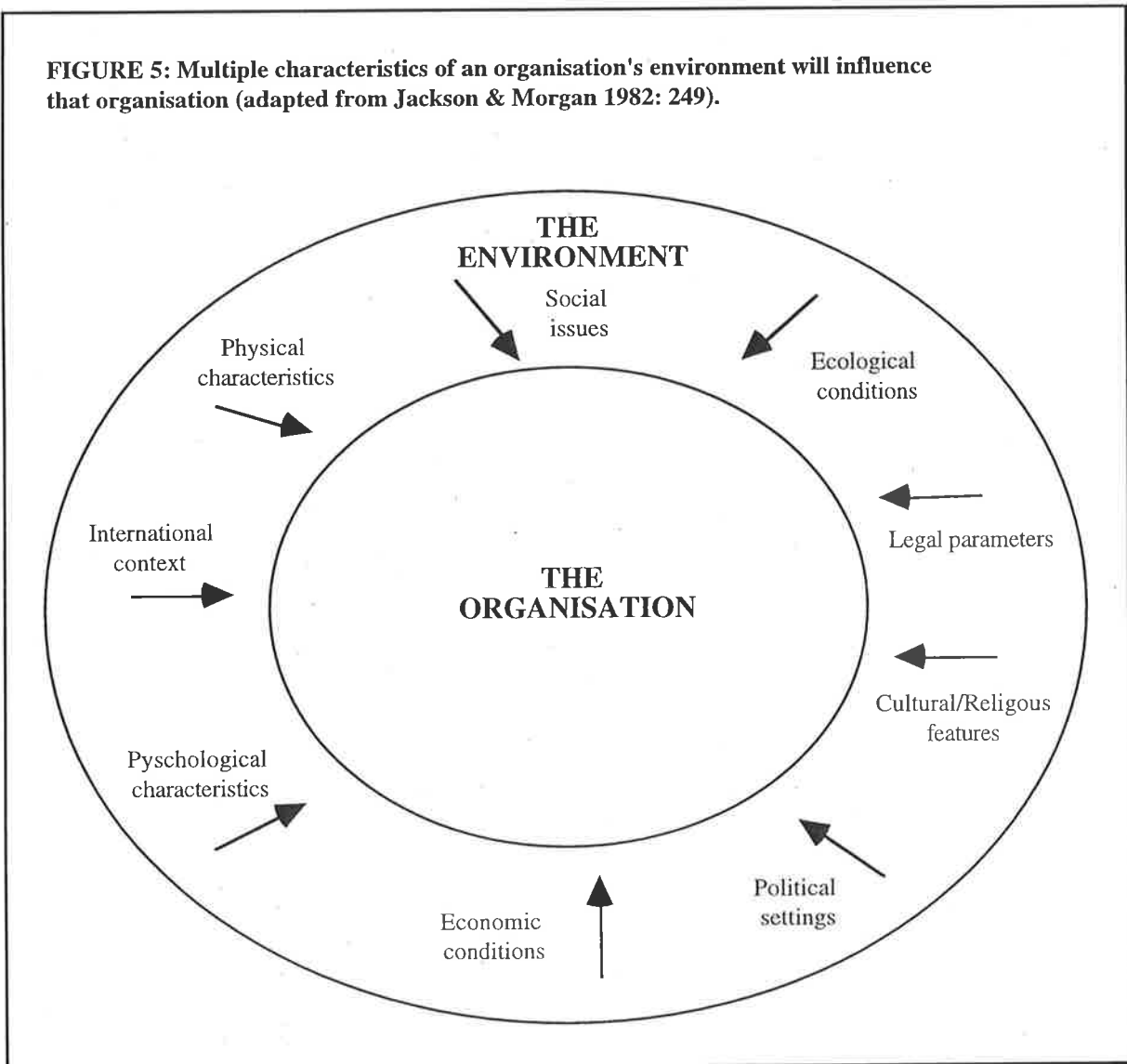


FIGURE 5: Multiple characteristics of an organisation's environment will influence that organisation (adapted from Jackson & Morgan 1982: 249).





necessarily included understanding organisational phenomena that consist of internal *and* external interactions. Determining the nature of zoos' inter-organisational relationships provided an important focal point: how do these interactions guide, influence, reinforce, or restrict zoo policies and strategies? Such issues are crucial to any consideration of the role of zoos in conservation, as is appreciating the highly political nature of zoo policy.

## **1.6 ZOO POLITICS AND POWER**

Zoo policies are informed by politics and power; they represent a "set of shifting, diverse, and contradictory responses to a spectrum of political interests" (Edelman 1988: 16). Politics pervades all aspects of human life where there are choices to be made about different kinds of resources: capital, land, income, labour, natural resources, time, education, status, influence, health and knowledge. Zoo professionals must vie for resources, rationalise their human, monetary and animal resources to both themselves and those outside their particular organisation.

Most definitions of politics reflect decisions concerning the allocation of resources. According to Leftwitch (1983: 12), politics is primarily concerned with:

... all the activities of the cooperation and conflict, within and between societies, whereby the human species goes about obtaining, using, producing and distributing resources in the course of the production and reproduction of its social and biological life ... not isolated from other features of social life ... they influence and are influenced by the distribution of power and decision making, systems of social organisation, culture and ideology in a society, as well as its relations with the natural environment and other societies.

Politics is a process of allocation which necessitates various forms of decision-making. If allocation is the 'guts' of politics, then negotiations in the form of bargaining and persuasion are the 'guts' of political processes among people (Lerner 1976). Deciding 'who gets what and when' is influenced fundamentally by various power relations which pervade society.

As well as being rational, mechanistic and bureaucratic, the Australasian zoo fraternity is highly political. It forms a small community of organisations perceiving specific conditions in social and physical environments which oblige them to make changes to both the concept and institution that society has come to know as 'zoos.' Zoo communities are continually assessing possible actions that bring them to their desired conservation state, but must do so in a constantly changing environment. While Lindblom (1959: 68) was not referring specifically to zoos, his conceptualisation of policy and the policy process are applicable to zoos' conservation policies. He states that:

Policy is not made once and for all; it is made and remade endlessly. Policy-making is a process of successive approximation to some desired objectives in which what is desired itself continues to change under reconsideration.

Zoo conservation policies have been formed over a considerable amount of time and continue to evolve. The reality of zoos' supposed transition from menageries to conservation centres is experienced differently by factions within the zoo community whose members have divergent - and sometimes conflicting - definitions of conservation. Definitive choices are being made

at both organisational and individual levels about what are appropriate reasons for the existence of zoos. Those choices (we will call them policies) constitute numerous "interrelationships between different groups of actors" (Nakamura & Silkwood 1980: 9) which reflect their various positions of power and different values concerning what is a legitimate and feasible conservation role for zoos.

When focusing on decision-making processes, it is important to acknowledge that the preferences of some are adopted over those of others. Power involves relationships between political actors, be they individuals, groups, or other aggregates (Ham & Hill 1993). These exchanges do not preclude the fact that such inequalities may be resisted by the less powerful, nor does it deny that the more powerful may experience some regret when utilising their advantageous positions.

At an individual, group and organisational level, members of the zoo community constantly negotiate for the institutionalisation of their particular professional and political orientations within specific administrative structures. Zoo conservation policies eventuate from "a series of negotiated settlements resulting from interaction among competing" interests (Dana & Fairfax 1980 as cited in Clark & Kellert 1989: 18). The zoo community's constituency - the many individuals, groups, and organisations working in and around the zoo community - have particular views regarding what are appropriate functions for zoological parks. Zoo visitors, government wildlife agency personnel, and the zoo community are just three groups that influence zoo policy and each is an important focus of this research<sup>8</sup>. Zoo visitors represent a variety of people whose valuations of nature tend towards the humanistic and aesthetic<sup>9</sup>. Wildlife professionals in the conservation community are likely to be part of a unique culture with strong professional commitments (Cutler 1982; Kennedy 1985; Bullis & Kennedy 1991; Roper & Kennedy 1989) and particular views concerning endangered species conservation. Zoos are staffed by a diverse range of people including wildlife professionals, education specialists, marketing and business experts, and veterinarians. All of these people have both common and disparate perspectives on the roles of zoos. Some individuals, however, occupy formal and informal positions where they are able to make their views known, others have little access to decision-making forums. Hence, zoo policy is likely to most representative of powerful and influential zoo staff.

### 1.6.1 Models of Power

If political interactions are an inherent part of the policy process, they will be operating at different levels to shape zoo policy. Hence, it is helpful to diverge briefly to examine further the concept of power; and the different models that interpret how power functions in society. There are numerous ways to consider the zoo community: at international, regional, national,

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<sup>8</sup> The influence of animal welfare/rights lobby groups on zoo conservation policy will also be considered and appears in Chapter Four.

<sup>9</sup> In their research on zoo visitors' attitudes towards non-human nature, Kellert & Dunlap (1989) use the term *humanistic* to describe visitors' attitudes which expressed a strong interest in and affection for individual animals. These visitors also were drawn to large, attractive animals and made strong anthropomorphic associations. *Aesthetic* attitudes in zoo visitors were expressed by a dominant interest in the artistic and symbolic characteristics of non-human nature.

and organisational levels; as informal networks and formal groups which form across regional, national, and organisational boundaries; as formal and informal groups within particular organisations and at an individual level. Different forms of power operate in all these dimensions of zoo interactions.

Smith (1993) explains that the many forms of power (including authority, coercion, force, inducement, persuasion, manipulation) are acquired through the possession of certain resources (economic, status, knowledge, solidarity, physical coercion). Individuals, groups, and institutions may deploy power with varying degrees of intent, control and skill depending on the type of resources being exchanged and the context in which such exchange occurs. Lukes (1986) submits that one possible outcome of the possession of power is an ability to make a difference to the world. Therefore, the analysis of imbalances in the distribution of power is relevant for considerations of policy because it demonstrates where social and environmental justice might be enhanced. In the case of zoos, such an inquiry would be directed towards understanding how power is applied to creating and implementing conservation policies. An examination of this kind might also consider what, if any, adjustments need to be made so that zoo principles and practices represent more fully the range of values in the zoo community (such as ecological interests).

Pluralism and elitism offer ways of understanding the operation of power at a macro level. A pluralist view of society, dominant in much of our thinking, asserts the notion that different groups bargain and compete for a share of the balance of power and use their influence to bring about a negotiated order that creates unity out of diversity<sup>10</sup>. The 'plural' nature of interests, conflicts, and sources of power is emphasised. Pluralists view the state as reflecting the will of the people, whereby access to decision making processes is gained on a temporary, individualist basis rather than on a systemic basis. Eventually, those groups whose members have the attention of the state give way to the appeals of other interest groups competing for the opportunity to be heard. In this view, the state turns its eye equally to all those who have a voice.

In the pluralist model, the zoo community is portrayed as competing on an equal basis with other interest groups for the attention of the state (such as ensuring its involvement in endangered species conservation, controlling the degree to which it is regulated, and ensuring its own funding). This model is only appropriate if one considers the state to be a neutral body and that the zoo community always operates as a single entity. The state, however, can be seen as an active agent which exercises its power to ensure that its preferences (concerning zoo policy) are secured<sup>11</sup>. In some cases the difference among zoo organisations, groups and

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<sup>10</sup> Pluralist notions of society form the very foundations of American democracy. They have become so naturalised in Western society that critiquing them is extremely challenging. Atkinson & Coleman (1992: 155), however, note the inadequacy of pluralist models for accounting for "the difficulty of organising and maintaining interests, the uneven character of organisation, the privileged status of business, and variations in state capacity".

<sup>11</sup> This interpretation of *the state* is consistent with Pusey's (1991: 14) definition. He views the state as "an actor and a complex of legal and bureaucratic institutions that not only structure relationships between civil society and public authority in a polity but also structure many crucial relationships within civil society as well ...". Similarly, Atkinson & Coleman

networks may be more characteristic of the zoo community than its commonality. Additionally, some parts of the zoo community may engage the state to a greater or lesser degree, do so with varying abilities, and for different reasons. Finally, the zoo community may be also competing against other interest groups who have greater access to the state's attention.

Elite theories may be more appropriate for analysing how the zoo community conducts its negotiations with the state. These theories challenge the pluralist notion that power is dispersed and that different groups have equal access to the state<sup>12</sup>. According to elite theory, power is concentrated and held by a minority that is not representative of the larger society, yet whose influence is imposed upon the masses. Elites secure their advantages through the occupation of formal political positions, the possession of wealth, technical expertise, and knowledge. Although political power may originate from a variety of sources, it remains the case that, in most political systems, such power is rarely exercised by more than a minority of the population. Elite factions in the zoo communities may exercise (separately or together) their power in order to successfully engage the state in dialogues that they hope will result in the sanctioning of their interests.

Corporatism is of partial use to a discussion of zoos and macro power processes, because it encompasses elitism, the plurality of interests, and positions the state as active agent with preferences that are as tangible as those of civil society (Ham & Hill 1993; Nordlinger 1981). Cawson (1987) defines corporatism as a process whereby the state and a limited number of monopolistic organisations representing particular sectors of the economy negotiate in closed forums about how resources will be generated and distributed. These alliances tend to benefit business disproportionately (Stewart 1985) which furthers economically-based goals. Given the significant power resources that private business, politicians, and state officials have at their disposal, this model of power is particularly useful for illustrating how closely linked economic and political power are. Set in the context of economic rationalism, the interplay between these actors has serious ramifications for environmental policy<sup>13</sup>. These processes may also have partially and indirectly facilitated the incorporation by government of business principles into publicly-owned and managed institutions such as some zoos.

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(1992) recognise the state's agency in moulding society and serving the interests of office holders as much as, or more than, the interests of citizens.

<sup>12</sup> Elite theories also support the notion that while power may be used by individuals to influence other individuals, it also exists and is exercised at a structural level.

<sup>13</sup> McEachern (1993) uses a loose interpretation of corporatism to analyse the development of two of Australia's major conservation strategies: the *National Conservation Strategy for Australia* and the *Ecologically Sustainable Development Reports*. His focus is on negotiated relations between business, environmentalists, and the state whereby government played a key role in incorporating environmental activists and the business community into a set of "normal" political negotiations. A conservation rhetoric was used to advance and protect developmental goals, and negotiation forums were constructed in such a way as to routinise and neutralise environmental conflict. This analysis is particularly relevant to environmental policy given the increasing environmental concern of the past two decades which brings certain pressures to bear upon industry and the more conservative factions of government. Alliances among these dominant groups enable them consistently to co-opt any environmental arguments which might threaten current economic and resource development practices, thereby diffusing the potential for real change.

While no single model of power can sufficiently explain the complexity of power relationships in society, the strength of each lies in its ability to bring into question the distribution and effect of decision-making processes. In this context Lukes' (1986) three-dimensional view of power is helpful. Firstly, to exercise power is to prevail over the contrary preferences of others with respect to key issues. Secondly, those in possession of power may be controlling the agenda, mobilising the bias of the system, determining which issues are 'key' issues, indeed which issues come up for decision, and excluding those which threaten the interests of the powerful. Finally, power may modify desires and beliefs in a manner contrary to people's interests.

With regard to environmental problems, it would appear as if particular interests in western society, informed by the dominant paradigm of economic rationalism, systematically exercise their power to influence policy in ways that -- while beneficial to them -- maintain the progressive erosion of physical and social environments. There are limits to which a diversity of interests are be tolerated, especially when they are unrepresentative and systemically privileged to the detriment of the rest of society and non-human nature. As Lukes (1986) has suggested, what may be needed is more of, not only an interest in the *difference* that power can make to the world, but also in the *making* of that difference.

### **1.6.2 Corporatising the Public Sector: the Converging and Dominating Interests of Business and the State**

A disproportionate access to power is critical to understanding the nature of decision-making. Power imbalances can threaten the representativeness of policies when the interests of a few are advanced over (and without consultation with) the interests of many. It has been suggested that economic rationalism is an ideology of exclusion that, when used in policy-making forums, empowers and furthers the interests of elites (Carroll 1992; Pusey 1992; Rees 1994).

Economic rationalism has been increasingly embraced by Federal and State Governments in Australia (and in many other Western nations) since the middle of the 1970s when a downturn in the economy and other social, political, and administrative factors triggered a series of changes in how the public sector was to be managed. There were moves to start reducing both the size of government and its expenditures, and maximising public sector productivity (Zifcak 1994; Wettenhall 1995). By the mid 1980s and early 1990s these ideals were well engrained in the state bureaucracy<sup>14</sup> and manifest in sweeping public sector reforms which, in the quest for greater efficiency, assert the lack of merit in government-owned enterprises, and argue that there should be little difference between how the public and private sectors are managed (Emy & Hughes 1991; Pollit 1993; Wanna 1994; Zifcak 1994).

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<sup>14</sup> Pusey (1991) constructed a social and intellectual portrait of the dominant group of public servants constituting the state apparatus in Canberra. He found these people to be predominantly wealthy, educated in private schools, and embraced right-wing ideologies. Their training in neoclassical economics equipped them with an economic rationalism which entails valuing greater economic deregulation, privatisation, smaller government and less welfare spending. Additionally, these public servants were drawn to a business culture and enthusiastically backed the government's program of reforms.

The ideology behind these measures for change is often referred to as 'managerialism'<sup>15</sup>. This set of beliefs, grounded in rationality and order<sup>16</sup>, is unswervingly optimistic about how much control can be gained by increasing amounts of organising. Managerialism asserts that *better* (more efficient) management can be successfully applied to a range of social and economic problems, and that those techniques can be taken from the private sector and applied to the public sector (Duncan & Bollard 1992; Farrar & McCabe 1995; Pollit 1993; Rees 1995; Wanna 1994).

Farrar & McCabe (1995: 37) identify five principles of a corporate management framework that should be applied to the public sector:

- having clearly defined objectives which act as a focus for management and assist the organisation to achieve a level of performance comparable to the private sector;
- obtaining sufficient managerial autonomy for boards of directors and management so that objectives are met and the value of the organisation is maximised;
- implementing performance evaluation in order to improve accountability;
- introducing market-based systems of rewards and sanctions for directors and management that is closely linked to individual and corporate performance, and that reflect private sector practices and;
- facilitating competitive neutrality by creating a 'level playing field', vis-a-vis the private sector, by removing special advantages and disadvantages that apply to public corporations by virtue of government ownership.

The incorporation of these measures into the public sector are thought to provide considerable benefits for society. Hughes (1992) asserts that traditional management models have outlived their usefulness and such corporatised reforms are long overdue. Holmes (1993) welcomes the use of corporate tools in schools as they provide organisational structures that provide flexibility in volatile markets and greater control. Wood & Jones (1993) are supportive of these managerial methods. However, they suggest a framework that places less emphasis on a top-down system of authority, and are supportive of a more participatory approach.

Others are less convinced of the benefits of managerialist reforms. Rhodes (1996) asserts that managerialism naively assumes a world-wide solution to common problems; propagates a culture of fear whereby speaking out against management is discouraged; and places too much faith in markets. Thynne (1996) is similarly concerned about the executive imperialism fostered by managerialist practices, and remains unconvinced that these methods assist

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<sup>15</sup> There is some variation in the use of the terms 'managerialism', 'corporatisation', and 'corporate managerialism'. Some use 'corporatisation' to refer to the public sector reforms of the 1980s and 1990s (eg Duncan & Bollard 1992; Wettenhall 1995; Farrar & McCabe 1995). In this research, 'managerialism' will be used to refer to the ideology behind the more specific reforms. 'Corporatising' will refer to the process of transforming the various agencies in the public sector into more business-oriented organisations of the private sector. A 'corporate framework' will refer to the particular tools that facilitate such a transformation.

<sup>16</sup> Rees (1994) suggests that a growing impatience and concern with increasingly complex problems has contributed to a reliance upon economic rationalism's supposed capacity to deliver clear and simple prescriptions for action. The rhetoric of economic rationalism could be readily transformed into an ideology for rebuilding the state whereby politics and social policy are subsumed by an economic model; and big business and the power of money provide greater benefits than intellectual inquiry or political debate.

organisations in achieving goals. Indeed, corporate frameworks may even condemn organisations to poor performance. Considine (1988) warns that efficiency problems often result *from* overly centralised structures, inadequate staff and client involvement in decision-making, and from failure to develop open, more problem-oriented policy-making processes - all typical traits of corporatised organisations.

These highly flawed management principles are proving particularly worrisome for administrators of cultural and educational institutions. In lamenting the Australian government's administrative policies of 'rational' economics, Des Griffen (1993: 5), Director of the Australian Museum in Sydney, states that:

... what government has also tended to do is to impose further regulation on government enterprises, but lessen it in respect of commercial enterprises. Governments have tightened regulations about disclosure in annual reporting, introduced accrual accounting, sought to have [museum] collections valued as assets (which misses the point entirely), introduced job evaluation, award restructuring and enterprise bargaining and, in the UK and in NSW, demanded the formulation of performance guarantee statements ... What government has not done is promote leadership, work out mechanisms to match performance with resource allocation or develop review mechanisms which actually identify what is wrong with organisations that do not seem to be achieving their agreed goals.

The Commonwealth and State governments' devaluing their responsibility for fully supporting cultural and educational institutions, while simultaneously imposing the use of business principles for the management of such institutions, appears to be inequitable, myopic and ineffective. Corporate management principles primarily represent commercial interests and utilise reform measures that mistake notions of efficiency for effectiveness. As we will see in subsequent chapters, this policy trend has significant implications for both the publicly-owned and managed zoos in New South Wales, Victoria, Western Australia, the Northern Territory and New Zealand, as well as those 'private' zoos in Queensland and South Australia.

## **1.7 DISSERTATION STRUCTURE AND THEMES**

The themes and structure of this dissertation reflect an interest in obtaining a more holistic understanding of the role of zoos in conservation than what has preceded. The depth of meaning present in zoos' ambient conditions has largely been ignored or not taken seriously enough in many previous research efforts. My use of a contextual orientation acknowledges the influence that zoo settings have on their conservation policies.

The importance of *context* represents the defining characteristic of this research. As the issues influencing the zoo community's attempt to implement conservation policies are interrelated, there is necessarily a substantial amount of overlap in the subject matter of each chapter. The main body of the dissertation does present some of these key considerations separately. However, these data have been collated while continually referring the inquiry back to a consideration of 'the whole'. That is, how do the conditions surrounding zoos create and shape zoos' role in conservation? While there may be substantial meaning in each of the contextual components, it remains that the role of the zoos (the whole) is greater than the sum of its 'parts'.

This dissertation consists of three main components. The first component entails Chapter One and Chapter Two. Chapter One -- the introduction -- lays the preliminary foundations for the research 'problem' and discusses broad theoretical themes that have informed my research. Chapter Two discusses the key epistemological and methodological considerations that constitute my frame of reference for this inquiry and the techniques used to generate data. The second component, Chapters Three through to Nine, comprises the main body of the dissertation. The appendices provide a supplement to the data in this part of the dissertation. Where further explanation of research processes and findings was warranted, additional details regarding zoo history, zoo-based endangered species breeding programs, and zoo and conservation community interviews and questionnaires were included. However, the amount of information provided in the appendices was dictated in part by space requirements and production costs. The third component of the dissertation is the final chapter. Here several conclusions are drawn and policy recommendations are made.

Zoos' pursuit of a conservation identity signals a distinctive shift in tradition. Chapter Three traces zoos' evolution from their origins as menageries of the rich and powerful to public institutions purportedly concerned with the public good. In this chapter, I seek out those historic influences which may have helped to shape contemporary conservation policies of international and Australasian zoo communities. Special care has been taken to consider how human-nature relationships set in political and economic contexts may have informed, obstructed, and enhanced the realisation of zoos' conservation aims.

Zoos may provide a valuable backdrop for understanding how the way in which nature is valued by certain segments of Western society will determine both what *kind* of nature is conserved and the *means (and ends)* for taking such steps. While there are some progressive and ecologically-inspired principles and practices pursued by contemporary zoos, it remains that the instrumental value afforded to zoo animals and the *ex situ* conservation strategies employed by zoos embody the technocentric environmentalism described by O'Riordan (1981) and Pepper (1986). In Chapter Four, I explore the 'Zoo Debate', focusing in particular on the ethical and practical reasons provided as justifications for zoos' conservation role and their very existence.

An important feature of the research is its regional focus; ten of the major zoos in Australia and New Zealand have been examined. Selection for this project was based on a particular zoo's commitment to conservation as evidenced by their membership in the ARAZPA membership and participation in the ASMP, as well as each organisation's demonstrated willingness to participate in and lend financial support to the research. While any zoo will have features that distinguish it from other institutions, striking similarities can be found among western zoos attempting to validate their conservation identity. Chapter Five presents an inventory of select physical and organisational characteristics of each of the study-zoos. In order to provide further insight into the intricacies of conservation policy formulation and



implementation, Chapter Six provides an examination of the aims(s), methodologies, and scope of current conservation programs at an industry-wide level as well as exploring programs of specific zoos taking part in this research.

Zoo decision-making processes concerning conservation cannot be separated from surrounding structures. While many zoo professionals employ a rhetoric of change to depict zoos' contemporary endeavours relative to past practices, there are significant bureaucratic forces that may compel zoo professionals to abide by conformist viewpoints and routine procedures, irrespective of the mandate for creative problem-solving that having a vital role in conservation presents. Chapter Seven explores how fragmented and constrictive governmental, legislative, administrative and organisational configurations play an integral part in shaping zoos' conservation policies. Chapter Eight presents an analysis of managerialist principles (accompanying zoo structures) being utilised by many contemporary zoos and explores whether these maxims are detrimental to attempts to implementing demonstrably effective conservation programs.

Chapter Nine investigates public perceptions of zoos' conservation role and the relevance those views have for the Australasian zoo community's conservation policies. There are many and varied opinions on what ideals and activities should constitute the conservation role of zoos. Zoo staff, wildlife agency personnel, non-government agencies, and the general community may understand the meaning of conservation and the purpose of zoos from myriad and sometimes conflicting positions. Opinions differ as to what are the most effective way to save endangered species and whether people can (or should) be motivated to act on behalf of nature by viewing captive animals. Their perspectives on zoos and conservation range from confusion to curiosity, from ignorance to abject scorn, all suggesting:

... the diversity of meanings inherent in every social problem, stemming from the range of concerns of different groups, each eager to pursue courses of action and call them solutions ... the problem becomes what it is for each group precisely because their rivals define it differently (Edelman 1988: 15).

Such dissonance warrants the need to examine the ongoing scope and nature of zoos' conservation role and how well matched such a role is for contemporary societal and environmental values.

The dissertation concludes with Chapter Ten. The main arguments are restated and the future of zoos is considered with respect to the potential for incorporating ecologically-based principles and practices into conservation policies.

## **1.8 CONCLUSION**

The zoo is a unique institution that has performed a particular function in western society for some time. Zoos are no longer the institutions of days gone by, or are they? Certainly, shifting social values and increasing environmental degradation have triggered a

transformation of zoos, however partial it may be. Zoos now openly acknowledge their special environmental responsibilities for the public they entertain and the animals they retain.

Formal promises and actual efforts by zoo communities to arrest the decline in biodiversity, or more generally to become environmental advocates, are instructive examples of how environmental problems have been and are approached in Western society. Unfortunately, both the conceptualisation of and methods for resolving environmental problems embodied by zoos have been less than effective, and in some cases, have worsened our dilemmas.

This quandary warrants a special inquiry, one that has as its primary focus producing knowledge which can be applied towards ensuring the integrity of promises to reduce the scale and scope of environmental problems and towards creating potent and practical remedies for our environmental ailments. Consequently, my research focuses on the who, what, where, when, how, and why certain decisions regarding environmental matters (such as conservation) are made, both by individuals and groups, inside and outside of zoos. Such a diverse and complex investigative agenda necessitates the use of a wide range of disciplines and techniques, the likes of which will be expanded upon in the following chapter.

## CHAPTER TWO: AN INTERDISCIPLINARY RESEARCH DESIGN IN ENVIRONMENTAL STUDIES

*The label research has come to mean the equivalent of employing the 'scientific method', of working within the dominant paradigm. There is, however, an alternative (Patton 1980: 203)*

### 2.1 INTRODUCTION

The multiple discourses on zoos' role in conservation vary in both content and form. Some historical examinations consider zoos' philosophical and practical transformation from parochial and gaudy menageries to progressively-minded conservation resource centres (eg Brambell 1980; Cherfas 1984)<sup>1</sup>. Some debate ethical and moral dilemmas faced by zoos (Bostock 1993; Jamieson 1985, 1995; McKenna et al 1987)<sup>2</sup>. Other discussions on zoos include the appropriateness and feasibility of using captive breeding as a sound method of restoring endangered species populations and biodiversity (eg Biological Diversity Advisory Committee 1992; CBSG & IUDZG 1993; Ehrlich & Ehrlich 1981)<sup>3</sup>. The capacity of zoos' formal and informal education programs to impart favourable attitudes and behaviours towards the environment has also been discussed at length (eg, Kellert & Dunlap 1989; Mullan & Marvin 1987; Tunicliffe 19??)<sup>4</sup>. Generally speaking: what constitutes zoos' conservation obligations; what is the moral and scientific basis of zoos; and should zoos exist at all, are all open questions hotly debated (eg Norton et al 1995). Few analyses, however, have fully contextualised zoos' conservation role. Brewer & deLeon (1983: 13) extol the virtues of contextuality:

Contextuality means understanding the relationship between the parts and the whole of a problem. It also means having a clear sense and appreciation of the past, present, and future of events as they interact and change through time. If a choice must be made, we urge comprehensiveness by giving preference to the whole ... being contextual requires a comprehensive conceptual framework to direct one's attention to possibly significant phenomena in a setting and to maintain a tentative, evolving appreciation of the whole.

Some care has been taken to include contextual considerations in several inquiries into zoos and conservation (eg Mullan & Marvin 1987; Norton et al 1995; Tudge 1992; Woodruffe 1981). Yet certain crucial issues are conspicuously absent from the 'zoo debate'. What are the epistemological and methodological foundations of these analyses? How do policy and organisational matters create and influence the role of zoos? These are two crucial components of my research that help to contextualise this debate. The complexity of our society and its environmental problems demand that we strive for more creative understandings of the social, political, economic, legal and ethical contexts in which solutions to conservation problems may be found. In this research I aim to widen the scope of the zoo debate to include considerations of

<sup>1</sup> See also Hahn (1968); Luoma (1987); Mullan & Marvin (1987); Page (1990); Tudge (1992); and Zuckerman (1979).

<sup>2</sup> See also Singer (1985); Norton et al (1995); World Society for the Prevention of Cruelty to Animals & The Born Free Foundation (1994).

<sup>3</sup> See also Endangered Species Advisory Committee [ESAC] (1992); Fiedler et al (1993); Groombridge (1992); Leitzell (1986); Loftin (1995); Magin et al (1994); McIntyre et al (1992); McNeely et al (1990); Minta & Kareiva (1995); Norton et al (1995); Primack (1993); Rojas (1992); Tudge (1992); and Vrijenhoek (1995).

<sup>4</sup> See also Bierlein (1991); Birney (1988); Bitgood et al (1988); Block (1991); Churchman (1987); Derwin & Piper (1988); Finlay et al (1988); Greene (1987); Hamilton (1993); Hohn (1988); Kelsey (1991); Kellert (1979); Mitchell (1991, 1993); Molloy (1993); Rhoads & Goldsworthy (1979); Shettel-Neuber (1988); White & Marcellini (1986); Williamson (1995); Wilson (1996); Woodside & Kelly (1995); Yerke & Burns (1991); .

how conceptions of nature, organisational structures, methods of finance, inter governmental relations, legislative mandates, and divergent personal perspectives affect zoo policy. These dynamics are as central to notions of an effective conservation role for zoos as are considerations of zoos' moral and ethical responsibilities to nature and their technical capacity to help restore endangered wildlife or educate the public about the need for conservation.

## **2.2 CONSTRUCTING ZOO KNOWLEDGE**

Building a more comprehensive information base on zoos' conservation role will be accomplished in this thesis by integrating several theoretical perspectives and techniques. While an empirical stance has been taken in order to generate particular tangible quantitative and technical data on zoos, this effort is driven by cultural and critical analyses which produce knowledge about the *social* aspects of zoos and conservation. That is, what kinds of interactions create social rules and patterns of behaviour; where are there contrasting principles leading to tension and conflict; how is power operating to safeguard dominant interests; and how might power imbalances in zoo policies be redressed?

Given these numerous dynamics which make up my research agenda, an interdisciplinary analysis has been used to provide the multiple viewpoints required for sufficient understanding of the issues. Policy analysis is one such theoretical tool which provides a varied and flexible framework for achieving a greater comprehension of human decision-making processes in and around zoos, and for using such knowledge towards rectifying those problems encountered. Investigating these social dynamics warrants the use of qualitative inquiry, although some quantitative methods have been employed as well. Thus, a variety of tools have been used to generate both general and specific zoo data.

### **2.2.1 A Synthesis of Empirical, Cultural and Critical Inquiries**

Contextualising zoos' conservation role entails documenting multiple zoo programs and activities. Therefore, another critical component of my research involves looking well beyond commonly-accepted and officially-defined goals of zoos towards the depth of meanings in the human actions and events that underlie zoo conservation rhetoric and programs.

Most research about zoos is dominated by empirical-analytic inquiries, primarily in the natural sciences and, to a lesser degree, in the social sciences. These inquiries tend to be grounded in positivism and generate technical information in the form of laws and theories meant to account for regularities in observable, objectively-knowable events. For example, studies based on reproduction and reproductive biology in zoos attempt to isolate all critical factors which enhance or impede the fertility of a range of species. This knowledge is then used to modify animal breeding capabilities. Similarly, market research in zoos is used to generate information on the motivations and visitation patterns of zoo visitors. In turn, zoo professionals use these data for designing strategies to facilitate an increasing attendance rate for their institutions.

While these efforts certainly have some utility, they are problematic in several respects. Positivist empirical inquiries inherently devalue other ways of knowing and other issues of

importance. That is, "knowledge which can be quantified - measured and given a number to - is privileged over qualitative knowledge, which cannot be so readily bounded and counted" (Cameron 1996: 3). Qualitative research on zoo visitors is uncommon, much of it is market-driven. Furthermore, because positivist processes consider objects of research as separate (and ultimately knowable) entities from the observer, the subject of the research is separated from its context. This reductionist orientation assumes that it is valid to break down complex phenomena into smaller and more manageable pieces and analyse them separately. Variables rather than persons, groups or communities are studied, reducing the capacity of the research to provide an understanding of social phenomena as complex wholes (Reason & Rowan 1981). Zoo-based ex-situ conservation is a prime example of extremely positivist conservation methodologies which implicitly deny that the whole is greater than the sum of its parts. Individual animals are bred with the aim of returning them to a larger population of a particular species which, alongside other species, support the biodiversity of that ecosystem. Continued use of this type of conservation strategy, however, denies the complexity of the targeted species or ecosystem and the intricate workings of those institutions involved in breeding schemes. Even if the best and most scientific knowledge were available, myriad political and administrative issues directly affect the success of the breeding program.

A research paradigm that encourages such narrow conceptualisations of environmental and zoo problems is insufficient for more comprehensive understandings. When applied to research on human activities, the knowledge generated by these inquiries is of limited utility. Moreover, Maguire (1987) asserts that such a research paradigm is often used to expand power and control over people and by people over non-human nature. Consequently, while this research is partly constituted by *empirical* investigations, I have focused on *cultural and critical inquiries* to provide a more discerning and equitable examination of zoos and conservation whereby knowledge generated by my research is shared with the zoo community in such a way that empowers people to make changes.

*Cultural inquiries* aim to show how individual and group interpretations of reality influence social interactions (Fay 1975; Maguire 1987). Rather than trying to discover universal laws that definitively explain all human interactions, the focus in cultural inquiry is on understanding how human communications generate principles that structure social life. This interpretive knowledge may then be applied to ameliorating conflict between different social orders (Fay 1975; Habermas 1971; Maguire 1987). My research direction has been guided by an appreciation of the range of meanings that individuals and groups attribute to the notion of 'conservation', and how commonalities or differences in those understandings shape zoo policy. While a total consensus on what is a suitable conservation role for the zoo may be neither necessary nor achievable, feeding my data back to the zoo community may foster more open discussions of the problems plaguing zoos.

The *critical* element of my research provides further insight into the decision-making processes undertaken in zoos. While critical inquiries also focus on social relationships, an additional

emphasis is placed on illuminating contradictions that create social tensions and conflict. Exposing and modifying various mechanisms of domination and power is a primary objective of this type of investigation. Ideally, once knowledge of those oppressive systems or relationships is made explicit, people are better equipped to understand their surroundings and take action to change them (Fay 1975; Maguire 1987). Understanding the role of zoos in conservation will surely be clarified by making explicit the range of preferences for particular policies represented among zoo and wildlife professionals. Merely illuminating the existence of different opinions, however, does not necessarily resolve conflict. Therefore, my research includes an analysis of how power is used (or not used) to create and/or influence zoo conservation policy. It may be that in making these processes explicit, zoo professionals can increase their knowledge of the nature of decision-making in zoos and can then create policies which are more representative of conservation than what has been achieved to date.

The empirical aspects of this research endorse the value of some forms and uses of technical knowledge. These tools can help us to determine at least some tentative parameters of certain 'realities' or 'truths' which are then used to tell a more informative story about actual events and issues. Having said this, it is also beneficial to recognise the weaknesses of purely technical, positivist knowledge. There is no singular form of inquiry that can fulfil the requirements of social research (Maguire 1987; Patton 1980). Technical knowledge produced by empirical inquiries comes up wanting when applied to addressing human (or animal) emancipation and social transformation, especially if the purpose of the particular research exercise aims to rectify social contradictions, not merely summarise what they are (Brydon-Miller 1984; Habermas 1971; Maguire 1987).

Perhaps most importantly, my interest in clarifying and improving the role of zoos in conservation reflects my placement in environmental studies. Such a setting begs an understanding of not only the truly social nature of environmental problems, but also how disproportionate access to power favours certain interests at the expense of our social and physical environment. Environmental studies is ideally an alternative research paradigm that encourages a multitude of methodological approaches to learning *about* and *for* the environment.

### **2.2.2 A Discussion on an Interdisciplinary Approach**

An interdisciplinary analysis can provide a more inclusive explanation of a research problem than single disciplinary inquiries by targetting as broad-ranging a selection of information as possible. Several theoretical and practical problems, however, have been raised concerning the validity and integrity of interdisciplinary research. First, unclear definitions and varied applications of the term 'interdisciplinarity', as well as a lack of clearly-defined boundaries and methodologies, are thought to frustrate the validity of this type of research (Kocklemans 1979; Hausman 1979; Jurkovich & Paelinick 1984). Second, determining what knowledge can and should be taken from other disciplines and reconciling different problem-solving approaches in each discipline heightens the complexity of interdisciplinary research (Stuart-Kennedy 1975). Third, given that no one individual can achieve total competence in a single discipline, some accuse

interdisciplinarity of producing generalists who sacrifice depth for the sake of breadth (Broido 1979)<sup>5</sup>.

While the conceptual, ideological, and methodological parameters of interdisciplinary research have not been conclusively decided upon, the social and intellectual need for such an approach remains. Reductionist, discipline-oriented stances facilitate a "disinclination to conceptualise or implement a holistic or synthesising approach to understanding nature or environmental relationships" (Caldwell 1993: 112). Compartmentalising or isolating an issue without then re-contextualising it merely reduces the realm of possible conceptions of it. The broad approach of an interdisciplinary analysis makes accessible a new range of intellectual problems and the paths of inquiry regarding those problems. The researcher pursues broader and unique conceptions of research problems, while acknowledging simultaneously that the picture is never complete.

Ideally, the fundamentally integrative nature of an interdisciplinary approach offers an insightful conceptual and methodological research ethic for environmental studies. It provides an alternative to the positivist and mechanistic means for understanding today's complex environmental policy issues. Problems should not be conceived of as being entirely discrete. Rather problem design and analysis should contain flexible boundaries capable of incorporating more capacious notions of the issue (Dryzek 1987a & b). Environmental problems do not exist in isolation, hence neither should the analysis or the application of solutions be so inclined. The complexity of our society and its environmental problems demands that we strive for more contextual understandings of the situations we have created. Solutions to our environmental dilemmas can be addressed only partially by devoting our attention to technical quandaries. Our vision must be inclusive of social, political, economic, legal, and ethical settings which constitute environmental problems. It is these contexts which will also provide possible answers for resolving contradictions and new avenues of inquiry.

The 'problem' of the role of zoos in conservation begs an interdisciplinary quest for explanation and (where possible) resolution. Today's environmental issues are diverse and multi-dimensional. Likewise, the conceptual exercise of researching zoos' conservation principles and practices and the zoo itself are both complex subjects with many interconnecting and overlapping components. Zoos have intricate administrative structures in which a range of functions, professions and interests must be organised. A vast array of species and habitats from diverse geographic regions are displayed in zoos. In the actualisation of a conservation role, zoos are engaged in intricate processes and must be content with a complicated and changing environment. The individual and collective capacity of zoos to contribute (at least) to arresting the demise of many endangered species, and to educating the public about conservation, encompasses a range of activities which are informed by multiple theoretical and scientific

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<sup>5</sup> Other challenges to interdisciplinary research highlight perceptual and structural problems. The negative perceptions of single discipline researchers may arise from their reluctance to acknowledge the presuppositions and boundaries of their own fields. They may also feel threatened by interdisciplinarity's potentially expansive domain (Hausman 1979; Kocklemans 1979). Organisational arrangements which separate disciplines into distinctive administrative units further obstructs intellectual and practical integration of knowledge that quality interdisciplinary work depends upon (Hausman 1979; Kocklemans 1979).

disciplines (such as policy analysis, organisation theory, management theory, sociology, psychology, zoology, biology and ecology). A research subject as diverse as zoos and conservation necessitates an approach that values variety and context. Environmental studies is such a discourse.

### 2.2.3 Policy Analysis as a Guiding Principle for Research

Given the multi-faceted nature of zoos and their conservation aims and objectives, a policy analysis informed my theoretical and methodological approach to the research problem. The role of zoos in conservation is about zoo policy as it relates to conservation; the policy process in zoos; wildlife conservation policy; policy as a vehicle for environmental change; and the overarching concern of politics. While "no scientific discipline is an island unto itself" (Sherif & Sherif 1969:8), it is possible to argue that the inherently interdisciplinary nature of a policy orientation is particularly instructive for this analysis.

Policy analysis does not fit neatly into a specific discipline; it necessarily encompasses a broad range of theoretical concerns (Wildavsky 1979; Hogwood & Peters 1985; Rose 1976; Mac Rae & Wilde 1976). Additionally, it can be both descriptive and prescriptive, promoting further understanding which can then be applied to resolving social problems (Ham & Hill 1993). Rein (1976: 12) asks "what is the purpose of studying policy if not in some measure to influence it?" In other words, policy investigations can be used for the analysis *of* policy and analysis *for* policy. Hence, it can be used to generate technical, interpretive and critical knowledge, and has considerable practical applications for clarifying and improving zoos' conservation policies.

The policy sciences have a relatively short history as a "systematic, institutionalised approach to improved governance" (deLeon 1994: 77). Lasswell was the chief proponent of a policy focus for the social sciences, offering the development of the 'policy sciences' as "an interdisciplinary field to embrace all the social sciences and to produce knowledge applicable to public problems" (Torgerson 1985: 242). This theoretical approach offered an alternative to traditional public administration approaches which were perceived as overly concerned "with workaday administrative rather than policy making exercises; program administration versus policy making" (deLeon 1994: 79). The policy sciences helped to develop a 'policy orientation' by:

... studying how knowledge is used or not used in decision and policy processes, while simultaneously judging how well these processes themselves are working and trying to upgrade the outcomes of the processes (Clark 1993: 500).

Such an approach purports to facilitate knowledge *of* the policy process and an understanding of the relevance of knowledge *in* the process (Brewer & deLeon 1983; Torgerson 1985). Contextual analysis, problem orientation, and multiple methods are the primary conceptual tools of the policy orientation set out by Lasswell. A contextual analysis entails examining the 'big picture', asking what are the social, political, economic, and functional contexts directly or indirectly bearing on the policy process. A problem orientation requires that the analysis include:



1. Description of trends in the problem, including analysis of both context and process (historical standpoint);
2. Explanation of trends (scientific standpoint);
3. Projection of trends (projective standpoint);
4. Evaluation of trends and projection (normative standpoint);
5. Intervention, evaluation, and selection of alternatives that might solve problems (operational standpoint) (Brunner as cited in Clark 1992: 429)

Viewing the role of zoos in conservation from multiple perspectives has produced numerous questions. What major changes have occurred in the zoo environment that have brought about their shift in purpose? Can animals be reared in captive conditions without significantly altering behavioural and genetic characteristics? What ethical dilemmas are created by maintaining wild animals in captivity? What kinds of technology and information are being used by zoos to ensure they attain their goals? What are the impacts of zoos on the consciousness of their customers, professional colleagues and clients, and the community in general? Are there more appropriate organisational forms and practices with which zoos may pursue their conservation policies? What kinds of futures exist for zoos, given the direction and characteristics of their activities? What recommendations can be offered to zoos which would address the problematic situations some policy decisions have led them to? These questions are crucial for constructing and clarifying preferences, trends, and scientific analysis of policy - in this case zoos' conservation policy (Clark 1992). I address these matters in subsequent chapters by:

- using historical analyses to chart notable shifts in zoo principles and practices;
- examining the ethics of maintaining animals in captivity and the commonly-offered justifications for zoos' existence;
- describing how zoos' animal collection and breeding plans and education programs constitute their contribution to conserving endangered species and biodiversity;
- investigating how an array of governmental, legislative, administrative, and organisational arrangements and management philosophies influence and/or create zoo decisions;
- comparing multiple perspectives of zoos in order to detect preferences for particular zoo agendas.

The assumption that one researcher is capable of 'knowing' all these things about zoo policies may appear overly rational and positivist. Torgerson (1985), however, points out that while Lasswell's original approach to policy analysis is highly optimistic in its search for knowledge of the whole, it is tempered by the understanding that such an inquiry is never complete. Be they empirically, culturally, or critically-based, exploratory studies seek a beginning familiarity with a topic when one is examining a new interest or when the subject of study is itself relatively new and unstructured (Babbie 1989)<sup>6</sup>. While zoos' role in conservation is the subject of great interest and has received considerable attention of late, my efforts at contextualising this role

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<sup>6</sup>Babbie (1989) offers two other purposes for research; description and explanation. Both purposes are applicable to this research. In the process of exploring a newly defined research problem, I necessarily had to observe and describe numerous situations and events that constituted zoo policy. Given that the work comprised both a cultural and critical inquiry, explanations of issues and events were offered.

(with a special emphasis on the Australasian region) represents a unique research endeavour. This approach to zoo problem-solving has depended on a policy orientation to provide a type of peripheral vision that constantly refers the inquiry back to an ongoing acknowledgement of the whole *context*. The role of zoos in conservation has yet to be conceptualised in this manner or on this scale. An in-depth examination of the vast array of issues that constitute zoo conservation policies has been undertaken and meaningful links have been made among those components. In so doing, my research has generated questions that are vitally important to the fulfilment of zoos' conservation aims that have traditionally been neglected or ignored to the detriment of zoo animals, research, policies and administration.

#### **2.2.4 A Qualitative Inquiry**

This research was informed primarily by my belief that it is possible to ascertain, to some degree, the qualities of zoo conservation roles. Given that zoos' role is inclusive of tangible 'facts' as well as more elusive, subjective personal views, this analysis lies somewhere in the middle of the nomothetic and ideographic methodological continuum<sup>7</sup>. My approach was nomothetic insofar as I have focused on analysing, identifying, and defining relationships and regularities between the various elements that comprise zoos' role. It is also ideographic insofar as I tried to understand how individuals' subjective experiences contribute to the interpretation, creation and modification of conservation principles and practices in zoos.

Consequently, some quantitative techniques for obtaining and analysing data were used, yet the overriding emphasis is on qualitative methods. This preference reflects the greater suitability of qualitative methodology for elucidating the social nature of those environmental, policy and organisational issues under investigation. Qualitative methods provide the means to understanding intricate details of those phenomena that defy quantitative description. Uncovering the ambience of an issue is best served by the use of qualitative measures which target the meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things (Berg 1989). Qualitative processes provide for a sense of humanity and richness of texture that goes beyond the capacity of numerical treatments of an issue or situation. They establish a sense of context; prioritise understanding the perspectives of those directly involved in the phenomena being studied (Bryman 1989); illuminate aspects of an issue about which little is yet known; and obtain a new perspective on that which has already been extensively examined (Strauss & Corbin 1990).

This research makes use of both qualitative and quantitative tools. These choices reflect the value attributed to both forms of measurement. Quantifying some information was of benefit to my inquiry for two basic reasons. First, there is some utility in counts and measures of things. For example, counting survey and some interview data provides for a sense of how significant certain trends in perspectives on zoos may be. These measures provide some insight into the

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<sup>7</sup> Burrell & Morgan (1979) identify four sets of polarised assumptions, debated in the literature on social philosophy, regarding the nature of social science: the ontological debate: nominalism - realism; the epistemological debate: anti-positivism - positivism; the human debate: voluntarism - determinism; and the methodological debate: ideographic - nomothetic theory. At either ends of the spectrum are the dimensions of objectivity and subjectivity, respectively.

degree of support (or lack of) zoos have for their stated conservation roles. Second, many zoo professionals also place a great importance on being able to assess the degree to which their conservation programs are fulfilling professed goals. As the Australasian zoo community provided critically important financial and administrative support for my work, it was important to incorporate some of its interests and desires into my research design. Indeed, changing societal values will increase the pressure on zoo professionals to show that they are fulfilling their conservation promises in an ethical, effective and practical manner. My use of some quantitative measures has generated plentiful numerical data. These data suggest some areas of zoo performance that warrant further investigation, and may assist the zoo community in creating some measurements of conservation capabilities of both individual institutions and the industry and region as a whole. Multiple, complex social phenomena that create and influence zoo principles and practices, however, necessitated a greater emphasis on qualitative analyses which could provide a depth of understanding that quantitative measures could not.

### **2.3 RESEARCH TECHNIQUES**

Once the fundamental research question had been established - determining the nature of the role of zoos in conservation - a research plan was designed and techniques were selected which would satisfy the research question. The Australasian region was chosen as my target of study. The endorsement and support of the ARAZPA was obtained in order to assist me with securing the participation of several member zoos in the research. The research was planned in two distinct phases. The first phase (or year) proceeded by placing the region's zoos in their social, political, and economic context. This task was accomplished by reviewing current literature and events, and visiting each of the study sites to gather preliminary contextual data and design a visitor survey and plan for its implementation. My attendance at several wildlife and zoo conferences supplemented data gathered at the primary research sites (the zoos), and provided further opportunities for collaborating with zoo and other wildlife professionals.

The next phase of the research entailed a second round of field work and interviews at each of the zoos and further interviews with the conservation community. The visitor survey was executed as planned. Other data gathered during interviews and observation intimated that zoo visitors do not have a direct and integral role in influencing zoo policy. Rather, these initial results pointed to the complexity of institutional, regulatory and interpersonal environment in which the Australasian zoo community implements conservation policies. These results warranted a shift in emphasis. A foray into the literature on policy analysis and organisational processes provided the basis for a shift in emphasis: elucidating myriad contextual factors had become the primary focus of the work and would run throughout the duration of the research project, rather than merely constituting its early phases. The following section elaborates these steps.

#### **2.3.1 Literature Review**

An extensive literature review was conducted in order to understand the context of zoos' role and to determine what work had been done in this subject area previous to my research efforts. This search assisted the formulation of the research questions and directions and revealed

existing gaps in this field of study. I kept my use of biological information relevant to zoo conservation roles to a minimum. This strategy was used because of the prolific rate at which such materials are produced; the narrowness in which zoo conservation policy is conceptualised by most natural science inquiries; and the paucity of social science inquiries about zoo operations. Hence, a strong emphasis was placed on the use of data bases such as the Australian Public Affairs Information Service, the Heritage and Environment section of AUSTROM (an Australian CD-ROM data service), and the American and international Public Affairs Information Service.

The process of the literature review was not confined to the early part of the research for several reasons. First, the zoo industry has and continues to undergo rapid change. Hence, it was necessary to constantly monitor the literature for evidence of further policy shifts and developments. Second, as my work is exploratory and was continually generating new questions, I returned regularly to the literature to assess the relevance of the ideas I was generating, as well as referring to a few new areas of interest that the original research question produced (such as policy and organisational literature).

As my earlier research on zoos and conservation (Mazur 1991) provided me with a preliminary understanding of the subject matter, I was able to proceed directly to exploring some more complex questions. Early on in the literature review it became apparent that research on the role of zoos had never been approached from an interdisciplinary environmental studies perspective, and that work had never been conducted on the Australasian region. Initially, I proceeded by focusing on current documents from the zoo industry in order to understand how the zoo community was defining its conservation imperatives and what strategies and techniques were being utilised to realise its aims. This research strategy included tracking the historical progression of zoos from their origins to their contemporary endeavours. This inquiry was supplemented by literature which identified how human attitudes towards nature and political and economic factors influence zoo development. Philosophical texts on the ethics of maintaining animals in captivity, and a brief foray into conservation biology literature, provided the context for debating the zoo community's justifications of its conservation role.

Early field work, interviews and questionnaires began to generate information that intimated both varied opinions on how zoos ought (if at all) to assist conservation and gaps among zoos' conservation rhetoric and reality. These results indicated a need to explore the literature on policy analysis and organisational theory. I was interested in understanding macro and micro decision-making processes, namely, how do certain decisions get made about the environment and about zoos and why? The area of policy analysis is particularly instructive for bringing to the fore myriad factors (social, political, economic, organisational, historical and ecological) behind the aggregate of decision-making processes that eventuate in a particular conservation role for zoos. Additionally, zoos are collections of people trying to advance disparate conservation goals. This conceptualisation calls for a better understanding of how individuals act collectively within organisational structures and how those structures both create and

influence what people can and cannot do. A diverse array of literature was used to provide me with a working appreciation of organisational behaviour, culture, identity, change, learning and inter-organisational relations.

### 2.3.2 The Zoo Selection

The strength of zoos' conservation role is predicated on the collective and individual efforts of their captive breeding programs and education efforts. Given the limited resources, expertise and space that any one institution possesses for captive breeding, the successes of zoo-based ex-situ efforts depend on the capacity of zoo professionals to manage competently breeding programs at their own institutions, to coordinate animal exchanges between different zoos, and to assist government wildlife agencies where possible. Similarly, the great number of people that zoo education programs are purported to reach both within their own localities and globally is often cited as a fundamental strength of zoos.

Hence, the very way the conservation role of zoos is most commonly defined dictated the use of multiple units of analysis. In this research, extensive formal and informal communication networks and programs at international, regional, national and local levels are examined in order to further elucidate macro and micro processes that comprise conservation policies of zoos.

Throughout the work I frequently refer to 'zoos', the 'zoo industry', the 'zoo community', or to individual zoos. These multiple perspectives enable an assemblage of a partial representation of the zoo as a traditional and persistent institution of western society, an 'industry' pursuing professionally-defined goals, and a 'community' of people striving to obtain greater relevance and meaning for their organisations. Additionally, a search has been conducted for common characteristics of zoological-type institutions that both enable and hinder the ability of such organisations to realise conservation aims. I have also ascertained how contextual variations stimulated and influenced policies as well. Examples of particular structural features have been used to highlight contrasts among zoos, at other times they are used to gain an overall picture of the zoo industry. For instance, the zoos managed by the Zoological Parks Board of New South Wales (ZPB of NSW), Zoological Parks Board of Victoria (ZBV) and the Perth Zoo are extreme cases of the challenges associated with bureaucratic and corporatised organisations, yet there have also been marked variations in the degree and kind of dilemmas encountered. The collations of emerging trends of similarities and differences could then be applied towards improving understanding of existing policies.

The Australasian region and ten zoos within that region were selected as the focus for this research. These choices represent three variations of *purposeful sampling* as described by Patton (1990)<sup>8</sup>. Purposeful sampling involves the selection of information-rich cases for study

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<sup>8</sup> The sampling techniques utilised in this research comprise several types of nonprobability sampling. This form of selection does not allow for calculating the probability that each unit in the sample will be chosen from the total population, nor is one able to claim that the sample is representative of the larger population (Frankfort-Nachmias & Nachmias 1992; Bailey 1987). These empirical axioms, however, do not apply as readily to the more ambiguous, yet information-rich, nature of qualitative data. Patton (1990) asserts that there are no rules for sampling size in qualitative inquiries. The qualitative data in this research has provided insight into numerous issues that are of central significance

whereby the size and specific cases depend on the study purpose. The ten Australasian zoos warranted selection because I deemed them to be "politically important cases" (Patton 1990:182). By virtue of their high visibility and size, the ten study zoos are some of the more influential organisations in what is a relatively small region. Virtually all the zoos are located in or very close to a major capital city in Australia (or New Zealand). All ten zoos are financial institutional members of the region's professional association - the ARAZPA - and participate in the regional breeding scheme, the ASMP. Taronga, Melbourne and Perth are the larger zoos in the region, and the directors and middle managers of these organisations as well as those at Adelaide Zoo, Auckland Zoo, and Currumbin Sanctuary, are politically-active members of the zoo community. For example, until 1996 the President and Vice-president of ARAZPA were both employees of the ZBV. Additionally, the region has received considerable attention from the international zoo community of late due to its relatively high level of cohesion and development of sophisticated animal management and collection planning data bases.

The Australasian zoos also comprise *maximum variation sampling* (Patton 1990). They embody a range of dimensions of interest, providing me with an opportunity to document divergences that emerge from different conditions, and to identify important common patterns that cut across those variations. Within the sample of ten zoos are organisations of various sizes and ages; public and private zoos; metropolitan zoos, wildlife sanctuaries, and open-range zoos; zoos that feature only Australian native species, those that have both natives and exotics; and zoos from different geographic regions of Australia.

There were other significant issues that affected the selection of the particular zoos. The sample provided a potentially good example of zoos whose administrators have made their conservation policies explicit. I perceived the ten zoos to have a particular commitment to conservation by virtue of ARAZPA membership and participation in the ASMP. Additionally, a study of this scale (national and regional) fostered a certain ease with respect to gaining access to information. Berg (1989) speaks of the need to plan flexible entry tactics and strategies for various research settings. During the process of enlisting potential participants in the study, I approached ARAZPA for assistance. ARAZPA's endorsement was an effective incentive for zoos to participate. It made explicit the fact that a study of this size and type had not been done before in this region and consequently would gain considerable attention. Moreover, the research would provide participating zoos with valuable information to assist them in the design and implementation of more effective conservation policies.

For the zoos, proficient conservation programs depend on inter-organisational relations constituted by exchanges among different zoos, and between zoos and other conservation agencies concerned with a range of wildlife policy issues. My use of the term 'community' refers to a collective unit of analysis (groups, organisations, societies) and has much in common with DiMaggio's (1983) 'organisational field'. That is, the Australasian zoos in this study have

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to the role of zoos in conservation. While not all findings in my inquiry can be applied to every zoo in existence, the data have generated meaningful indicators which have been applied to uncovering issues of relevance to zoo conservation policy.

a common purpose (conservation) and pursue specific objectives in an arena of both strategy and conflict where the degree of interaction among organisations varies over time. This framework is applicable to government and non-government conservation agencies as well. Where I refer to a 'policy community', the meaning is similar. It is closer in meaning, however, to Milward's (1982) 'policy system' which comprises a collection of public and private organisations and individuals who depend on each other for resources, and are linked by a social network which sustains a *rough* policy consensus.

Hence, in this research the zoo and conservation communities, as well as the zoo visitors, are also an example of Patton's (1990) *stratified purposeful sampling*. These collections of people represent particular subgroups of interest to my research, facilitating comparisons of attitudes towards and perceptions of zoos' role in conservation. This grouping has enabled me to combine interviews from different zoos into one set of data, and to do the same for the zoo visitor data and interviews from the conservation community. As interview and survey data were collected, it became clearer that many issues of concern among different groups are similar in form, substance, and concept. Such trends, however, do not negate either existing differences between organisations or the effects those differences may have on individual perceptions of zoos' capacity to deliver effective conservation programs and services.

### 2.3.3 Informal Observation

The field work for this research included a variety of activities and settings. Given the importance of feeding information back to the zoo community throughout the course of the research, I attended the 1992, 1993, 1994, 1995 and 1996 Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keepers (ARAZPA/ASZK) conferences. I also attended several conferences sponsored by various conservation groups and government wildlife agencies, although the imperative for providing 'progress reports' in those contexts was not as significant<sup>9</sup>. Nonetheless, all these events enabled the presentation of ongoing findings from my research in a formal setting (as spoken papers), and to receive feedback from conference delegates through informal conversations in social settings such as morning teas, lunches, conference dinners. My attendance at professional conferences also provided me with opportunities to speak informally with zoo and conservation professionals in more relaxed settings. These exchanges often produced valuable insights on the issues I was pursuing, providing the means for formulating critically important questions.

Field work also included visiting each of the study zoos to gather data on specific site characteristics, observing work routines, conducting interviews and administering visitor surveys. Zoo visits were conducted during the first and second years of the research with each visit lasting from one to two weeks. Support for my visits varied among the zoos. Most of the zoos covered my transport costs (air or bus fares) and provided some administrative assistance while I was in residence (desk space to work from, photocopying of zoo-visitor surveys). More

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<sup>9</sup> In addition to zoo community meetings, the following conferences were attended: Conserving Biodiversity, Sydney University, New South Wales, June 1993; Ecopolitics VII, Griffith University, Queensland, July 1993; Nature Conservation: The Role of Networks, Geraldton, Western Australia, May 1994.

informal types of assistance such as facilitating and arranging interviews with zoo staff varied according to which zoo staff member was assigned by the zoo director or senior manager to be my contact person. At those zoos where the contact person attributed considerable value to the project, and I received a high level of formal and informal endorsement from senior management, the ease with which I was able to conduct my research and gain access to an array of information was greatest.

Information about zoos has also been collected by interpreting the zoo landscape. Meinig's (1979:47) view that "landscapes mirror and landscapes matter, that they tell us much about the values we hold..." was particularly relevant to this research. Self-guided tours were conducted at each zoo. Special note has been taken of particular elements of the natural and built environment and also of those organising ideas that constitute 'a zoo.' The presence of particular exhibit design trends were observed with an eye to determining when and how conservation messages are incorporated into exhibit signage. Appreciating zoo visitors' and employees' perceptions of their surroundings has been considered and augmented by directly observing zoo visitors and by accompanying animal keepers on their rounds. Viewing the zoo from these angles has provided me with an important understanding of the varied dimensions of the total zoo experience, such as confronting the dilemma of confining wild animals to captivity or gaining a clearer knowledge of the plethora of practical challenges that zoo staff face while implementing a conservation role.

I observed organisation routines, attended zoological board and full-staff meetings, and was present during some social events such as lunches and dinner outings. The recording of any outstanding or significant observations was generally delayed until immediately after these events in order to facilitate more open exchanges and temporarily suspend my image as researcher. In the interest of conducting honest and ethical research, I informed zoo professionals of my intentions to use any 'sensitive' information that they, knowingly or otherwise, relayed to me.

#### **2.3.4 Interviews**

In order to gain an understanding of insider perspectives, their everyday theories of organisational life, and what they consider relevant to zoos' conservation role, either in a general sense or in relation to their own organisation, my interviews with both zoo and conservation communities were predominantly issues-focused. Sackmann (1991) notes this to be an effective interview orientation when research is aimed at illuminating important cultural knowledge in organisations, and at making comparisons across individuals and research sites. The 'issue' in this case was zoos' role in conservation, and questions were purposefully broad in to include the widest possible range of views on the subject. This question design also avoided offering highly structured questions that might bias respondents' articulation of their conceptions of zoo conservation roles.



An *interview guide approach* as described by Patton (1990)<sup>10</sup>, was used to conduct zoo and conservation community interviews. Before the interviews began, I spoke briefly to each respondent about the issues that were to be covered (Appendices 1 & 2). A check list of broadly-defined interview topics was used to keep the interviews on track, and decisions about question sequencing and wording were made as each interview proceeded. Patton (1990) asserts that such an approach increases the comprehensiveness of data and makes the data collection somewhat more systematic for each respondent than a purely informal conversational interview, while still retaining a conversation and situational quality. Additionally, logical gaps in the data can be anticipated and closed. Patton (1990) also asserts, however, that important and salient topics may inadvertently be omitted and the flexibility in wording and sequence may reduce the comparability of responses as a result of variation<sup>11</sup>.

Given the exploratory nature of the research, it was important to maintain optimal flexibility of approach in order to remain open to new issues of importance. In later stages of the research, however, the interview schedule became more specific. It often proved fruitful, however, to diverge occasionally from a strict adherence to the schedule and omit certain issues. That is, during the course of some interviews I was able to pursue several associated topics that were not originally considered, but nonetheless proved to be highly relevant.

While the problems of this approach cited by Patton (1990) were applicable to zoo and conservation community interviews, other issues beyond my control contributed to interview variation. Some interviewees had less time than others to devote to my queries, with interview times ranging from one quarter of an hour to one hour. Additionally, while most interviews were conducted in a person's office, occasionally I had to interview people while accompanying them on their work routines (for example following keepers on their rounds). Sometimes these temporal and logistical circumstances limited the amount of ground that could be covered during the course of the interview or distracted the respondent. Other factors influencing interview outcomes included some interview bias effects, and respondents' differing interpretations of, and abilities to answer, interview questions<sup>12</sup>. Consequently, the quality of interview data occasionally varied. In order to overcome these inconsistencies and still glean valuable

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<sup>10</sup> This technique involves outlining a set of issues that will be examined with each respondent before the interview process begins. The issues set out in the outline are not necessarily followed in a particular order, and the actual wording of the spoken questions has not been predetermined. The interview guide functions as a basic checklist during the interview to ensure that all relevant topics are covered. When using this tool, the researcher presumes there is common information to be obtained from each interviewee. However, standardised questions are avoided. Hence, the interviewer must adapt the wording and sequence of the questions to each respondent and to the context of the actual interview.

<sup>11</sup> Judd & Kidd (1986) and Nachmias & Nachmias (1992) note similar disadvantages of flexible interview techniques. Making comparisons between one interview and another can be difficult. Hence, data analysis becomes more problematic and time consuming.

<sup>12</sup> The neutrality of an interviewer can be affected by their own expectations, personal characteristics, or situational dynamics (Kidder & Judd 1986; de Vaus 1990; Babbie 1989). My personal style of communication and the notoriety I had developed in the zoo community by the later stages of this research may have reduced my researcher neutrality to some degree. While these interviewer effects contributed to some biasing effects, my familiarity greatly enhanced my ability to become part of the zoo community. This closeness provided for greater access to information and deeper understandings of the relevant issues.

information from the interviews, content analysis of the transcripts was directed at filtering data for recurring themes.

All interviews were conducted confidentially, and interview data analysis indicates only the organisational level at which the interviewee works. Retaining study participant privacy is of the utmost importance, given the small size of the conservation and zoo communities, and the fact that interview data occasionally reveals secret, potentially discrediting, or sensitive information about zoos. However indirectly, associating an individual's views with their organisation can facilitate their identification. This need for privacy also influenced the decision to create two large data pools, despite the fact that interviewees may have worked at different agencies and/or settings. The first collection of data contained all interviews from different zoos, and the second included interviews from members of the conservation community.

#### *i Specifics of Zoo Interviews*

Given the emphasis this research places on understanding how individual values and power influence zoo policy and organisational processes, a wide range of zoo professionals were interviewed. One hundred and twenty-six interviews were conducted with a selection of zoo staff from different departments and organisational levels at the ten zoos. It was presumed that interview data would provide insight into how individuals within different departments understood and worked towards conservation-oriented goals, and the effects that divergent views had on policy formulation and implementation, given where those individuals were placed both within their own organisations and within the zoo community as a whole. Oftentimes formal policies created at the top of an organisation differ by the time they filter down to operational levels in the implementation process.

Zoo staff were queried on their employment history and professional training, and their motivation for working at a zoo. Several broad topic areas were defined to supplement the primary interview question, "What is your understanding of the role of zoos in conservation?" (Appendix 1). The zoo community responses are considered in detail in Chapter Nine. The quality and amount of these data may have been compromised in part by several factors<sup>13</sup>. Some zoo staff had difficulty formulating their answers to my questions, because they lacked fully-developed verbal skills or simply did not have sufficient time to consider what (if at all) they thought about the issues. Access to certain zoo professionals was restricted occasionally either by their heavy works schedules or because staff had not had sufficient notice from the zoo to allocate time for an interview.

#### *ii. Specifics of Interviews with the Conservation Community*

Forty-eight interviews were conducted with people from federal and state government agencies, NGOs, universities, museums and private consultancies. Given that the total population of the

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<sup>13</sup> There are several commonly recognised disadvantages of personal interviews as a means for gathering information. Interviews are time consuming and costly to conduct; provide minimal levels of anonymity; and may be easily influenced by readily observable characteristics of an interviewer (such as race or gender) (Kidder & Judd 1986; De Vaus 1990; Babbie 1989).

conservation community would be far too large for a study of this size, it was necessary strategically to limit interviews to a selection of those senior managers and project officers who have had the most interaction with zoos, and who could speak first-hand about their perceptions of zoo capabilities, ideologies, motives and logistical problems associated with working with the zoo community. Government wildlife agency personnel represented the largest proportion of interviewees (63 percent). This emphasis was intentional, as I was particularly interested in testing the degree to which zoo staff are *active* policy-makers in the wildlife policy arena and what dynamics influence the nature of these inter-community relationships.

In the earlier stages of the research interviewees exhibited a high degree of scepticism when speaking generally about what they felt the role of zoos in conservation is (or should be). The interview schedule at this stage was very broad (Appendix 2). When the interview and survey data of the first year were analysed and my knowledge of the issues became more sophisticated, subsequent interview questions were directed towards distinguishing more specific information. These data are discussed further in Chapter Nine. Material from conservation community interviews was subject to similar influences as were the data gathered from the zoo community. Conservation professionals were often quite busy and difficult to gain access to; not all of them had spent a lot of time considering what their own views were; and some had more direct professional experience with zoos than others. Occasionally, I was mistakenly perceived by an interviewee to be *from* the zoo community. In some of these instances, a respondent's answers reflected their reluctance to be overly-critical of zoo policy.

### 2.3.5 Questionnaires

In addition to the use of interviews for generating information on public perceptions of zoos' conservation role, questionnaires were administered to zoo visitors and the conservation community. Questionnaires can be used to measure a wide variety of variables (Stone 1978). Given the broad nature of the research question and the exploratory nature of my work, it was worthwhile to make use of an additional means of generating information that would be relevant enough to capture critical *themes*, rather than supplying definitive and precise *answers*. Questionnaires were the appropriate technique for these purposes and provided an opportunity for me to access large numbers of people with *relative* ease.

Questionnaires for zoo visitors and the conservation community were similar in design. Both questionnaires contained closed and open-end items<sup>14</sup>. The closed questions provided a greater uniformity in and incidence of responses, were clearer and more easily processed (Babbie 1989), presenting uniform stimuli to all subjects (Stone 1978). The open-end items, however,

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<sup>14</sup> This design strategy was utilised in order to help overcome the disadvantages of either question type. Closed questions may create false opinions by providing an insufficient range of alternatives from which to choose by prompting people with acceptable answers; cannot accommodate people's qualifiers to the responses they tick; and facilitate a high incidence of guessing if answers are not known (Babbie 1989; de Vaus 1990; Bailey 1987). Open-end items can encourage responses that are self-contradictory, incomprehensible, irrelevant, or not standardised. Hence, they are costly and difficult to analyse (Kidder & Judd 1986; Bailey 1987). This type of question also requires a respondent to have superior writing skills and an ability to express themselves verbally; may be too general for the subject to understand adequately; can be time consuming and generate high refusal rates; and add length to the questionnaire (Bailey 1987).

produced qualitative information that more fully encompassed the complexity of the issue(s). Moreover, these items provided an important supplement to information generated by the closed questions, and facilitated access to respondents' perspectives without predetermining those views through prior selection of questionnaire categories (Patton 1990).

In addition to mixing question types, both questionnaires were self-administered. This feature provides greater anonymity for the respondent, who may in turn, be more open or truthful when answering questionnaire items (Fowler 1984; Stone 1978). Self-administered questionnaires also take much less time to collect as opposed to those questionnaires in which each item is read out to the respondent. Given that my research was being conducted under very real time and resource constraints, the relative ease and convenience of this technique proved invaluable, and afforded me more time to attend to numerous other research details and imperatives while still accessing an important source of information<sup>15</sup>.

While there was considerable qualitative information generated by the questionnaires, most of the data were quantitative. There are some important conceptual and practical advantages in using quantitative measures. Not only are quantitative measures "succinct, parsimonious, and easily aggregated for analysis" (Patton 1980: 28), they have provided my inquiry with important general indicators of the size and nature of trends in people's perceptions of and attitudes towards the role of zoos in conservation.

#### *i. Specifics of Zoo Visitor Questionnaires*

On some level, most zoo professionals believe that zoo policies should take account of visitors' experiences of and perspectives on zoos conservation axioms and operations. While the zoo community may have a particular social responsibility to be responsive to public views and to monitor the quality of zoo 'encounters', it remains that most of the research conducted in zoos is market-based. Attitude studies are valuable<sup>16</sup> because they can provide information about public support and beliefs, goals necessary to set standards, and the current and future behaviour of relevant parties (Heberlein 1989). A paucity of national data about visitor perceptions of zoos' conservation role remains. I designed a visitor questionnaire in order to partially fill this information void (Appendix 3).

The questionnaire was designed to elicit information on visitor attitudes to zoos' conservation role and included specific details about:

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<sup>15</sup> There are disadvantages to relying upon self-administered questionnaires. The researcher is not present to exercise quality control measures such as ensuring sufficient responses and completion rates (Kidder & Judd 1986; Fowler 1984). There was a fairly high incidence of incomplete zoo visitor questionnaires returned. The quality of answers can also be influenced by the researcher not being in control of either the order in which questions are answered, or the context of question answering (Kidder & Judd 1986; Fowler 1984). Some respondents were observed answering items out of sequence or being assisted by family members or friends while they completed their questionnaires.

<sup>16</sup> Kidder & Judd (1986) warn of the inadequacies faced by attitudinal, self-administered questionnaires. They assert that respondents may not have a particular attitude towards an issue if they had not considered it before. Hence, they may be inclined to give 'throwaway' responses. Moreover, given the complex and multi-dimensional nature of attitudes, a person may not have a single, overall attitude towards an issue. Attitudes also vary in intensity. Collectively, these factors make the task of assessing and measuring (numerically) attitudes more challenging.

- zoo visitor profiles, their interests in and expectations of zoo visits;
- the role of zoos in relation to other conservation agencies;
- perceptions of zoo methods and performance in education and endangered species conservation;
- visitor awareness of existence and causes of species decline;
- visitor valuations of nature;
- individual responsibility towards conservation;
- demographic details (respondent's age, sex, schooling levels, occupation, visitation patterns);
- membership in or time donated to environmental/conservation groups; and
- whether visitors felt they had learned something new or were reminded of anything as a result of their visit to the zoo.

A simple random sampling strategy was used in order to be able to generalise from the sample to the general population of zoo visitors. In order to obtain as representative a population as possible of zoo visitors, people ranging in age from 11 to 70 years were targeted. A sample of approximately 200 visitors was collected for each of the eight zoos participating in the survey<sup>17</sup>. This size of sample would allow for comparing percentages across the different zoos as well as for more sophisticated data analysis.

Volunteers assisted with administering the questionnaire at Adelaide Zoo, Perth Zoo, Melbourne Zoo, Healesville Sanctuary and Taronga Zoo. Paid staff assisted at Currumbin Sanctuary, Territory Wildlife Park and Werribee Zoo<sup>18</sup>. The questionnaire targeted those visitors who had already seen at least half of the available exhibits. Visitors were approached in areas where they were likely to be relaxing or taking a break in their visit, as they were required to fill in the questionnaire themselves. It took approximately 10 minutes to complete. A majority of the survey items were closed. Respondents were asked to rate a series of statements according to a level of agreement or disagreement, effectiveness, or frequency of usage. The use of a Likert scale with an even number of options often encourages people to commit to a more definitive answer rather than selecting a neutral answer. A 'don't know' option was provided for several questions.

Simple descriptive and frequency statistics were produced to analyse most of the data. In an effort to understand what factors may have been influencing some visitor responses, particular statistical analyses assessed the predictive value of respondents' age, sex, schooling levels,

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<sup>17</sup>Visitor data were not collected for Auckland and Western Plains Zoos as the necessary organisational support for administering the questionnaire could not be arranged.

<sup>18</sup> Hood (1987) and deVaus (1990) recommend the provision of a training session for volunteers assisting with visitor studies to ensure consistency and a degree of professionalism in questionnaire administration. I provided zoo staff and volunteers with a briefing on the overall aims of the research and questionnaire procedures during each of my zoo visits. On most occasions I was present for at least part of the questionnaire implementation period at the zoos and could monitor procedures. For those times when I could not be present, however, the questionnaire process had to be assessed through a zoo staff member. The thoroughness of this evaluation was subject to staff availability, and was often sporadic.

occupation, visitation patterns, and membership of and time donated to environmental groups. Responses to the qualitative answers were grouped according to several themes and then quantified. Chapter Nine discuss the questionnaire results.

*ii. Specifics of Conservation Community Questionnaires*

Questionnaires were also distributed to delegates at the Conserving Biodiversity Conference, Sydney University and at the Ecopolitics VII Conference, Griffith University held during June and July, 1993 respectively. It was assumed that these events would provide a partial sample of the target population of members of the conservation community (government wildlife agency staff, academics, environmental activists). Supposedly, this populace, like many zoo professionals, would have explicit professional and personal interest in biodiversity, conservation and other environmental issues, and would tend to differentiate themselves from the zoo profession and culture. Consequently, their views on appropriate conservation strategies and methodologies might differ from zoo community opinions and provide additional insights into why zoos do not have a more integral role in conserving biodiversity. These perspectives are presented and discussed in Chapter Nine.

The conservation community questionnaire sought to confirm some of the key issues that had surfaced during earlier interviews with conservation community members (Appendix 4). Additionally, this questionnaire provided a chance to quantify some of these perceptions with a view to determining how widely distributed such views are. The data generated by the survey could then be further clarified in subsequent interviews.

The self-administered questionnaire was left on all the seats before conference delegates arrived for the first session of the day early in the week. The questionnaire asked respondents to return the forms to me at a designated location before the conference was over. These instructions were reinforced by having the conference convenor make a short announcement explaining the purpose of the questionnaire and encouraging delegates to fill one out. Despite this strategy for enhancing response rates, a relatively low number of questionnaires was returned. A total of 116 completed questionnaires was collected from the two conferences.

The questionnaire was made up of a series of closed, multiple choice and open-ended items which were designed to elicit information on respondents' place of employment or affiliation with a particular organisation; their zoo visitation patterns; the basis of relations between zoos and government/non-government organisations; the ways in which zoos contribute to conservation; and how zoos could better serve conservation. Respondents had the opportunity to select from several possible answers to most of the questions, with space provided for additional comments or alternative selections. Prompts were derived from those issues which arose during the course of earlier interviews with members of the conservation community. As with the zoo visitor questionnaires, data generated by the closed-end questions were analysed with simple descriptive and frequency measures. Qualitative responses to open-end items were

assigned to appropriately-themed categories and, in some instances, quantified in a similar manner.

## **2.4 CONCLUSION**

This chapter establishes context as the principle factor influencing my research framework. A diverse collection of information on zoo conservation policy was gathered by synthesising several theoretical perspectives and techniques. Empirical, cultural and critical inquiries were combined in order to uncover implicit meanings in zoos' formal and informal conservation aspirations. My research strategy targeted those knowledge voids left by traditional zoo research which tends to rely on empirical, positivist investigations to generate information of a technical nature.

This chapter essentially offers an alternative research paradigm for understanding the role of zoos in conservation. The intricate nature of the subject matter lends itself to an interdisciplinary approach, one that is grounded in multiple outlooks and dependent upon a range of tools for information gathering. Ideally, environmental studies research is best served by such a variegated trajectory. The inherently interdisciplinary nature of policy analysis (and the policy sciences) is positioned in this chapter as a potent prescriptive and descriptive mechanism that facilitates the continual search for more holistic understandings of the issues in question.

Zoo conservation roles are constituted largely by social processes, the essence of which can best be captured by the use of qualitative techniques. Yet, certain quantitative measures were used to supplement data generated by qualitative measures. Finally, this chapter recounts my use of certain procedures during the research. Multiple units of analysis were employed to capture the heterogeneous nature of zoo conservation roles. Informal observations provided significant insight into zoo settings and organisational procedures. Interviews provided access to individuals' perceptions of conservation programs and principles in zoos and questionnaires produced valuable data on a broad range of topics relevant to zoos.

The theoretical, epistemological and methodological foundations of this research are established. The role of zoos in conservation is an important environmental issue that necessitates a contextual, interdisciplinary investigation. This inquiry will be undertaken from several vantage points, the first of which will be historical. The following chapter provides an analysis of the evolution of zoo conservation policy.

## CHAPTER THREE: ZOOS AND CONSERVATION, AN HISTORICAL ACCOUNT

*The future is shy. If you want to catch a glimpse of it, you have to sneak up from behind. So the place to start for a look into the future is the past (Ehrenfeld 1993: 175).*

### 3.1 INTRODUCTION

The modern role of the zoo is not nearly as established as the institution itself. Indeed, education and conservation did not start to become priorities until zoos shifted away from being private menageries and became public institutions in the middle of the 19th century. By the middle of this century, conservation had emerged as the consummate rationale for zoos. Traditionally, the purpose of collecting animals has been far from benevolent, constituting displays of pomp and power and the influence of ruling classes whose members could obtain exotic animals from far-off lands. These customs date as far back as the ancient societies of Egypt, Greece, Rome and China. While it might be argued that the basic tenet of zoos remains that of maintaining animals in captivity, there have been some discernible changes in philosophy, statement of purpose, and physical characteristics of many zoos. These changes are worth examining.

Many historical accounts of zoo development and current discussions regarding the role of contemporary zoos in conservation account for a shift in zoos' societal roles since their inception (eg Cherfas 1984; Rabb 1994; Zuckerman 1979), few have included an account of how shifts in human values and attitudes towards non-human nature have informed zoo transitions. Mullan & Marvin's (1987) definitive text elucidates zoo development by highlighting some key themes. They submit that the collection of exotic species of animals cannot be fully understood unless the analysis focuses on the context of different forms of power. The presentation of animals in zoos may implicitly express supremacy over and distance from non-human nature. Power is imposed on the animal subjects inside zoos by virtue of their captivity, and those controlling and managing zoos exercise power as well. The history of menageries cannot be separated from: an enthusiasm for wild things which cultured people have had; the ability of certain individuals to control the resources necessary to acquire animals from the far reaches of the globe; the fascination with and preference for rare and unusual exotic animals as opposed to local species; and the contacts and power such animals bring to their possessors (Ritvo 1987).

In this chapter I will explore some of the changing roles of zoos, and will elaborate on the influence of certain political and economic forces and shifts in human relationships with non-human nature during major historical periods. The point of this exercise is to highlight select influences that have contributed to zoos' current situation. The discussion of *Australasian* zoo development is set primarily in an international context. Initially, a European model of zoos had a significant influence on emerging zoo principles and practices in the colonies, laying the foundations for modern institutions. By the middle of the 20th century, western zoo policy trends were emanating largely from the United States and England where many of the



international zoo community's more prominent and influential zoo leaders were (and still are) located.

### 3.2 ANCIENT MENAGERIES

Hediger (1950) notes that efforts to tame and domesticate animals, and keep them in captivity, is as old as human society itself. While there is some debate as to the exact point in history when zoos began<sup>1</sup>, most agree that collecting animals and maintaining menageries dates as far back as the ancient societies of the Egyptians, Greeks, Romans and Chinese (Table 2). The main purpose in maintaining these aggregations was to display wealth and power and provide for exotic hunting and entertainment (Zuckerman 1979; Page 1990; Cherfas 1984; Hahn 1968; Bostock 1993; Mullan & Marvin 1987; Brambell 1980; Ritvo 1987; Curtis 1978; Finnie 1987; Jenkins 1977). Animals would also have been exchanged as a gesture of diplomacy or friendship (Hahn 1968). For some members of these societies, particularly for the Egyptians and in Mesopotamia, there would have been significant religious reasons for keeping animals (Bostock 1993; Hahn 1968; Mullan & Marvin 1987). Unlike their modern counterparts, ancient menageries were not constituted by systematic collections plans (Hahn 1968). While some animal selection was motivated by human curiosity about new creatures discovered during exploration, war and conquest, another important rationale was the symbolism of power. Choosing animals for collections was often informed more by the major symbolic value afforded to particular species as well as by the power conferred to the owner who possessed those specimens. Birds of prey, carnivorous mammals, and charismatic mega-vertebrates such as elephants were well represented in most ancient menageries. While the Chinese and Greeks did confer some scientific and educational value onto their menageries, such acknowledgment was largely in its infancy and did not reappear until much later.

Singer (1975) asserts that Western society's attitudes towards animals have two roots: Judaism and ancient Greek schools of thought were eventually united in Christianity which came to prevail in Europe. The Aristotelian view in Greek society asserted that human capacity to reason placed us at the top of a hierarchy of nature whereby those beings with less reasoning ability exist for the sake of those with more (eg plants for animals, animals for humans)(Singer 1985; Ryder 1989). The conquest of new lands during the Hellenistic Age would afford a dramatically increased awareness of new and different environments, and magnify the contrast between the natural and cultural landscape (Glacken 1967).

The advent of Christianity would magnify the gulf between humans and non-human nature, conferring onto people dominion over nature, and relegating animals to a place outside its sphere of concern (Singer 1985; Ryder 1989). The attitudes and activities of the Romans epitomised humans as merciless despots. Extensive tracts of land were cleared for pastoral economies and

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<sup>1</sup>Zuckerman (1979) believes exact starting dates are unclear. Loisel, a zoo historian, recorded the Egyptians as an appropriate launching point for studying zoo history (Mullan & Marvin 1987). Jenkin (1977) cites the earliest recorded zoos in Egypt in 1400 BC and in China in 12th Century BC.

**TABLE 2: Underlying purposes and trends in the menageries of ancient societies**

Societies	Religious Imagery & Pride of Power
Egyptians	<ul style="list-style-type: none"> <li>• certain types of animals were considered to be sacred (lion, ibis, falcon, baboon) and were maintained in temples, parks, or mummified for mausoleums</li> <li>• collections of carnivores were often maintained for hunting events (eg hyenas, cheetahs, leopards)</li> <li>• enclosed parks were stocked with domestic and acclimatised wild animals</li> </ul>
Mesopotamia	<ul style="list-style-type: none"> <li>• sacred menageries were maintained</li> <li>• hoofstock were kept in vast parks adjoining palaces where royalty hunted with dogs, lions, leopards, and trained elephants</li> <li>• the lion was a particular favourite and was used to chase down other animals as well as being hunted itself</li> <li>• exotic animal gifts tended to be enthusiastically received by royalty due to the scarcity of indigenous species</li> </ul>
Greeks	<ul style="list-style-type: none"> <li>• menageries contained domestic and wild animals</li> <li>• temples incorporated sacred woodlands as game reserves and displayed animals affiliated with particular gods such as eagles</li> <li>• there was a demonstrable preference for bird keeping</li> <li>• Alexander's campaigns secured vast collections of elephants, bears, and monkeys</li> <li>• Aristotle used Alexander's menagerie to lay the foundation of classification of animals based on their physical structure</li> </ul>
Chinese	<ul style="list-style-type: none"> <li>• menageries were associated with a value that was placed on learning &amp; knowledge and were often called 'parks of intelligence'</li> <li>• these early collections featured various kinds of deer, goats, antelope, birds and fish</li> </ul>
Romans	<ul style="list-style-type: none"> <li>• animals were used primarily for displays of power such as in triumphal processions or for official celebrations</li> <li>• gladiatorial games epitomised the Romans' extremely arrogant and violent attitudes towards animals</li> <li>• emperors and wealthy upper classes maintained vast aviaries and confined animals in parks for hunting</li> </ul>

wildlife populations were devastated by gladiatorial games (Freas 1987; Hahn 1968; Hughes 1975). Considerable energy was devoted to extending and defending the Roman Empire and the gladiatorial games provide evidence that Romans were averse to bestowing moral considerability to those beings (humans and animals alike) that exhibited weakness (Singer 1975)<sup>2</sup>. Rather these beings were transformed, *en masse*, into commodities of power. While the cruelty may have abated somewhat, such narrow parameters of care did not shift, even with the collapse of the Roman Empire. On the contrary, Ryder (1989) suggests that people may have been more inclined to separate themselves from nature out of a fear that their declining civilisation was indicative of humans slipping back to a state of 'animality.'

### 3.3 THE MIDDLE AGES

The records concerning human attitudes towards and treatment of non-human nature are rather sparse for the Middle Ages. However, it is possible to ascertain the predominant influence of Christian anthropocentrism. Glacken (1967) asserts that extensive environmental changes such as forest clearance, land drainage, and the creation of gardens and hunting parks, were informed by the belief that humans should assist God in improving their earthly home. Ryder (1989) concludes that Christian attitudes towards non-human nature were highly ambivalent. While there were those who promoted treating non-humans with some care (such as St Francis of Assisi), most animals were treated with a mixture of pity and contempt. Civilisation itself was equated with human supremacy and all those things that were 'bestly' were considered to be uncivilised. Certainly, the traditions of maintaining menageries and hunting indicate that utilitarian and superior attitudes towards nature were fundamental to these times.

Exotic animals in medieval and later Europe were seen as luxurious gifts and prized possessions to be exchanged among royalty and important nobility (Hahn 1968; Cherfas 1984; Zuckerman 1979; Mullan & Marvin 1987; Ritvo 1987; Thomas 1983)<sup>3</sup>. Many monarchs and aristocrats maintained private animal collections (or menageries) which featured 'ferocious' animals such as lions, leopards, tigers and bears, although the selection and abundance of animals varied according to particular preferences of the reigning monarch (Ritvo 1987)<sup>4</sup>. Sport and entertainment were often equated with the hunting and/or fighting of 'wild beasts'. Some rulers

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<sup>2</sup> Like the Greeks, the Romans seized wild animals as spoils of war and marched them in triumphal possession alongside the human captives (Hahn 1968). Trajan celebrated his Dacian victory in 106 by conducting four months of gladiatorial games which killed 10,000 gladiators and 10,000 animals. Augustus's reign saw the destruction of 3,500 beasts between 1BC & 14 AD. Titus used some 5,000 animals in the games (Zuckerman 1979; Mullan & Marvin 1987; Hahn 1968).

<sup>3</sup> Henry I is credited with establishing medieval England's first expansive menagerie at Woodstock where he kept lions, leopards, lynx, camels, and rare owls (Zuckerman 1979; Jenkins 1977; Mullan & Marvin 1987; Hahn 1968; Blunt 1976). Eventually the Woodstock menagerie was shifted to the Tower of London under Henry III's rule. Here Henry III maintained an elephant, a gift from Frederick II, and a polar bear, a gift from his brother-in-law Louis XI (Cherfas 1984; Jenkins 1977; Mullan & Marvin 1987; Hahn 1968; Blunt 1976).

<sup>4</sup> Charlamagne, emperor of the Franks from 742-814, was particularly interested in exotic animals. He maintained several menageries and an animal collection that travelled with him. Charlamagne received various animal gifts from other leaders, the most auspicious of which was an elephant sent by an Arabian caliph, the first elephant to be seen in France (Hahn 1968; Zuckerman 1979).

fought their captive animals in an effort to demonstrate their triumph over the natural world (Thomas 1983)<sup>5</sup>.

Part of Frederick II's motivation for maintaining his vivarium may have been motivated by less destructive interests<sup>6</sup>. The Holy Roman Emperor and King of Sicily has been depicted by Cherfas (1984) as an outstanding naturalist. His vivarium, purported to be the first of its kind in Western Europe, contained a large area of marshes and ponds populated with various species of water birds (Hahn 1968; Zuckerman 1979; Mullan & Marvin 1987). Hahn (1968) states that Frederick's learned interest in animals prompted him to produce a book on ornithology. However, Frederick was probably progressive for his time. Glacken (1967) notes that until the late Middle Ages, the study of nature was undertaken more for the evidence it provided of God's existence and His plans for a designed world, than it was for its own sake.

### **3.4 DISCOVERY AND TRADE DURING THE RENAISSANCE**

The colonisation of the New World, and discoveries of new environments, climates, flora and fauna continued to reinforce notions of nature's God-given fullness, richness and variety, and stimulated a great interest in learning (Glacken 1967). Such erudition was set in a context of exploitation. This time was also a major period in human civilisation where habitat destruction was widespread throughout the Americas and Europe (Freas 1987). These exploitative endeavours were probably facilitated by the humanist world view of the Renaissance. Ryder (1989) and Singer (1975) state that this ideology increased the gap between humans and non-humans by contrasting human superiority, dignity and potential with the more limited capacity of 'lower' beings. In conjunction with the anthropocentrism being extolled by contemporary Christianity, such a supremacist perspective contributed to an overall deterioration in the treatment of animals<sup>7</sup>.

Contemporary hunting practices, such as the establishment of deer parks, provide some insight into human-animal relations. Animals were confined in large forested and unforested areas set aside for the express purpose of hunting expeditions, a central feature of the royal and noble lifestyle. Ryder (1989) & Hahn (1968) maintain that a scarcity of game in England after the 15th century led to a proliferation of these parks where large numbers of animals met their inevitable end. Cherfas (1984) states that many aristocrats throughout Europe possessed deer parks as well. He is much less critical of the 'success' of these hunting practices and links - rather unproblematically - deer parks to the eventual establishment of zoos. Crown Prince

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<sup>5</sup> Henry III provides an extreme example of how rulers' animal collections were often little more than a form of personal property, subject to their every whim and given little moral consideration. Henry III destroyed his entire collection in 1583 after having a nightmare in which his animals devoured him (Bostock 1993: 24; Hahn 1968: 33). Records also suggest that during the reign of James I fights between lions, bears and dogs provided court entertainment (Bostock 1993).

<sup>6</sup> Frederick II's interest in natural history does not imply that he avoided the exploitive tradition of maintaining menageries. He also kept a travelling menagerie containing lions, camels, elephants, panthers, and cheetahs, as well as a training school for cheetahs.

<sup>7</sup> There were several prominent figures who showed some compassion for non humans. Ryder (1989) provides an extensive discussion on the views of Leonardo DaVinci, Sir Thomas More, Michael deMontaigne, Martin Luther and John Calvin.

Maximillian is credited with establishing the first modern zoo in 1552, because he stocked his deer park with exotic animals for display purposes only.

Generally speaking there was a proliferation of menageries. This increase was undoubtedly facilitated by European discovery of the New World and a growth in trade between certain European centres and other parts of the world<sup>8</sup>. Rare species from every part of the known world were being imported at an unprecedented rate to private menageries (Page 1990; Thomas 1983; Mullan & Marvin 1987; Hargrove 1995). Animal collections continued to symbolise colonial conquest, wealth and status, and aesthetic satisfaction (Thomas 1983). Overseas discoveries and successful trade brought about increased levels of prosperity and invigorated longings for luxury goods. With the rise of the middle class, a new, more numerous class of people now possessed greater resources, status and leisure time to cultivate those activities (including an interest in animals and nature) that had previously been confined to elites.

Renaissance Italy serves as an appropriate example of these trends. Mullan & Marvin (1987) explain how Venetians played a key role in actualising the interest in animal keeping. Venice served as the primary channel for movement and storage of goods. Hence, it was necessarily an important focus for the supply of wild animals to Italian menageries. By the 16th century all the great European cities<sup>9</sup>, other Italian courts, several popes and cardinals<sup>10</sup>, and private citizens kept menageries.

Animal collections were well established in European society at the end of the 16th and during the 17th centuries. In addition to the existence of royal menageries, most aristocrats maintained collections of resplendent birds in their gardens. The public was developing an interest in viewing exotic animals, and there was a growth in commercial exploitation of these interests. Such popularity was not necessarily synonymous with progressive thought. Ryder (1989) and Thomas (1983) site a shift away from anthropocentric views of the late Renaissance where concerns for the treatment of animals and preserving at least some wild creatures began to

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<sup>8</sup> Menageries were not limited to European civilisation. Cortes' accounts of the great Aztec zoo maintained by Montezuma II would have stimulated considerable interest. This vast collection included birds of prey, water birds, large cats and dog-like carnivores, snakes, as well as human 'curiosities' (dwarfs, albinos, deformed people and slaves) - all obtained from Montezuma's vast empire (Hahn 1968; Cherfas 1984; Mullan & Marvin 1987; Page 1990). Yung Lo, emperor of the 15th century China-Ming Dynasty, maintained royal gardens stocked with exotic animals from tributary countries. Prior to 1417 there were no African species in animal collections in China because ships had not yet sailed to Africa. The considerable excitement generated by Yung Lo's eventual receipt of a giraffe motivated the Emperor to send a ship to the east African coast to inaugurate trade with Melinda (Hahn 1968; Mullan & Marvin 1987).

<sup>9</sup> Evidence of Florentians' pride in their menagerie could be found in poetic prose and in artists' renditions of wild animals in paintings, frescoes and sculptures of that time. It was not unheard of for some artists, such as daVinci, to maintain wild animals as live models for their works (Hahn 1968).

<sup>10</sup> Pope Leo X (1513-23) of Medici maintained a menagerie of parrots, monkeys, civets, lions, leopards, bears and elephants at the Vatican. Some of these animals were gifts from King Manuel of Portugal who requested that the Church ratify Portuguese possessions in Africa and the Far East (Hahn 1968; Mullan & Marvin 1987; Bostock 1993). Mullan & Marvin (1987) point out how the Medicis' large menageries were a reflection of their considerable power and influence. Exotic specimens were sent to the Medicis by the Sultan of Egypt who was attempting to enlist their assistance in swaying a decision to release his brother who was being held by the French. Such a gesture provides another example of how the extreme value attached to animals gifts was used to ease diplomatic negotiations.

emerge. Hargrove (1989) locates the association of zoos with the scientific study of natural history sciences in the 17th century.

However, these trends had yet to fully manifest in the practice of maintaining animal collections. Perhaps the influence of thinkers like Descartes still coloured contemporary thought. Descartes promoted the notion that non-human nature, void of any consciousness, needed to be dominated by human rationality and purpose. In any case, most architectural designs of menageries emphasised pleasing visitors rather than meeting the needs of captive animals, as few knew about or were interested in animal behaviour (Mullan & Marvin 1987). For example, despite the reputation of Louis XIV's menagerie for serving scholarly interests, at the time it was established more attention was devoted to its aesthetic architectural features than to the adverse conditions animals were subject to in their small brick and iron enclosures<sup>11</sup>. It was not until the mid 18th century, do we see definitive beginnings of an association of science and zoos become evident, and it was much later before animal welfare concerns started to influence zoo designs.

### 3.5 REVOLUTIONS IN THOUGHT AND OTHER ZOO DEVELOPMENTS

Significant streams of thought and particular attitudes towards nature emerging during the 18th and 19th centuries had marked effects on changes to principles and practices of zoos. The ideology of scientific reason was becoming a central focus for educated Europeans. Knowledge of natural history grew quickly and took on a particularly utilitarian character. Thomas (1983) suggests that disciplines such as botany and zoology began as a means to identify how plants and animals could benefit humankind. A growing concern for animal welfare and the works of Linnaeus, Darwin and others did challenge human distance from and treatment of non-human nature, but these ideas took a long time to take hold in zoos. Increasing levels of affluence, leisure time and mechanisation brought on by the Industrial Revolution, resulted in a concomitant growth in the appeal of 'wild' nature and a strengthening of the animal welfare movement. The middle classes would now have the time and money to pursue such interests. Interestingly enough, while these forces gave rise to an interest in conservation, they also contributed to an increase in the popularity of zoos. By the mid 19th century, a distinctly European model of *public* zoos was spreading quickly across the globe. Here too are the earliest uses of science and education as justifications for zoos' existence and beginnings of identity problems that confounded zoos' attempts to achieve the cultural status and legitimacy enjoyed by museums. Today, these problems continue to challenge the zoo community.

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<sup>11</sup> Louis XIV was an ardent fancier of 'beasts' and received a steady stream of animal gifts from foreign leaders. The unique design of his menageries integrated his animal and botanical collection. A precursor to later naturalistic exhibits designed to conceal an animal's captivity, various plants and trees were strategically positioned to hide unattractive bars and fences (Mullan & Marvin 1987; Hahn 1968; Cherfas 1984). In addition to locating the collection close to his residence, these arrangements reflect a guiding principle whereby "nature is re-organised into a pattern which converges on the house at the centre of the system and from where it can be seen at a glance" (Mullan & Marvin 1987: 101). Such a design reflected the significant power and influence of many menagerie owners. Today traces of these designs can still be found in modern zoos. Central administrative buildings, where the power of decision-making resides, are often located near the zoo entrance from where numerous zoo activities are observed and controlled.

### 3.5.1 Scientific and Political Influences

The French Revolution was a critical catalyst for the transformation of zoos from private to public institutions and for the incorporation of science into zoos' *raison d'etre* (Bostock 1993; Cherfas 1984; Mullan & Marvin 1987; Zuckerman 1979). This was a time when 'ordinary' people called for the demise of many court frivolities and excesses, not the least of which were the menageries at Versailles<sup>12</sup> (Hahn 1968). There was considerable indignation in certain circles over the fact that menageries' animals were living a life far above the standards of average citizens<sup>13</sup>. Although specific details of the exact events vary, it is commonly agreed the Versailles menagerie was stormed by disgruntled citizens demanding the demise of such a vulgar indulgence. Some of the animals were liberated, while others were slaughtered. The remaining dangerous animals and a few others were eventually transferred to a site adjacent to the Museum d'histoire Naturelle<sup>14</sup>. It signalled a new phase in zoo development. As the Museum and the Zoo were located at the same site, scientists had a counterpart 'museum' of living animals for study, and the people of France had a zoological garden from which they could not be excluded (Bostock 1993; Brambell 1980; Cherfas 1984; Hahn 1968; Mullan & Marvin 1987; Zuckerman 1979).

The Paris Zoo was quite successful in achieving a high profile scientific identity for itself. In effect it became the centre of biological research for France for a period of time (Zuckerman 1979; Brambell 1980). Many leading scientists were affiliated with the Paris Zoo and National Museum<sup>15</sup> and believed that the Zoo was more than a place where the 'ignorant' could (or should) stare at exotic beasts in a somewhat stupefied state. While citizens could not be prevented from viewing and enjoying the animals, the collection was always to be maintained, first and foremost, in the name of pursuing scientific knowledge. The Zoo and the Museum, like the menageries that preceded them, were under the control of powerful men of affairs who could shape policy. They were adamant that the living part of the Museum would not be mistaken with ordinary and frivolous menageries and trained animal shows that were flourishing (Zuckerman 1979; Hahn 1968).

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<sup>12</sup> Unlike Louis XIV, neither Louis XV nor Louis XVI was particularly interested in animal collections and the Versailles menagerie suffered considerable decline during and after these monarchs' periods of rule, its survival attributable to a kind of royal inertia that can sustain court traditions even in the face of a lack of interest by individual monarchs (Mullan & Marvin 1987; Cherfas 1984).

<sup>13</sup> There is a certain irony in this perspective if one compares it to modern animal welfare opposition to zoos. These views presuppose that subjecting animals to captivity is inherently cruel, despite any attempts to provide the most comfortable conditions for them.

<sup>14</sup> Previously known as the Jardin du Roi, this institution had been established in 1626 by Louis XIII for the study of plants and later broadened its interests to aspects of natural history. During the Revolution the Jardin du Roi came to known as the Jardin des Plantes and was incorporated into the newly formed Musee National d'Histoire Naturelle which previously had a small menagerie stocked with animals confiscated by the police from travelling shows and circuses which had been banned.

<sup>15</sup> The prominent naturalist Buffon, a confidant of Louis XIV and an animal enthusiast as well as an avid hunter, had been the director of the Jardin du Roi in 1739. In association with ongoing anatomical theory of that time, he offered that all living forms related to each other (Zuckerman 1979; Bostock 1993). Frederic Cuvier, often regarded as the founder of modern anatomy, utilised the Jardin des Plantes' resources to produce his studies on instinct and intelligence in animals, as well as his work on comparative anatomy. Sainte-Hilaire, Duvernoy, Milne-Edwards, Gervais, Gratiolet, Lamarck and Latrille were other prominent scientists of the times who were affiliated with the Paris Zoo and National Museum.

The success of the Paris Zoo was a significant catalyst for the establishment of the Zoological Society of London (ZSL) and London Zoological Gardens, as well as other zoos in Europe. The Jardin Des Plantes' indisputable reputation attracted the attention of somewhat envious British officials, particularly Sir Stamford Raffles, a distinguished colonial administrator in the East Indies. An avid animal collector - he possessed a substantial menagerie of his own - Raffles was inspired by the Paris example and wanted to see a similar institution established in London. He found the quality of menageries that existed in and around London to be lacking, believing they were designed to titillate the curiosity of the multitudes rather than to celebrate the achievements of a few. Such a serious national scientific and political deficit needed attending to (Cherfas 1984; Mullan & Marvin 1987; Ritvo 1987; Zuckerman 1979). Ritvo (1987: 207) describes how Raffles' activities as a naturalist mirrored his concerns as a colonial administrator:

... he made discoveries, imposed order, and carried off whatever seemed particularly valuable or interesting. The maintenance and study of captive wild animals, simultaneous emblems of human mastery over the natural world and of English dominion over remote territories, offered an especially vivid rhetorical means of re-enacting and extending the work of empire, and Raffles intended to continue his colonial pursuits in this figurative form ...

Raffles was instrumental in actualising his vision of a London-based collection of living animals for scientific purposes and general interest. He collaborated with Sir Humphrey Davy and Sir Joseph Banks, influential men in their own right, to establish the ZSL in 1826<sup>16</sup>. The ZSL envisaged offering "a collection of living animals such as never yet existed in ancient or modern times" where animals would be gathered "from every part of the globe to be applied either to some useful purpose, or as objects of scientific research, not of vulgar admiration" (Cherfas 1984: 35; Hahn 1968; Mullan & Marvin 1987: 109; Zuckerman 1979). These utilitarian sentiments would reappear many times over with the subsequent proliferation of zoos throughout the remainder of the 19th and the first half of the 20th century.

Although the London Zoo went on to become one of the most famous public municipal zoological gardens, its beginnings were exclusive and privileged. The Zoo was not established to provide a recreational facility for the general public. Concerned primarily with pursuing scientific interest, the ZSL's Council opened the Zoo in 1827 in Regent's Park, intending to restrict admissions to the elevated classes (Bostock 1993; Cherfas 1984; Hahn 1968; Mullan & Marvin 1987; Ritvo 1987; Zuckerman 1979)<sup>17</sup>. Mullan & Marvin (1987) cite other ways in

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<sup>16</sup> Zuckerman (1979) points out that the ZSL was one of a number of societies established at the end of the 18th and early 19th centuries that were catering for specialised areas of scientific concern. Given Sir Joseph Banks' avid interest in natural history and his integral role in establishing and maintaining Australia as part of the British Empire (Gascoigne 1994), it is interesting to speculate on what, if any, influence he would have had in the development of Australasian acclimatisation societies and early zoos.

<sup>17</sup> Sundays were reserved for members and guests. Non-members, or 'strangers' as they were called in the regulations, had to pay a fee and to have secured the endorsement of a member who had made a written request to the Society. Despite the restrictive aims of this policy, it proved difficult to enforce as tickets became easier to obtain. By 1834 members were acquiring passes for people they did not know well, and non-members could purchase tickets in local pubs. The Society's new Secretary finally convinced the Council in 1834 that it would be in the best interests of the Society's flagging revenues to admit all those - members or otherwise - who were willing to pay a fee (Bostock 1993; Ritvo



which privilege and influence have contributed to London Zoo's development. For several years after the Zoo opened, animals continued to be supplied from royal menageries (such as Windsor Park and the Tower of London) and as gifts from princes, lords, consuls and foreign leaders. They also note that the successful acquisition of government land for the Zoo only resulted from a long and protracted struggle whereby officials had to be convinced of the worthiness of such a project. Similarly, Hahn (1968) reports that due to restrictive land regulations, ZSL members had to call in several favours before gaining permission to erect animal cages at the Regents' Park site.

The example of the London Zoo also provides some valuable insights into what was to become a widespread and enduring scientific and educational conservatism in zoos. By the mid 19th century, Linnaeus' system of classification for plants and animals was having a profound effect on both the science of zoology and the organisation and interpretation of zoological collections (Bierlein 1991; Brambell 1980; Zuckerman 1979)<sup>18</sup>. Zoos became a focal point for the emerging science of zoology by virtue of the animals they held or could hold (both alive and dead); the race was on to see who could identify and name the most specimens or collect the most unique animals. The zoos of the late 19th and early 20th century were characterised by their 'postage stamp' collections and their focus on taxonomic interests in zoology and biology (Mullan & Marvin 1987). Zuckerman (1979) describes how, despite all its access to the most current scientific knowledge of the day, the London Zoo resisted exploring new areas of zoological science. The ZSL remained exclusively committed to a straightforward study of anatomical form and classification. Brambell (1980) suggests that most zoos lost their scientific integrity when the science of zoology moved away from anatomy. Supposedly scientists exhausted the supply of knowledge that could be gained from studying zoo animals. The life sciences were now the new focus of concern, but had not been developed sufficiently to contribute to managing live animals in captivity. Hence, there was little incentive for 'serious' scientists to remain involved with zoos. Today, zoo critics and opponents remain dissatisfied with zoos' rigid adherence to taxonomic understandings of animals and species-based approaches to conservation. These views are discussed further in Chapter Four.

### **3.5.2 An Evolving Zoo Identity: in Pursuit of Legitimacy**

By the middle and late 19th century the zoo of today's era was becoming established in western society<sup>19</sup>. There is little doubt that zoos were a popular destination, particularly for the middle classes. It became a public right to have access to a zoo and, at the very least, zoos were to be opened to a group of subscribers or to people paying an entrance fee. This growth has been linked closely by Mullan & Marvin (1987) and Zuckerman (1979) with a sense of civic pride. Many of these new zoos were being established by groups of prominent citizens who perceived

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1987). The policy of members-only Sundays, however, was to remain in place until as late as 1957 (Mullan & Marvin 1987).

<sup>18</sup> Previous to Linnaeus' work, most anatomical studies of exotic animals were largely unsystematic, driven more by an uninformed curiosity than a desire to test the strength of new theories against what was being observed.

<sup>19</sup> The term 'zoo' was coined in 1867 by the music hall artist 'The Great Vance' who sang 'walking in the zoo is the OK thing to do' (Bostock 1993; Mullan & Marvin 1987). The word 'zoo' was also now included in the Oxford English Dictionary and became part of the international English vocabulary.

the need for *their* city to have a zoological garden. Zoological gardens could now be found in many major European cities (Dublin, Bristol, Amsterdam, Frankfurt, Basle) and several cities in America and Australia (Bostock 1993; Zuckerman 1979; Mullan & Marvin 1987; Cherfas 1984). Mullan and Marvin (1987) highlight with certainty that the growth of this particular model of zoological garden, an entirely European invention, was facilitated by European colonisation of other parts of the world<sup>20</sup>.

Australian zoo beginnings bear a striking resemblance to the zoological gardens in Europe and the other colonies. They also embody important differences. By the 19th century, some early Australian settlers imported numerous species of plants, birds and animals in great numbers in an attempt to render the landscape into a version of the English countryside they longed for. In all Australian colonies, and in New Zealand, these importations were under the control of specially appointed Acclimatisation Committees or Societies<sup>21</sup>. While the objectives of these organisations were very similar to the British acclimatisation societies, Ritvo (1987) suggests that a key difference was the colonists' desire to supplant the native fauna, rather than to supplement and domesticate it.

These Committees formed the foundation of municipal zoological gardens in Australia. Their briefs were strikingly similar as demonstrated by Table 3. More detail is also provided in Appendix 5. Like the European zoological societies, these organisations were constituted entirely by leading citizens and holders of public office who acted in both managerial capacities and as benefactors. In addition to the air of respectability that such influential members accorded to the Societies, their power also enabled them to 'simplify' what were normally multitudinous arrangements involved in inter-colonial and international transactions. Jenkins (1977) compiled a list of personalities and benefactors who were instrumental in establishing and maintaining a particular pattern of zoo development in Australia - as is the case in other countries - over the course of their history<sup>22</sup>.

This was a significant period of zoo development. Zoos were proliferating and becoming a favoured leisure destinations among the general public in most Western societies. Accompanying this trend were the beginnings of what was to become the international zoo community's contemporary justification for the existence of zoos; conservation, education, research and recreation. These four concepts are discussed in greater detail in Chapter Four. The founders of early zoos were declaring, in a manner similar to the founders of the ZSL, that

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<sup>20</sup>They do, however, qualify their claim by noting that zoological gardens did not take hold in South and Central America in a similar manner. The Spaniards and Portugese, who did not have a preference for zoological gardens, still maintained considerable cultural influence in these areas during the 19th and early 20th century (1987: 112).

<sup>21</sup>Jenkins (1977) offers a detailed description of the kinds and numbers of plants, animals, and birds introduced by the various Australian acclimatisation Societies.

<sup>22</sup>E.J.L. Hallstrom, President of Taronga Trust for 25 years, spent an estimated one million pounds on Australian zoos, and on Taronga Zoo in particular. He funded overseas expeditions, animal purchases, and building projects. His benevolence came at a price. He is purported to have ruled with an 'iron fist', rejecting most suggestions for improving the Zoo - unless they were his ideas (Hediger 1966; Jenkins 1997)

**TABLE 3: Early histories of Australasian municipal zoos**

Zoo	Acclimatisation Origins
Taronga Zoo	<ul style="list-style-type: none"> <li>• 1852 idea for a Zoological Society &amp; public zoo first proposed at a public meeting</li> <li>• Zoological Society involved in introducing new &amp; rare animals for domestication and acclimatisation</li> <li>• Zoo would provide for scientific, educational &amp; tourist ventures</li> <li>• 1880 State government grant subsidises donations &amp; member subscriptions to finance first animal collection, subsequent grants tied to money raised by Zoo</li> <li>• 1884 Taronga Zoo opens to public</li> <li>• 1908 Zoo granted Royal Charter</li> <li>• 1912 Assisted by the Premier, more suitable site secured for the Zoo</li> <li>• 1914 Zoo re-opens to public for small fee</li> </ul>
Auckland Zoo	<ul style="list-style-type: none"> <li>• 1922 local councillors purchase private animal collection from prominent citizen J.J. Boyd</li> <li>• Creators of Taronga Zoo participate in planning for Zoo</li> <li>• Encouraged by Mayor of Auckland, animal collection planning for the Zoo heavily influenced by donations of animals secured overseas by wealthy businessmen</li> </ul>
Perth Zoo	<ul style="list-style-type: none"> <li>• 1896 Western Australian Acclimatisation Committee formed</li> <li>• 1898 Zoo opens to public and Act of Parliament sanctions the Acclimatisation Committee as Zoo's Board of Management</li> <li>• Acclimatisation Committee accepts gifts of animals and imports exotic species for release to wild</li> <li>• First director member of the LeSoueff zoo family dynasty</li> </ul>
Adelaide Zoo	<ul style="list-style-type: none"> <li>• 1882 the Acclimatisation Society changes its name to the South Australian Zoological &amp; Acclimatisation Society</li> <li>• The Society finances itself through member subscriptions, donations and government subsidy tied to amount raised by Zoo</li> <li>• 1883 after protracted dispute over removing land from Botanic Gardens, land secured for Zoo site</li> <li>• 1883 Zoo opens</li> </ul>
Melbourne Zoo	<ul style="list-style-type: none"> <li>• 1857 first meeting of the Acclimatisation Society of Victoria</li> <li>• Dr. Thomas Black suggests the Society expand its interest in propagating poultry &amp; cage birds and establish a public zoo</li> <li>• Soon after, government grants land and money to the Society for establishing the Zoo</li> <li>• Substantial part of first animal collection donated by foundation member of the Society</li> <li>• 1871 acclimatisation and zoological interests merge, Society changes its name to the Zoological &amp; Acclimatisation Society of Victoria</li> <li>• 1884 Zoological &amp; Acclimatisation Society Incorporation Act passes creating a management committee consisting of elected and appointed members</li> <li>• 1910 Society granted a Royal Charter by King Edward VII</li> </ul>

their organisations were being established for the purpose of science and education (Bostock 1993; Zuckerman 1979; Mullan & Marvin 1987; Cherfas 1984). Zoos' transition from strictly elite to more publicly-oriented institutions, may have created the need for offering such defences. In effect, zoos were moving into a period whereby they would need to be accountable to the public. It is valuable to consider that these organisational goals were forming in the context of particular ethical, economic and political conditions.

The animal welfare issues that continue to plague zoos today were growing in strength during this time. Consideration for animals had intensified considerably<sup>23</sup>. Most of the welfarist activity was centrally located in England (Ryder 1989). However, humane advocates were active across the Empire by the 1840s (Stratford 1995). It seems feasible to assume that there were repercussions for the growing international zoo community as well. The Royal Society for the Prevention of Cruelty to Animals was founded in 1824 and the Royal Society for the Protection of Birds was set up in 1889. Anti-cruelty campaigns resulted in the enactment of significant pieces of legislation: the consolidation of The Prevention of Cruelty Act (1849) and the Wild Animals in Captivity Protection Act (1900) (Bostock 1993; Ryder 1989). The latter reform was implemented in response to animal welfarists' dissatisfaction with the austere conditions suffered by animals in zoos and circuses.

Early claims by the ZSL that its new zoo would provide superior conditions for its animals would have been debated. It was becoming hard to ignore detrimental effects that inadequate menagerie-like conditions were having on animals such as the big cats. Behaviours such as neurotic pacing or bored expressions were displeasing to watch. There was a growing interest in and desire for more naturalistic enclosures. Moreover, life expectancies for many zoo animals were quite poor at the time (Bostock 1993). The average life span for the lions, tigers, leopards and pumas at the London Zoo was a dismal two years<sup>24</sup>. This would have had serious financial and public relations ramifications for the Zoo, as the carnivores were the most popular attractions for those times (Ritvo 1987).

Zoo designs did not necessarily reflect the physiological or psychological needs of the animals they contained. Rather, like the earlier royal menageries, wild and dangerous animals were confined in small cages which allowed for optimal viewing from the vantage point of clearly marked and manicured park pathways. Nineteenth and early twentieth century zoos were constituted by "conspicuously attractive edifices designed in whatever was then the current fashionable style" and essentially were "places for outings in pleasant surroundings" (Mullan &

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<sup>23</sup> This is also a time when distinctions concerning the kinds of consideration we afford to domestic animals and 'wild' animals begin to appear. Ryder (1989) suggests that while the need for humans to show kindness to animals was well established by the Victorian era, wild animals essentially remained outside the protection afforded by legislative reforms. This resistance may have resulted from the landed gentry believing they owned, not just the land, but the wildlife on it. The legislation to protect captive animals, he believes, was a function of a particular Edwardian anxiety over the adverse conditions suffered by zoo and circus animals. The irony here may be how the captive condition of zoo animals may have neutralised their 'wildness,' and afforded them a level of care that was generally reserved for domestic animals.

<sup>24</sup> This compares with an estimated eleven year life span for wild tigers and eight to ten years for lions in the wild.

Marvin 1987: 48). Additionally, the taxonomically-informed animal collections and exhibits rendered an unruly nature into submission (Ritvo 1987).

Carl Hagenbeck, a well known animal trainer and trader, introduced notable changes to zoo design and husbandry practices during the late nineteenth and early twentieth centuries that were to have an enormous influence throughout the international zoo community. While Hagenbeck's designs may not have escaped symbolising humans' dominion over nature, they did offer a way of presenting captive animals that was unique for those times. Hagenbeck wanted to recreate some semblance of the animal's 'normal' life and reduce perceived barriers between the observer and the observed (Hagenbeck 1909). When he opened his zoo in Stellingen near Hamburg in 1897, visitors could now view animals in large, open-air naturalistic enclosures. Many of the bars were gone and replaced by grassy ditches or water-filled moats<sup>25</sup>. There was extensive planting of trees and shrubs, as well as series of winding pathways leading the visitor to each exhibit. Some exhibits were arranged so that it appeared as if carnivores and herbivores, predator and prey, were in virtually the same exhibit (Mullan & Marvin 1987; Street 1953; Cherfas 1984; Bostock 1993; Curtis 1978).

Additionally, Hagenbeck used his experience as an animal trainer to improve contemporary animal management practices in zoos. He emphasised differences among individual animals, the need for positive reinforcement and that training captive animals had occupational and psychological usefulness (for the animals). Until this time, animals from warmer climates were housed in airtight, heated buildings in the fear that exposing them to temperate climates would seal their fate. Unfortunately, these methods did little to preserve the animals' health. Hagenbeck was the first to dispense with such methods, showing the zoo world that, within reason, animals could adjust to climatic changes (Hagenbeck 1909; Mullan & Marvin 1987; Street 1953; Cherfas 1984; Bostock 1993).

In comparison to Hagenbeck's interest in dispensing with cruel treatment of and inappropriate housing for wild animals, the commercial aspects of his profession<sup>26</sup> would seem to be in direct contradiction to extending care to non-human nature. The growing number of zoos had created a market for animal specimens, as it was now no longer feasible to build a collection on gifts from fellow rulers and loyal subjects (Mullan & Marvin 1987). Exotic animals had become "a kind of currency" (Zuckerman 1979: 19). Hagenbeck was noted for his architectural and husbandry

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<sup>25</sup>Hagenbeck studied the maximum leaping distances of animals and designed moats in accordance with those specifications in order to prevent animals escaping for their enclosures (Curtis 1987).

<sup>26</sup> During the latter half of the 19th century, the commercialisation of zoos was actualised in other ways. Ritvo (1990) recounts how the ZSL was forced to admit anyone willing to pay an admission fee after the initial appeal of London Zoo for its supporting members began to wane. Mullan & Marvin (1987) discuss how German zoological societies' members were shareholders and zoos needed to offer them monetary, as well as scientific, educational and recreational benefits. Restaurants, bars, concert halls, rooms for parties and games were incorporated into these zoo grounds as a means for increasing revenues. Most modern zoos remain dependent upon this type of income for supplementing gate-takings and government subsidies.

innovations, as well as for the size of his animal trading business<sup>27</sup> (Cherfas 1984; Street 1957; Mullan & Marvin 1987). His business supplied animals for zoos in Australia, America, Africa and Asia and circuses in America and Europe (Hagenbeck 1909). Table 4 lists the daunting list of the number of species Hagenbeck traded over a 20 year period.

It is sobering to contemplate the effect that this kind of trade would have had on the wild populations of these animals given that Hagenbeck was only *one* of many animal traders operating businesses around that time. Bostock (1993) offers a rather meagre defence for Hagenbeck, claiming that his animal trade would not have had as dramatic an effect on the environment as farming and sporting practices of the day, or the subsequent World Wars. It remains that zoo practices of that time would have made serious impacts on populations of wild animals, irrespective of any contrasts that might be made with other land-use practices. Zoos would eventually have to account for their practices when international regulations in wildlife trade were introduced during the second half of the twentieth century.

Nonetheless, conservation concerns were growing during the late nineteenth century, and there were a few very early signs of zoos taking this imperative on board. In Australia, the typical colonial perspective, indifferent (or in some cases hostile) towards the natural landscape, began to shift towards an appreciation of the uniqueness of Australian natural and cultural heritage, and the pragmatic use of natural resources (Frawley 1994). This growing consciousness would have had an impact on early Australian zoos. By the late 1880s and 1890s there was mounting opposition from conservation-minded citizens about the harmful effects that introducing exotic plants and animals would have on the fragile Australian landscape. As these criticisms grew, the acclimatisation societies eventually switched their emphasis from introducing exotic animals to focusing more on maintaining and developing their zoological gardens (Jenkins 1977; Rix 1978)<sup>28</sup>.

In America, the growth of the early conservation movement also appeared to be influencing zoo policy. The National Zoological Park is purported to be the first zoo established in America dedicated to the preservation of native species<sup>29</sup>, as well as to the "advancement of science and the instruction and recreation of the people" (Crosby 1979: 30; Woodruffe 1981: 4). Yet, there was considerable cynicism over these endeavours early in the twentieth century, comparable to some of the anti-zoo sentiment emanating from the conservation community today (see Chapter Nine). This doubt may well have been embodied in the debate between the United States Senate

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<sup>27</sup> People were being exploited as well. In an attempt to rejuvenate lagging profits of his animal trading business, Hagenbeck began to import and exhibit indigenous peoples from foreign lands: Lapps, Nubians, Eskimos, Somalis, Indians, Kalmucks, Cingalese, Patagonians, Hottenots and others (Hagenbeck 1909: 85; Mullan & Marvin 1987: 87; Bostock 1993:13).

<sup>28</sup> Jenkins (1977) notes that acclimatisation activities still found numerous supporters well into the 1930s, but the tide eventually turned against such pursuits due to a growing awareness of animal ecology.

<sup>29</sup> The New York Zoological Society also touted the conservation banner when it was chartered as a non-profit organisation. It endeavoured to provide an educational and recreational experience for the public through exhibits, research programs and conservation efforts and identified wildlife conservation as one of its foremost objectives (Woodruffe 1981; Curtis 1978).

**TABLE 4: Inventory of animals provided by Hagenbeck to zoo community**  
*(Riechenbach 1980 as cited in Mullan & Marvin 1987: 112).*

Lions	1,000
Hyenas	800
Birds	100,000
Camels	300
Tigers	400
Elephants	300
Giraffes	150
Leopards	700+
Antelope	600
Bears	1,000+
Monkeys	tens of thousands
Crocodiles, Boas, & Pythons	thousands
Javan Rhinoceros	17
Sumatran Rhinoceros	17
Indian Rhinoceros	7

and Congress over whether funds should be allocated to a national, scientifically-oriented zoo. The Senate was largely supportive of such an endeavour. The Congress, however, appeared to reflect popular sentiment by questioning the need for a zoo which would have to import exotic species and 'lock up' native species (Crosby 1979).

### 3.6 SHIFTING TO A NEW ERA

While conservation interest was building gradually during the early part of the twentieth century, further zoo developments had slowed. Western environmental values at this time focused on 'wise use' concepts in resource management (Frawley 1994). Wildlife conservation efforts emphasised the prevention of species extinctions, but had yet to consider the welfare of individual animals (Ryder 1989). Table 5 lists some societies and conventions that were established during this time.

There were few signs that conservation had infiltrated zoos to any greater degree than during the latter part of the previous century, nor had scientific or educational programs advanced very far. This trend is not entirely surprising, given that zoos were operating under a prevailing context of political and economic upheaval surrounding the two World Wars. Extensive personnel, material, and monetary shortages in zoos would have severely hampered their efforts to maintain and upgrade exhibits. Many zoos, including those in Australasia, fell into a state of disrepair (Appendix 5)<sup>30</sup>. Zoos began to depend on crowd pleasing activities such as chimpanzee tea parties, elephant rides and other animal shows to attract visitor revenues.

Despite this malaise, several developments occurred that would have a significant influence on zoo policy. Two influential associations were established: the IUDZG was formed in 1935 and the American Association of Zoological Parks and Aquaria (AAZPA) in 1924 (Zuckerman 1979). The Whipsnade Zoo, inspired in part by Hackenbeck's achievements, was opened in 1931 in England 70 miles outside London. Chalmers Mitchell, the Secretary of the London Zoological Society from 1903-1935, believed that there was a need for a country property whereby animals would be presented in groups living in 'natural' surroundings. These conditions would foster normal social behaviours, particularly breeding patterns necessary for maintaining a constant supply of exhibit animals, that could not be reproduced in the confined city zoo spaces. Additionally, animals from the London Zoo could be sent to Whipsnade for periods of rest and recuperation after illness (Street 1953; Bostock 1993; Curtis 1978). By the late twentieth century, this model of operating dual city-country properties has become a critical component in the management of several Australian zoos (Appendix 5).

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<sup>30</sup> Although the Australasian zoos endeavoured to supplement their government subsidies with membership subscriptions and donations, by the early part of this century their financial well-being had become so precarious that their respective state governments had to assume control.



**TABLE 5: Significant developments in wildlife protection during the early 20th century (Ryder 1989)**

1900	Britain, France, Spain, Portugal, Germany, Italy & Belgian Congo sign Convention for Preservation of Animals, Birds and Fish in Africa to curb decimation of game
1903	Society for Preservation of Wild Fauna of the Empire (Fauna Preservation Society) founded, focusing on species facing extinction
1912	Society for the Promotion of Nature Reserves in London (Royal Society for Nature Conservation) founded, focus on importance of preserving habitats for wildlife
1922	International Committee for Bird Preservation founded

### 3.7 MODERN ZOOS

The latter half of this century has been a formative period of consolidating and popularising both modern environmentalism and the role of zoos in conservation. By the middle of the century, thinkers such as Rachel Carson ignited Western society's concern about the harm that humans were causing to the biosphere. The cumulative effects of industrialisation and increased material consumption by an expanding population were considered to be serious problems (Pepper 1986). Awareness of mass species extinctions was building. Simultaneously, a post-war regeneration had launched zoos, now major recreational attractions, into another boom phase<sup>31</sup>. Subsequent zoo redevelopment during the 1960s and 1970s incorporated new philosophies and program priorities as well as exhibit designs (Appendix 5).

#### 3.7.1 Developing Zoo Sciences

One area of scientific study to have a significant impact on zoo practices was Ethology. The study of wild animal behaviour has been growing in popularity during the second half of this century (Ryder 1989; Mullan & Marvin 1987)<sup>32</sup>. By the late 1960s and early 1970s, zoo veterinarians and comparative psychologists were using ethology to find ways to foster animals' natural behaviours in captivity and eradicate the neurotic, stereotypical acts that visitors viewed so often (Hediger 1950; Curtis 1978). It was hoped that such advances would benefit not only the animals, but would also foster a better understanding of animal behaviour amongst the viewing public. Zoo-related sciences such as animal ecology and veterinary medicine for exotic animals, conspicuously absent during the first half of the century, made marked advances during the 1970s and 1980s. An especially important finding was the identification of stress as a threat equal in impact to animals as disease<sup>33</sup>. Additionally, field studies now highlighted the intricacy of wild animals' social relations (Greene 1987), and zoos began to apply these findings to the captive situation in order to enhance animal breeding and the overall welfare of species in their care (eg Benzon & Smith 1974; Dixson 1982; Rahn et al 1978).

#### 3.7.2 Exhibiting Animals and Educating Visitors

Zoo exhibit designs continued to evolve as well. By the end of the early 1970s, most Western zoos had 'naturalistic' moated exhibits similar to Hagenbeck's original concept. However, the 'nature' animals were set in was often being simulated with high-tech materials. Corresponding interpretive materials comprised large graphic images and interactive gadgets. Naturalistic habitats were also a part of the landscape immersion concept introduced into zoos in the early 1980s. However, these new designs strive for even more realism by placing the visitor, in effect, into the animal's environment (Greene 1987; Bierlein 1991; Park 1993). The open-range

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<sup>31</sup> Both Zuckerman (1979) and Mullan & Marvin (1987) list the escalating number of zoos; by 1920 there were about 120, by 1959 the International Zoo Yearbook listed 309, and by 1978 883 zoos were found in the Yearbook lists. There are currently an estimated 1200 zoos worldwide.

<sup>32</sup> Henri Hediger's (1950) publication of *Wild Animals in Captivity* was an early indicator of a growing awareness that zoos needed to be more responsive to animals' physiological and behavioural needs in captivity. Hediger had expanded upon Hagenbeck's animal training and behavioural work and laid the foundations for applying the science of ethology in zoos.

<sup>33</sup> Many exhibit designs now incorporated flight distances; the amount of space an animal needs to retreat from approaching creatures in order to feel safe (Greene 1987).

zoo format was increasing in popularity as well. Safari parks are now well established in Europe and Australia and animals are kept in open paddocks simulating their 'natural' surrounds (Appendix 5). The appeal of this strategy lies in the fact that people can view animals close-up in quite spacious naturalistic surroundings, simulating the experience of encountering animals in the 'wild' without the associated dangers (Mullan & Marvin 1987). Despite these significant shifts, today most older zoos exhibit a patchwork of the total range of design trends. Bierlein (1991: 12) has adroitly likened this planning pattern to Lindblom's (1959) disjointed incrementalism whereby:

An irregular pulse of funding leaves its mark on the [zoo] landscape: exhibits that represent design eras separated by long gaps in time. Consequently, zoos in transition typically contain a disjointed set of exhibits. Older exhibits and facilities stand as conspicuous artefacts of the past, while newer, more naturalistic exhibits begin to surround them. It's not surprising that redeveloping zoos are often full of architectural and thematic collisions, as well as transitional path systems and detours around exhibit construction projects.

### 3.7.3 Education Trends

By the latter half of the twentieth century, education in zoos was becoming more complex. Theories of visitor behaviour and interpretation were applied to the zoo context in order to more fully develop zoos' potential to provide informal learning experiences for visitors (eg Chaplin 1975; Kirchshofer 1981; Wolf & Tymitz 1981). Yet, most zoo programs focused on formal schools education programs, primary pupils in particular. There were several indications that traditional approaches to education would be redefined in the coming years. By 1966, the International Zoo Yearbook (IZY) featured a section titled 'Zoo Education'. The International Association of Zoo Educators (IZE) was formed by several zoo education officers in Europe in the late 1960s who were interested in examining the various problems and potential of zoo education. By the late 1970s, IZE membership included American and Australian representatives and dialogues centred on whether zoo education should be focused merely on schools' curriculum or whether it should also promote an appreciation for wildlife (Rabb 1994; Finnie 1987; Hatley & King 1993).

In the 1980s, zoo education departments began to weave more environmental themes throughout program formats in an effort to wake "the sleeping giant" of environmental education (Mitchell 1991: 12; Kellert 1987: 11). By 1982 ecological interpretation and nature conservation were the predominant theme at the IZE Conference and 'Communicating for Conservation' was the focus for the 1988 event (Hatley & King 1993:206). In addition to an earlier emphasis on communicating messages in order to create appreciation for species and their habitats, many formal and informal programs now targeted *motivating* people to act on behalf of conservation from some understanding of the critical role our species plays in ecosystems locally and worldwide (Rabb 1994). School children were (and remain) an important focal point for formal education, although zoos began extending their brief to include other audiences. Several Australasian zoos have recently begun to promote the concept of community education (eg Mitchell 1991; Hohn 1988; Hunt 1995; Woodside & Kelly 1995).

### 3.7.4 Emerging Industry-wide Conservation Principles and Practices

One of the more telling ways in which zoos responded to growing environmental and animal welfare concerns in late twentieth century was to consolidate and strengthen their resolve to become conservation-oriented organisations. Throughout North America, north-west Europe, Australia and New Zealand, zoo professionals questioned the existence of their own industry and asked what they should achieve in the future. Many zoo staff members realised zoos' consumptive practices of the past were no longer feasible. Stocking policies would now have to consider the shrinking supply of wild animals and organisational and exhibit philosophies would need to reflect a changing environmental ethic. Displaying exotic animals for its own sake no longer provides sufficient rationale for zoos' existence and husbandry practices had to account for individual animals' well being.

These conditions created the perceived need to formalise the zoo community and elevate organisational performances. This is a time when the notion of 'good' and 'bad' zoos appeared. 'Good' zoos are those that provide quality conservation and education programs, 'bad' zoos do not make such provisions and subject their animals to inadequate housing (eg Woodruffe 1981; Maple 1995; Maple et al 1995; Bostock 1993). Several regions formed professional associations as a response to growing criticism. For example, the Federation of Zoos in Great Britain and Ireland was established in 1966. The aim of the Federation was to alleviate the real and imagined concern of animal welfare groups by raising zoos' operating standards, and to this end, to lobby for legislation which would impose compulsory inspections for its member institutions. The initiative was delayed by an opposing rival organisation representing safari parks, but was finally actualised with the passing of the Zoo Licensing Act in 1981 (Bostock 1993; Zuckerman 1979). The establishment of the Association of Zoo Directors of Australia and New Zealand (AZDANZ) in 1967 signalled the Australasian zoo community's perception of the need for a fraternity among the region's zoos. For the first 13 years of its existence, AZDANZ functioned primarily as a directors' association, but gradually evolved into a mechanism for promoting and facilitating more committed, coordinated and scientific approaches to zoo management, acquisition, disposition, exchange, breeding and conservation of the region's zoo animals (Baker & George 1988; Wood 1992)<sup>34</sup>.

Across the globe, there were calls for zoos to rethink their strategies. The ZSL launched the International Zoo Yearbook (IZY) in 1959, a publication that theoretically would address a paucity of published information on progress being made by zoos in animal husbandry and management and display techniques (Zuckerman 1979). The Yearbook was also to become a political platform for members of the international zoo community and a barometer for detecting the nature of international zoo activities. The first volume emphasised how the

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<sup>34</sup> AZDANZ was eventually replaced by the ARAZPA and the Council of Governing Bodies of Australian Zoos (COGBAZ) in 1990. COGBAZ was dissolved several years later, leaving ARAZPA as the main governing body which now includes individual and institutional members (Jacob-Hoff 1992). Organising activities in the zoo community were and are not limited to senior managers. The ASZK was formed in 1976 by a small group of animal keepers based at Adelaide Zoo. The association, endeavouring to increase liaisons among zoo personnel in the region, produces a quarterly journal and jointly hosts the ARAZPA/ASZK annual conferences.

need to encourage conservation of remaining wild fauna becomes more urgent every day ... it is in the interests of everyone that the need to conserve wildlife and the move to develop zoos should be reconciled ... this will be possible only if we ensure that zoos are designed and maintained in such a way that the wild animals housed in them not only live long in captivity, but also live in conditions where they can reproduce themselves (Zuckerman 1960: i).

The times dictated that zoos maintain self-sustaining animal populations and increase the social relevance of their collections. The IZY's first Conservation Section featured three articles highlighting developments and opportunities for zoos and conservation in 1962. By 1977 this section was now titled 'Breeding Endangered Species in Captivity' and contained 22 articles on problems particular to breeding endangered species, genetic management issues, applying behavioural studies to captive breeding strategies, and demographic models for managing captive populations.

The realisation that nature would not offer an unending supply of wild animals for zoo collections was manifest in the growing emphasis on conserving endangered species as an integral component on zoos' programs. Gerald Durrell's Jersey Zoo was one of the earliest efforts to highlight the relevance of captive populations of endangered species for wildlife conservation. His animal collection was oriented specifically, and exclusively, for breeding endangered species for eventual reintroduction to the wild. He created the Jersey Wildlife Preservation Trust in 1963 in order to ensure the survival of this park (Martin 1975)<sup>35</sup>.

The first international symposium on the role of zoos in conservation was held in 1965. Zoo professionals perceived a need for an international organisation that would create a policy on distributing rare animals for exhibition. This event was sponsored by International Union for the Conservation of Nature (IUCN), IUDZG, and the International Council for Bird Preservation. The event was attended by 39 delegates from the three sponsoring bodies as well as those from AAZPA, the Fauna Preservation Society, the ZSL, the Institute of Biology, World Wildlife Fund and observers from several animal welfare non-government organisations, government game departments and commercial animal dealers. The symposium featured sessions on breeding endangered species in captivity; import, export, transport and sale of wild animals; conservation education in zoos; and moral and financial support for conservation through zoos. Additionally, the symposium examined the implementation of governmental controls on the importation and transit of rare animals (Jarvis 1965).

These conventions would probably have been organised in the context of a particular political climate that eventuated in the signing of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1972. The implications of international and national wildlife trade regulations were - and still are - sensitive issues for zoos. Zoo

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<sup>35</sup> This organisation now includes American and Canadian affiliate trusts, making it a powerful force in the international zoo community. The Jersey Zoo, unencumbered by the commercial imperatives of many municipal zoos, is now renowned the world over for its capacity to maximise the utility of ex-situ conservation for in-situ projects.

professionals wanted to be seen to be an *active* partner in this push for stricter wildlife trade regulations, but they were also quite concerned by them. Duplaix and Grady's (1980: 171) commentary captures the spirit of the zoo community's concerns:

How does this global convention affect zoos; will it put an end to the purchase of rare animals and, more importantly, could it curtail the growing and vital exchange of captive-bred animals between zoos ... One thing is certain: CITES not only multiplies the red-tape and paper work, which could discourage many zoos from attempting to overcome this challenge, but also it will, and must, affect the whole concept of breeding endangered species - the whys, the hows, and the what nows.

These issues were no less significant for the Australasian region. There was a discernible absence of exotic fauna in Australasian zoos and of Australian fauna in overseas zoos due to the region's strict regulations which were designed to prevent the introduction of diseases and feral pests. During this time no importation of birds was allowed and numerous restrictions existed for many kinds of other animals. AZDANZ consulted with and advised Australian Commonwealth authorities on the suitability of overseas public zoos to hold Australian fauna and on other matters (Strahan 1974). These dialogues presumably would have included zoos negotiating for policies which were in their best interests; namely trying to ensure that regulations had a maximum impact on the illegal wildlife trade and a minimal affect on zoos' ability to exchange animals or occasionally collect them from the wild.

By the 1970s Australasia's cooperative species management programs were forming in response to several factors. First, native species were growing increasingly rare or were simply difficult to obtain from the wild. Second, quarantine restrictions on importing many species constrained access to stocks that might otherwise be imported directly from certain disease-free countries. Third, the complete ban on importing birds highlighted the need to carefully manage existing stocks to ensure future displays. Finally, unwieldy logistics and prohibitive costs associated with importing larger mammals ensured that zoos found it too difficult to feature these animals. Several studbooks were created for high profile zoo species (giraffe, zebra, hippo and cassowary) and for species known to be declining in Australasian collections. There was some breeding and collection planning for priority species and initiating an annual census for other species. Generally speaking, however, extensive schemes for breeding stocks were not initiated until the mid 1980s (Baker & George 1988).

In the earlier part of the 1980s there was a growing realisation that the viability of zoos' contribution to conserving endangered species increasingly hinged upon the pooling of efforts, as no single institution had either the genetic or organisational resources necessary to guarantee the long-term survival of a species (Lovejoy 1980; Mallinson 1980; Tanglely 1984; Van Dam & DeBoer 1980). By the mid 1980s the emphasis on breeding endangered species in captivity was at its peak, and now reflected an advanced concern with the genetic viability of zoo populations of species and organisational mechanisms for implementing cooperative breeding schemes.

The dialogue continues today. Foose & Ballou (1988: 27) explain how zoos would function:

It appears that the survival of many species, especially larger vertebrates, will depend upon assistance from captive propagation over the next century or more. Zoos and aquaria can and must serve as arks for vanishing wildlife. However, captive propagation can truly assist conservation of endangered species only if zoo and aquarium populations are managed genetically and demographically in a manner to reinforce, not replace, wild populations. In the future, conservation strategies will ideally incorporate both captive and wild populations that are interactively managed for mutual support, that is, through regulated interchange of animals of at least genetic and demographic material that can be infused periodically into remnant wild populations or re-established in vacant wildlands ... Reciprocally, the wild populations, even if only remnants, will still be subjected to natural selection and thus maintain some semblance of the characteristic genetic makeup of the species in the wild.

The complexity of interchanging animals among institutions and between the captive and wild situations gave rise to the development of 'multi-institutional propagation programs' that would manage the myriad genetic, demographic and organisational considerations in coordinated breeding schemes for endangered species. These Species Management Programs (SSPs)<sup>36</sup> were developed by zoos in North America, Europe, Australia<sup>37</sup>, New Zealand and Japan under the auspices of their respective regional zoological associations (Rabb 1994; Foose & Ballou 1988). The CBSG, a specialist group of the IUCN's Species Survival Commission (SSC), was formed in 1979 to provide assistance and technical advice and facilitate coordination for captive breeding programs in the international zoo community<sup>38</sup>. In addition to these organising efforts, artificial and assisted reproduction techniques were increasingly being borrowed from agriculture and human medicine and applied to zoo populations of animals (eg Hearn 1986; Merilan et al 1982).

### 3.7.5 Searching for a Balance Among Competing Priorities

In the last two decades, zoo conservation policy development has been evolving in response to various criticisms and changing contexts, values and demands. These situations have enhanced and restricted zoos' capacity to develop truly progressive conservation programs which reflect contemporary ecological principles. Essentially, the international zoo community has been engaged in continuing internal and external struggles to define and actualise a conservation identity for itself.

Although zoos had been facing problems such as providing humane treatment for their captive animals and the need to restrict their intake of wild animals for their collections, animal welfare and conservation issues were largely separate. By the late 1970s and early 1980s, however, these two issues converged for zoos with the growing importance of animal welfare concerns

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<sup>36</sup>The objectives of SSPs are generally to maintain species' genetic diversity (usually stated in terms of 90-95% of heterozygosity) over long periods of time, often for a single human generation or 100 years (Rabb 1994: 160).

<sup>37</sup> The ASMP was formally established in 1983 as a means of coordinating genetic management of targeted species reproduced in regional public zoos. The Plan, which is discussed in Chapter Six, was extensively revised in 1986 and 1987, and again several years later, by introducing a number of mechanisms for distributing workloads and program costs more evenly amongst participating zoos. The animal records system which had been introduced in 1984 was functioning by 1986 and 31 species coordinators had been appointed by 1987 to coordinate the development of Species Management Plans (SMPs) for a number of species. The Species Management Coordinating Council, made up of ARAZPA representatives, was established to administer the ASMP (Baker & George 1988; Jacob-Hoff 1992). By the end of the decade, Australasia had emerged as one of the most cohesive regions in the international zoo community.

<sup>38</sup> The CBSG was (and continues to be) housed by the Minnesota Zoo in the United States. It remains one of the most highly influential forces in international, regional and national zoo conservation policy processes.

within the conservation movement<sup>39</sup>. Jordan and Ormrod (1978), concerned about the inadequate housing of many animals and the quality of conservation programs in zoos, published *The Last Great Wild Beast Show*. This prominent book posed some difficult questions which remain central to the contemporary zoo debate: is the purpose of zoos to entertain, educate, or study and preserve rare species? By the middle of the 1980s the Royal Society for the Prevention of Cruelty to Animals and a new organisation, Zoo Check, had joined forces to criticise the treatment of animals involved in zoo-based ex-situ conservation programs and stressed the need for conservation in the wild (Ryder 1989). Today, both organisations continue their critique of zoo practices.

These matters pose a complex challenge for zoos, whose contemporary justifications for their practices emphasise the benefits that zoo-based programs have for conserving biodiversity. Zoos have defended some practices (such as euthanising individual animals that are considered surplus to the captive population of an endangered species) on the basis that the benefits conferred to species by virtue of ex-situ conservation measures far outweigh any harm or discomfort that may be imposed on individual animals. Yet, in addition to the problems raised by animal welfare interests, more sophisticated knowledge of conservation biology has also shed light on the very real theoretical and practical limitations of ex-situ conservation as a means for preserving biodiversity (eg Fielder et al 1993; Snyder et al 1996). Several international and national conservation policy statements and strategies have specified the auxiliary role that ex-situ methods should play relative to in-situ methods.

In response to these matters the international zoo community has endeavoured both to clarify and strengthen its conservation identity to itself and the general public. Several prominent zoo organisations changed their names so that the new titles more accurately reflect their conservation mission<sup>40</sup>. One very notable formal response was the World Zoo Conservation Strategy's release in 1993 at the IUDZG's annual meeting. The Strategy endeavours to elucidate the *international conservation* roles of zoos and provides guidelines for implementing conservation-based policies which will enhance the collective potential of zoos for protecting endangered wildlife (CBSG & IUDZG 1993). The document targets national and international policy - and decision-makers and local government authorities; government bodies, councils, and benefactors of zoos and aquaria; zoo and aquaria professionals; other conservation

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<sup>39</sup> Garner (1993) and Ryder (1989) argue that the momentum for conserving endangered species has come, not from a concern for individual animals, but from ecological and utilitarian reasons. Yet, they do cite several organisations (Zoo Check, People's Trust for Endangered Species and International Fund for Animal Welfare) and several notable campaigns that draw heavily upon conserving species for compassion, right-based rationales (whaling, fur seals).

<sup>40</sup> In an effort to provide itself with a more modern image and identity, the New York Zoological Society (NYZS) changed its name in 1993 to the NYZS *The Wildlife Conservation Society* (Weintraub 1993). The Society also altered the names of its five properties: the Bronx Zoo became the International Wildlife Conservation Park; the New York Aquarium is now the Aquarium for Wildlife Conservation; Flushing Meadow Zoo was changed to Queens Wildlife Conservation Centre; Central Park Zoo would now be known as Central Park Wildlife Conservation Centre; and Prospect Park Zoo became Prospect Park Wildlife Conservation Centre (Weintraub 1993). In late 1994, the Captive Breeding Specialist Group changed its name to *Conservation Breeding Specialist Group* to convey more effectively its principles and programs (Miller 1996; pers comm).



organisations, particularly government wildlife agencies. The release of the Strategy is indicative of the aspirations of factions within the zoo community that are eager to clarify zoos' international conservation role. Moreover, the Strategy symbolises an attempt by elites to rally the rest of the international zoo community in the struggle to stave off impending threats to biodiversity, and perhaps threats to the zoo community itself.

Recent conferences and symposiums continue to reflect the zoo community's concerns with determining the boundaries of their conservation imperatives. In the United States key zoo personnel, activists, conservation biologists, and philosophers gathered at a symposium in Atlanta, Georgia in 1992 to debate the future of zoos and aquaria, the treatment of animals in captivity, and appropriate foci for conservation (Norton et al 1995). During these types of meetings zoo professionals negotiate among themselves for the acceptance and eventual adoption of what they believe to be appropriate policies at regional and organisational levels. Table 6 illustrates some of the issues with which the Australasian zoo community has been grappling to date.

The perspective that zoological gardens and wildlife parks need to further refine their management skills of captive breeding *and* begin a foray into the area of in-situ conservation remains at the forefront of the debate and continues to influence policy choices. The North American zoo community believes that if it is to have more of an impact on conservation its SSPs would have to strike a better balance between ex-situ and in-situ conservation efforts. A more 'organised' effort was deemed necessary and an In Situ Conservation Committee within AAZPA has been formed to promote and facilitate field conservation initiatives by member institutions (AAZPA 1992-93)<sup>41</sup>.

While the Australasian region does not have an in-situ committee per se, the need for zoos to engage in in-situ conservation programs is extensively endorsed. Several zoos vigorously pursue further involvement in inter-agency endangered species programs. These activities are described in more detail in Chapters Six and Seven. There are also calls for improving inter-agency relations with government wildlife agencies. Moreover, some members of the zoo community were, and remain, keenly aware of the need for more humility when forging relationships with outside agencies. They caution against attacking criticism with grandiose statements about zoos' accomplishments, particularly in their relations with government wildlife agencies. More of these views are explored in Chapter Nine. Graham Mitchell (1994: 25), former Director of the Melbourne Zoo, typifies that sentiment in the following statement:

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<sup>41</sup> Another North American initiative, the Ecosystem Survival Plan, was designed to increase zoos' relevance to conservation. Founded in 1988, the Plan endeavours to unite zoos, aquaria, botanical gardens, natural history museums and nature centres in raising awareness of and funds for in-situ conservation, such as habitat preservation. The Plan utilises imaginative interactive displays depicting parking meters and colourful graphics which discuss the loss of rainforest habitats to attract visitors' attention. It is hoped that visitors will then place donations for the cause in the receptacle provided (Gershenz & Saul 1993).

**TABLE 6: Topics highlighted by past ARAZPA/ASZK annual conferences.**

1992 Conference Theme: Saving Wildlife

*Topics of Discussion:* matching policy promises with definitive actions, conservation and education in particular; understanding and developing links with government wildlife agencies; integrating education throughout zoo policies; exploring public perceptions of zoos; highlighting current endangered species breeding successes.

1993 Conference Theme: Zoos Enriching Environments

*Topics of Discussion:* on-going examination of attitudes and messages conveyed in and by zoo community; clarifying planning developments; looking at habitat-oriented exhibits; increased development of in-situ conservation projects; intensified focus on behavioural enrichment.

1994 Conference Theme: Notogea - Our World

*Topics of Discussion:* the changing role of zoos; multi-level networking and inter agency relations; new education strategies; developing conservation outreach programs in Asia; conservation research in government wildlife agencies; the role of genome research banks in zoos; animal management strategies and achievements for endangered species; effects of importation regulations; exhibit design developments.

1995 Conference Theme: Partnerships for Conservation

*Topics of Discussion:* exploring and promoting inter agency partnerships with government bodies, zoos, and the community; zoo-field interfaces (in-situ projects); ASMP progress to date; further deliberations on incorporating educational imperatives into zoo policy; government wildlife agency research; zoos as genome resource reserves; captive breeding management achievements.

1996 Conference Theme: Zoos: Evolution or Extinction

*Topics of Discussion:* does captive breeding make zoos look good or does it create real conservation benefits?; how far should zoo policy go to attract the paying public?; are zoos as effective as they could be in conservation education?; can we work more cooperatively with our adversaries?

The key to success lies in integration with the activities of those legislatively charged with wildlife management at a local level, and with international conservation programs. In their publicity and in highlighting captive breeding achievements, zoos must re-inforce the notion of coordinated national and international collaboration (at both technical and political levels) as the essential ingredient and that the essence of conservation is in maintaining and securing habitat. They must never give the impression that they are going it alone or that they are even the key player.

Discussions about policy priorities also include the place of education in zoos' conservation role. While there are many in the zoo community who appreciate the importance of captive breeding for conserving endangered species, they frown upon the extent to which zoos' educational mandate is predicated upon rhetoric, and suspect that zoos' organisational (and financial) commitment to education is ineffectual (Hamilton 1993; Robinson 1988; Hancocks 1995). Some Australasian zoo professionals have made organisational and funding adjustments to better accommodate zoo education imperatives. Such initiatives are outlined in Chapter Six. Other policy debates to emerge recently in the Australasian region include the following:

- to what degree, and on what issues, zoos should be public commentators on environmental or conservation issues (they should avoid being 'political');
- how to balance 'for profit' activities (being commercially viable) with conservation, education, and animal welfare imperatives;
- how to develop effectiveness measures for conservation and education programs;
- determining parameters for ARAZPA as a voice for the zoo industry;
- how to identify and deal with zoo adversaries.

The current political and administrative context of these zoo discourses is significant. We have seen in Chapter One that since the mid 1980s economic rationalism has become a powerful ideology and method of governance in Australasia (and many other Western nations). Public sector reforms now mirror business principles of the private sector. Consequently, many zoos today operate largely according to a corporate management framework that calls for a quantifiable type of accountability. The realisation of ecologically-oriented conservation principles and programs in zoos is frustrated by this corporatised outlook which prioritises order and control over flexibility and participative processes; and rationalises the feasibility of most activities strictly in terms of economic efficiencies. This trend may represent the most recent phase in zoo evolution not accounted for by Rabb (1994); a period characterised by *corporatised* conservation.

### 3.8 CONCLUSION

This chapter has provided an historical account of zoos' acquisition of a conservation profile and illustrates how recent the transformation has been. This exploration has included a focus on understanding how shifts in human values of and attitudes towards non-human nature have influenced formation of zoos' contemporary conservation position. Prevailing economic and political situations have also been critically important influences.

Since the times of ancient menageries and later zoos, the practice of maintaining collections of wild animals conferred instrumental value onto animals, using them as indicators of power and wealth and sources of entertainment and amusement for elites. Many of these principles still inform contemporary zoos. A significant shift in zoo evolution was the spread of a European model of zoos during the 18th and 19th centuries. Zoos became sites for pursuing scientific and educative endeavours (which would allegedly benefit the community at large) and were visited by members of the general public. By the middle of the 19th century, zoos of this ilk were proliferating rapidly. Although now accessible to the general public, zoo development still tended to be instigated and sustained by groups of powerful and wealthy individuals.

By the 20th century a concomitant interest in conserving the integrity of the biosphere and exhibiting compassion towards sentient beings presented zoo professionals with substantial philosophical and practical challenges, the likes of which they had yet to encounter. The contemporary conservation role of zoos has emerged from these conditions. Today the zoo community continues to grapple with difficult decisions about how best to realise conservation goals. The following chapter will investigate the controversy surrounding zoo conservation policy and performance to date.

## **CHAPTER FOUR: THE PHILOSOPHICAL UNDERPINNINGS OF ZOOS' ROLE IN CONSERVATION**

*The fundamental reason that zoos exist is to display animals - all other aspects of a zoo's operation are and must be secondary. Without this display, zoos cannot be for it is their raison d'etre. What we do to justify this essentially dubious reason is to cite the big four dogmas - that of conservation, research, education, and recreation. However, the ever increasing sophistication of our paying public is beginning to demand more. They are demanding greater accountability of their zoos and greater and more frequent evidence of our results. That is a very reasonable demand (Fry 1996: 1).*

### **4.1 INTRODUCTION**

The previous chapter documented the progression of zoos through several historical and conceptual phases. In its earliest days, zoo-keeping demonstrated the power and wealth of certain individuals and societies, satisfied human curiosity and, arguably, was at its most inconsiderate with respect to its treatment of animals. While there was an easing of the brutality in later eras, a strong emphasis remained on gratifying human demands for viewing the peculiar, and for celebrating individual collectors' authority and affluence. Subsequent stages brought on more educative and scientific emphases, but it was not until the latter half of this century that the zoo community seriously began to question the reasons for its existence and to find means for demonstrating its public accountability. The zoo community's appropriation of a conservation ethos signalled the beginning of a wave of introspection that continues. Today, in the hope of becoming more socially relevant, zoo professionals often cite four main reasons for the existence of their institutions: conservation, research, education, and entertainment<sup>1</sup>.

In this chapter I will explore the depth of meaning behind these justifications. In so doing, I will show that despite whatever benefits might be conferred to species or individual animals as a result of these aspirations, zoo principles and attendant activities remain predominantly human-centred. Consequently, there are considerable gaps between professed performance and program realities with respect to conservation values. Finally, I will speculate on whether the incorporation of more fundamental shifts in zoo ideology may increase the potential for reducing such discrepancies.

### **4.2 ARGUMENTS FOR AND AGAINST ZOOS**

Today, the appropriateness of zoos' articulated goals and the ability to actualise these goals are questioned inside and outside the zoo community. Concerns fall into two basic categories: the ethics of maintaining animals in captivity and the justification of the existence of zoos. Parts of the general public demand that valid reasons be given for this existence, and require more evidence that keeping animals in captivity offers tangible and substantial benefits both to groups

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<sup>1</sup> There is some disagreement concerning the number and description of the reasons for zoos' existence. Woodruffe (1981) cites education, research, and conservation. Chiszar (1991) lists four: entertainment, education, conservation, and research. Bennett (1992) lists five: entertainment, recreation, education, conservation, and research. The World Zoo Conservation Strategy (CBSG & IUDZG 1993) defines all zoo objectives in terms of how they serve conservation: captive breeding of endangered species; contributing to scientific knowledge; and promoting an increase in public awareness. Perhaps the frequent and intensive use of these terms are more instructive than determining their exact parameters. Contemporary zoo professionals rely quite heavily on rhetoric which demonstrates that all activities in zoos are genuine, functional and offer substantial benefits to people and nature.

of species and to individual animals and humans, and guarantees that such values are forthcoming.

Education, conservation, research (or science) and recreation (or entertainment) are thus the four interdependent elements seen by zoo proponents as the pillars or foundations of zoos. By virtue of the animals held there, zoos are in a unique position to offer these four elements to the community. We have seen in previous chapters that zoos' conservation role is constituted by managing and breeding endangered species in captivity for eventual reintroduction to the wild and, more recently and to a lesser degree, by working on field conservation projects and conservation outreach programs. Research in zoos encompasses a broad range of activities and is normally focused around the animals held there. Science and research are sometimes used interchangeably - research purportedly furthers scientific knowledge in zoos with science providing the epistemological foundations for research efforts. Education entails producing knowledge about wildlife and inspiring more positive attitudes towards nature. Recreation (or entertainment) is closely linked to education, acting as zoos' drawcard. Many people are motivated to visit zoos on the basis of their appeal as a leisure setting. Once they are inside, enjoying the setting, zoo professionals may then educate them. The recreation component is also a critical provider of revenue.

These four pillars are used to justify the existence of zoos and to defend zoos against the recent barrage of criticisms launched at them by animal welfare and rights lobbyists. Anti-zoo inquiries have triggered a distinctive reaction in the zoo community - a search for a purpose and rationale that accounts for pre-existing zoo activities and lays down pathways for future development and action. Nonetheless, the four main reasons for zoos' existence remain the focus of considerable criticism. The critics of zoos are many and quite vocal in their antipathy towards both the appropriateness of goals selected by zoos and the feasibility of fulfilling those aims. It is worth noting that critiques emanate from within as well as outside the zoos. The zoo community tends to react officially more to external opposition than to internal criticisms.

#### **4.2.1 Using Species Conservation to Protect Biodiversity**

Conservation has been heralded by professionals in the zoo community as the primary reason for the existence of their institutions for the last thirty years. Generally speaking, conservation represents both an ideology and a method for maintaining some semblance of the 'integrity' of the planet's biodiversity by safeguarding a state of nonhuman nature as we find it, as well as preventing wasteful or damaging practices (Brown 1987). Concern for *species* decline indirectly represents a recognition of the growing negative impact that human activities are having on natural habitats and the overall degradation of functioning ecosystems that support them (Norton 1986). Zoo efforts to conserve endangered species become part (albeit a small part) of an overall effort to sustain biodiversity.

The International Convention on Biological Diversity defines 'biological diversity' as:

... the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems' (United Nations Environment Programme 1992: 3).

Biological diversity is conceptualised in three levels, all of which are necessary for the continued survival of species and natural communities:

*Genetic diversity* is needed by any species in order to maintain reproductive vitality, resistance to disease, and the ability to adapt to changing conditions ... *Species diversity* represents the range of evolutionary and ecological adaptations of species to particular environments ... *Community-level diversity* represents the collective response of species to different environmental conditions (Primack 1994: 22, emphasis added).

Ecosystems that contain higher levels of diversity are more resilient, hence are more likely to revive when subjected to stresses, particularly human-induced habitat degradation. In essence, the system has more choices (Biodiversity Unit, Department of Environment, Sports & Territories 1993).

In-situ or *on site* conservation involves maintaining natural communities and populations in the wild. It is the preferred strategy to ex-situ conservation (such as zoo-based captive breeding programs) for long-term protection of biodiversity because it allows for continuing adaptation of wild populations by natural evolutionary processes (Groombridge 1992; McNeely et al 1990; Primack 1993; Snyder et al 1996). Inherent in this approach is consideration of the importance of maintaining secure habitats in order to ensure species' survival. Slobodkin (1986) points out that organisms are more readily preserved in natural, or nearly natural habitats than in artificial ones such as zoos or botanical gardens. Ex-situ conservation, essentially a 'last-ditch' effort to save some individual members of a severely threatened species, is expensive; can only be used in a restricted number of cases; and compromises the natural state of the species (Leitzell 1986). Moreover, the latter approach necessitates highly intensive management efforts which, for success, require an unprecedented level of expertise, resources and cooperation<sup>2</sup>. Even if the best and most comprehensive scientific knowledge were made available for these projects, efforts can still be confounded by political and administrative obstacles (Clark et al 1994).

Not surprisingly, the capacity of captive breeding programs to make significant contributions to conserving biodiversity has been disputed. Hutto et al (1987) identify several substantial limitations to the species approaches to biological conservation. *First*, no two species occupy the same niche and a single indicator species cannot be chosen which will account for the needs of all other species. Only those species whose niches are entirely subsumed by or included

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<sup>2</sup> Woodruffe (1989) asserts that endangered species conservation programs will not stand up in the face of future challenges. He lists several substantial planning flaws as the cause of this inadequacy. First, there are too few recovery plans for threatened species. Second, existing efforts are piecemeal and fragmented given that different government and non-government agencies pursue separate aspects of a particular problem and do not always share information. Third, most plans are highly detailed, take several years to develop, and are subject to irregular and lengthy review processes. Hence, they are difficult to revise in the context of rapidly changing circumstances.

within the indicator species will be accounted for. *Second*, under this strategy species will compete with one another as management indicators. Time might be better spent investigating more comprehensive conservation strategies, rather than agonising over which species will be selected for conservation efforts. *Third*, species approaches depend on determining minimum viable populations of particular species. Irrespective of the difficulties associated with monitoring populations of *all* species, ascertaining what is a viable population size remains highly problematic. Moreover, the assumption that obtaining a *minimum* population size will enable us to retain the stability of that species comparable with higher population levels of that species is misleading and erroneous. *Fourth*, there is insufficient information for determining species' needs at different points in space and time due to the difficulties associated with monitoring and conducting habitat analysis for a single species in numerous locations, in all the seasons, and in different years. *Fifth*, species approaches tend to focus on charismatic fauna that are more likely to generate public support than the more obscure (but no less threatened) invertebrates or ecosystems. Not only do popular species end up 'competing with each other' for public and political assistance, but they also continue to distract attention away from developing awareness of and policies for addressing the underlying causes of environmental decline. *Sixth*, the over-emphasis on nearly extinct species places too high a value on population size as a criterion of value. This focus may disproportionately influence important management decisions (designing and placing management reserves on the basis of a species' location) and is an exorbitantly expensive strategy. *Lastly*, species approaches inherently devalue anything other than, or above the level of a species. Conserving species become the primary goal, reinforcing the notion that if populations of a targeted species can be stabilised and restored, then all levels of biological diversity are being conserved.

Species-based conservation alone does not address the protection of *all* areas of biological organisation and must be broadened to include habitat, landscape, or ecosystem approaches (Minta & Kareiva 1995; Vrijenhoek 1995; McIntyre et al 1992; Rojas 1992; Snyder et al 1996). Zoo-based captive breeding programs are extreme examples of single-species management (Loftin 1995) and as such do not accommodate more holistic ecological approaches. Despite the fairly widespread acknowledgement of the weaknesses of species approaches to biodiversity conservation, there remain formidable gaps in both our scientific knowledge of ecology and in our practical understandings of how to incorporate more progressive ecological concepts into existing conservation infrastructures<sup>3</sup>.

#### *i. Limited Scope of Zoo-Based Ex-Situ Efforts*

In addition to its limited potential for addressing the biodiversity problem, ex-situ conservation can never be more than a relatively minor stop-gap measure in the attempt to arrest species

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<sup>3</sup> La Roe (1993) asserts that implementing ecosystem approaches to conservation necessarily involves a higher degree of biological complexity and expanded political jurisdictions. Hence, the potential for conflict and degree of difficulty in planning and management are increased. These problems were certainly apparent at the Back from the Brink conference in Sydney in 1995 hosted by the Endangered Species Unit (ESU) of the Australian Nature Conservation Agency (ANCA). The conference focused on methods for refining endangered species recovery processes. One workshop was devoted entirely to examining the species-based approaches vs ecosystem planning, and generated a lively debate.



decline. This method is meant to *complement and assist* in-situ measures, not replace them (Ehrlich & Ehrlich 1981; Groombridge 1992; ESAC 1992; Biological Diversity Advisory Committee 1992; CBSG & IUDZG 1993). A lack of space, poor breeding successes, and low representations of endangered species (relative to unendangered species) constrain the vitality of zoo-based ex-situ programs. Groombridge (1992) cites some figures which illustrate that a vast majority of captive specimens in the world's zoos have little importance for conserving species or in maintaining genetic diversity among non-threatened species (Table 7).

Fiedler et al (1993) have compiled similarly sobering statistics: of the 4,200 species in captivity, only 1,200 have been bred successfully; the taxa in zoos and reintroduction programs represent a mere 1% of animal species found on earth; stretched to their full capacity, all the zoos in the world could sustain at best only 900 species by the year 2,000; and today only 64 species management programs have been established in the United States. Foose (1986) and Conway (1986) agree that there is only enough space in zoos for a mere 1,000 taxa.

### ii. Reintroduction Problems

The relevance of zoos' captive breeding programs also depends upon successful reintroductions of endangered species to their natural habitats. Zoos are well represented in current ex-situ programs. In an international survey of reintroduction projects, Beck (1995) determined that in 59% of those cases zoos supply individuals from their captive populations .

Southgate (1994) warns, however, that overly optimistic expectations of success from reintroduction cause many people to see it as a solution to species' immediate conservation problems. Subsequently, insufficient knowledge and understanding of the causes of threatening processes and possible remediation measures are overlooked. Success rates of reintroduction programs indicate the problems associated with ex situ conservation that have yet to be overcome: survival rates for reintroduced animals are low (Short et al 1992; Southgate 1994; Snyder et al 1996); captive-bred reintroduced animals may be subject to disease and may expose wild populations to disease<sup>4</sup>; the loss of diversity resulting from years of breeding closely related animals results in genetic problems that threaten the long-term viability of zoo populations (Ralls & Ballou 1983; Fiedler et al 1993; Wemmer & Derickson 1987). Furthermore, it is often difficult to recreate the physical and social conditions needed for animals to develop skills for surviving in the wild (Loftin 1995; Hancock 1995a & b; Snyder et al 1996). Of the mere 120 species currently involved in international zoo breeding programs, only 16 have been successfully reintroduced into the wild (World Society for the Protection of Animals & The Born Free Foundation 1994; Beck 1995)<sup>5</sup>.

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<sup>4</sup> Despite advances in zoo veterinary medicine since the middle of this century, the incidence of disease among captive populations of endangered species is quite common. Snyder et al (1996) offer several basic, preventative veterinary guidelines for avoiding disease outbreaks in captive breeding programs. They found that in a majority of programs few of these precautionary steps are taken because of the prohibitive costs associated with doing so.

<sup>5</sup>The following species are listed by Beck (1995) as being part of 'successful' reintroduction programs involving zoo-bred animals: wood bison, plains bison, Arabian oryx, Alpine ibex, bald eagle, Harris' hawk, peregrine falcon, Aleutian goose, bean goose, lesser-white fronted goose, wood duck, masked bobwhite quail, Galapagos iguana, pine snake, Galapagos tortoise.

**TABLE 7: The zoo community's 'real' contribution to species conservation**

- Of 629 mammalian species wholly threatened on a global scale, 20,628 specimens from 140 threatened species are held in zoos;
- Of the 15% of the world's species under threat the proportion of them represented in captivity is 22%;
- Only 10% of global zoo capacity of approximately 200,000 mammal specimens consists of threatened mammal taxa;
- Only 9 threatened mammalian taxa have captive populations over the recommended 500 specimens, a further 14 have captive population exceeding 250 (Groombridge 1992).

### iii. High Costs and Misplaced Priorities

There are other serious considerations regarding the feasibility of ex-situ conservation. This methodology is exorbitantly expensive and may shift attention (and funds) away from habitat preservation. Snyder et al. (1996) estimate the average cost for endangered species recovery efforts to be US\$500,000 per year per species. Ormrod (1994) notes that while the golden-lion tamarin project has been heralded by the zoo community as a spectacular success story, it has cost approximately US\$7.5 million<sup>6</sup>. Dietz et al (1994) calculate the cost of the black-footed ferret recovery program at US\$10 million. The ZPB of NSW received a State Government grant of \$50,000, and considerably more than that in corporate sponsorship, to help fund its participation in the international captive breeding program for black rhinos (ZPB of NSW 1992/93:75).

How do these costs relate to in-situ conservation options? The annual price for captive maintenance of a single black rhino is approximately \$16,800 compared to the \$1,000 it costs to protect its wild habitat (World Society for the Protection of Animals & The Born Free Foundation 1994). The cost of keeping African elephants and black rhinos in zoos is fifty-times that of protecting equivalent numbers in the wild in Zambian National Parks where one square kilometre of park can be patrolled for US\$400 per annum (Groombridge 1992). Maintaining the whole Serengeti ecosystem is estimated to cost US\$500,000 per year, a price comparable to that of sustaining a viable population of five species of primates in North American zoos (Fiedler et al 1993). Woodruffe (1989) submits that the cost of a species conservation program increases from tenfold to 10,000 fold at each of the three levels of intervention: species managed where they occur naturally; intensive on-site management; and species restricted to or heavily dependent upon zoos. These comparisons certainly cast ex-situ conservation in a highly impractical light.

There is now a trend for zoo professionals from industrialised nations to provide institutional and financial assistance for 'third world' nations by helping them to develop their own zoos; establish endangered species programs for which captive breeding may be an option; and in some cases, remove endangered animals from their countries of origin to transfer them to captive breeding programs in European, North American, or Australasian zoos<sup>7</sup>. While these programs may eventually produce more modern zoos or more individuals of a threatened species, the reality is that they are often ineffective. Moreover, such an emphasis shifts resources away from field studies and towards ex-situ strategies (Eudy 1995; Loftin 1995; Snyder et al. 1996).

These problems have not escaped the concern of the zoo community. Some zoo and conservation professionals acknowledge that the ex-situ technique is not an end in and of itself; incurs substantial financial costs; competes for conservation resources with other less expensive

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<sup>6</sup> Similarly, Kleinman et al (1991) calculate that the release program cost US\$120,000 per annum, excluding three salaries of principal investigators and numerous related expenses incurred by institutions participating in the program.

<sup>7</sup> The Sumatran rhino is a case in point. This highly endangered species has been the focus of intensive conservation efforts (involving government officials and several zoo-based international funding agencies and conservation agencies) oriented primarily towards its capture and attempted breeding. Rabinowitz (1995) suggests that these expensive, ineffectual - but politically expedient - strategies have been used, rather than implementing in-situ techniques which target the last remaining wild populations in Indonesia and Malaysia.

and more appropriate options; and suggest that funds would be better spent on developing and assisting in-situ conservation programs (eg MacKinnon & MacKinnon 1991; Sunquist 1993; Stanley-Price 1991). Others, however, cling to the idea that we should not divert funds from ex-situ to in-situ programs, but merely increase spending on both (eg Tudge 1992).

#### iv. Institutional Commitments to and Capabilities for Conducting Captive Breeding

To what degree are captive breeding efforts little more than a smokescreen used by parts of the zoo community to hide serious fundamental problems? Some critics of zoos assert that there is more breeding of unendangered species going on in zoos and that captive propagation was undertaken originally to boost flagging animals numbers resulting from restrictions placed on taking animals from the wild (Seidman 1993; Ormrod 1994; Hancocks 1995a & b; Snyder et al 1996). Such programs may, in part, continue to stabilise zoo populations of endangered species, irrespective of whether they are connected to reintroduction efforts. Loftin (1995) has found that most of the coordinated breeding plans of North American zoos (SSPs) make no plans for reintroduction whatsoever. A similar planning trend exists among Australasian zoos where only 5% of animals held are part of inter-agency in-situ conservation programs. Chapter Six provides a more specific discussion of these details. The actual impact that captive breeding in zoos has on wild populations of endangered species appears to be inconsequential.

The limited nature of zoos' conservation efforts is partly a function of innumerable organisational, administrative and planning constraints. Snyder et al (1996) assert that multiple changes in administration personnel for captive breeding programs is commonplace, and the instability resulting from frequent staff turnover poses a serious (and often overlooked) threat to a program's long-term success. Hancocks (1995) raises concerns about whether zoos possess the resources of space, time, energy and money needed for major breeding programs. Moreover, it is also questionable whether zoos are able to balance the various imperatives imposed on them by virtue of their divergent and competing programs, such as maintaining and displaying animals, conducting captive breeding programs and tending to an array of administrative, corporate, and financial matters. There are indications that many zoos' policies facilitate the allocation of vast amounts of money on promotions and public relations exercises while breeding programs for endangered species come in a poor second (Hancocks 1995; Jamieson 1995; Schaller 1993).

#### v. Misleading Messages

Can we really consider that an animal is 'saved' by virtue of its being in a zoo, particularly if there is no habitat to which it can be reintroduced? Zoos' reliance upon captive breeding as a means for 'saving' wildlife from extinction embodies some explicit and implicit messages to society. Captive breeding distracts attention away from the importance of habitat preservation, and zoo program biases toward the more charismatic mega-vertebrates devalues the lesser known vertebrates and invertebrate species that are in need of attention (Fiedler et al 1993; Garner 1994; Hutto et al 1987). The intense publicity afforded to high profile endangered species and to successful reintroduction efforts (whether they involve zoos or not) also creates the illusion among the public and politicians that we have a handle on problems when we do not (Recher 1994). Additionally, the focus on individual animals, in particular the mega-vertebrates,

continues to distract attention away from concepts of communities and ecological processes (Eudy 1995). Zoo programs are also based on single species and highlight charismatic species. Their public relations and marketing programs, however, are even more finely tuned than those of any government wildlife agency. Hence, zoos are particularly effective in advancing a false sense of hope about conservation when the public is told about new 'habitats' (cages) for animals or when they are *not told* that there are no habitats to reintroduce endangered species to (Hancocks 1995b).

Jamieson (1995) asserts that zoos should publicly acknowledge that establishing genetic warehouses or maintaining wild animals in highly managed zoo environments differs enormously from preserving wild animals and their habitats. While the zoo community has, on occasion, made some concessions to ex-situ techniques merely supplementing in-situ conservation (Captive Breeding Specialist Group & the World Zoo Organisation 1993), it remains that captive breeding of endangered species fails to address the underlying causes of habitat destruction. Such an approach neutralises zoos' real contribution to preserving biodiversity and does little to engender an appreciation of more progressive conservation knowledge in the public mind (a role to which zoos emphatically lay claim).

There are other concerns with zoos' captive breeding programs. One is that they only further the notion that our manipulation of the environment can always solve our conservation problems. Parts of the zoo community, in collaboration with scientists from the academic community, appear to be enthusiastically - if not somewhat blindly - celebrating the development of more technologically-oriented ex-situ conservation aids such as assisted and artificial reproduction techniques and genome resource banking such as cryopreservation, artificial insemination (see Captive Breeding Specialist Group & the World Zoo Organisation 1993; Hall 1995; Luoma 1987; Tribe 1994; Tudge 1992). 'Ex-situ' approaches embody positivist attitudes which place ultimate faith in highly technical and manipulative management of nature. Supposedly assisted by science people know no bounds with respect to conservation problem-solving. Unfortunately, these very actions and attitudes have created the need for such desperate action in the first place (Loftin 1995; Fox 1991).

#### **4.2.2 Education vs Entertainment**

Education in zoos takes place through formal curriculum-based schools programs and the informal learning experiences of zoo visitors. Both forms of education are purported to confer extensive knowledge about animals to zoo audiences, as well as to facilitate concern for animals and broader environmental matters. Another important benefit of zoos is argued to be the fact that in an increasingly urbanised environment, zoos are one of the few places where people can get close to wild animals and nature (Chiszar et al 1990; Maple 1995; Robinson 1993; Woodruffe 1981).

Arguments against zoos' role in education focus on the narrow scope of most zoo-education programs and the questionable capacity of such programs to deliver substantial benefits to the

public. Most zoo educational programs focus primarily on only a small part of the total visitor market - schoolchildren (Martin 1986). This is problematic because it is often done at the cost of more fully developing informal learning programs that target all zoo visitors (Markwell 1993; Ollason 1993). Studies on informal learning in zoos show that the zoo experience does little to improve knowledge of either biological facts or conservation issues (Kellert 1987; Kellert & Dunlap 1989).

The nature of zoo education is determined in part by the availability and allocation of organisational and financial resources for educational programs. Zoo revenues are finite and must be divided among competing programs (Giles & Kelly 1992; Larcombe 1995). In Australasia many zoo education programs are partially funded by State education services. Yet, rising operating costs and corporatised government policies encourage zoos to become more financially independent. These trends increase zoos' dependence on gate revenues and private sector funding for their survival. The degree to which these commercial principles and practices dominate zoo policy has certain ramifications for educational messages. There is a noticeable and increasing "tension between what zoos do to gain public support (entertain) and what they must do to justify themselves [preserve species and educate people]" (Jamieson 1995: 63). If zoos are meant to teach people about recognising human agency in the environment's demise, then implementing increasingly commercialised programs that displace educational priorities is contrary to stated conservation aspirations. Moreover, such a policy choice provides evidence for the argument that zoos may use conservation merely to paint a more concerned profile of themselves. In so doing, zoos lend an air of respectability to their practices which in turn may facilitate increases in funding (Hancocks 1995; Jamieson 1995; Ormrod 1994).

While many zoo professionals openly acknowledge that providing an entertaining and fun day for people is what draws visitors to the zoo, they do not necessarily define such a motivation as problematic. They claim that once people enter the zoo, whatever their reasons for coming, they are a captive audience ready to take in educational messages on offer in brochures, signage, keeper talks, touch tables and school programs (Bostock 1993; Chiszar et al. 1990; Maple 1995; McAdam 1995; Ollason 1993). Visitor recreational motives are seen to be necessary for maintaining their interest in the zoo and are considered to be vital to zoo survival. Revenues from high visitation keep zoos' front gates open and supposedly fund conservation and research activities.

Critics of zoos, however, see a conflict between people's motivation for visiting a zoo and what zoo professionals endeavour to educate people about. The entertaining and recreational nature of a zoo visit can overshadow the educative component. Critics dispute whether people will absorb conservation messages in any meaningful way if their expectations are predicated upon having a relaxed, fun day out viewing some animals. While education need not be serious to be effective, Kellert & Dunlap (1989) have found that many zoo visitors are more interested in individual animals and those animals' immediate comfort than they are in considering complex conservation issues. Moreover, the means by which zoos provide 'fun' experiences for visitors are seen to

discourage visitors from developing more 'sound' perceptions of human-nature relationships. Zoos' tendency to over-emphasise charismatic and "especially the diurnal, social, large, colourful, cute, typically mammalian ... species" does little to educate people about the "diversity and complexity of the planet's fauna" (Hancocks 1995: 34). In addition to public relations campaigns that offer humanised caricatures of animals (eg Sher 1991; Sloan 1991), zoos' presentations of animals in confinement may also encourage a false sense of order between animals and humans. The implicit message is that no matter how much we value animals, they are resources for us to manipulate as we see fit, even if that manipulation is rationalised as being in the animals' best interests (Grandy 1992; Jamieson 1995; Mullan & Marvin 1987; Seidmann 1993).

Preserving genetic material or retaining wild animals in intensively controlled zoo environments is antithetical to conservation. However faulty the methodology of captive breeding may be, existing programs do function to assuage both institutional and individual consciences in the zoo community, needing the reassurance that, at the very least, they are *trying* to assist the conservation cause. Ultimately, zoos' ex-situ efforts compromise their education role by intimating (and in many cases stating quite explicitly) that species are being 'saved' when in reality they are not.

#### **4.2.3 Research**

Research has been identified as one of the primary goals of zoos. While some zoo professionals acknowledge past and current weaknesses of their research programs (eg Mitchell & Embury 1992), others are unswervingly optimistic about the capacity of their efforts to assist both wild and captive populations of animals (eg Captive Breeding Specialist Group & the World Zoo Organisation 1993; Hutchins et al 1995). Increased infrastructure and resources are seen to be a remedy for the lack of 'scientific' rigour characterising past efforts (Hutchins 1988; Giles & Kelley 1992). However, critics question the validity of research as a significant justification for having zoos. Only a handful of 'good' zoos maintain facilities and staff to undertake research programs and, where they do, most of that information is used to improve captive husbandry and exhibit design - neither of which would be necessary if wildlife were not contained in the first place (Kellert & Dunlap 1989; Jamieson 1985, 1995).

Research in zoos may refine long-term captive management techniques. However, it may or may not be specifically directed towards conservation. Projects often entail collaborative efforts among members of the zoo and academic communities. Outside research using zoo animals as case studies is often presented by the zoo community as contributing to conservation, but may only contribute to knowledge of keeping animals in captivity. Mitchell & Embury (1992) list six broad topic areas of scientific research in zoos: reproduction and reproductive biology, nutrition, disease, behaviour, genetics, and rehabilitation and reintroduction.

Research on *reproduction and reproductive biology* often addresses the issue of controlling the fertility of highly fecund, but unendangered, zoo species. In other cases attempts are made to

optimise breeding conditions for captive animals which in *some* cases will be endangered species. Studies on fertility enhancement may contribute to breeding endangered species or to ensuring a balanced representation of founder population genes in captive breeding programs (Mitchell & Embury 1992). Artificial or assisted reproduction techniques aim to maintain optimal levels of genetic diversity within zoo populations of either threatened or non threatened species (Mitchell & Embury 1992).

*Nutritional studies* focus primarily on maintaining the health of captive species. This area of research can assist conservation when links among nutrition, behaviour and reproduction are established and applied to species used in reintroduction programs. Similarly, investigations into *infectious disease control or treatment* in zoos does not automatically assist conservation, unless it specifically targets endangered species. Unfortunately, in programs which *do* target threatened animals, poor funding and diagnostic capabilities, a paucity of available vaccines for pathogens, and a low incidence of animal examinations severely hinder progress (Snyder et al 1996).

*Behavioural research* can assist in situ conservation by applying observations of captive endangered species to those in the wild. The successful transferrance of knowledge about a particular species' behaviour from a captive situation to wild conditions can have extremely limited applications given the different conditions animals are subject to in each setting<sup>8</sup>. Conversely, behavioural studies may merely serve to justify confining wild animals to captivity by improving management tools such as managing stress levels and determining characteristics of, and facilitating normal behaviour in, captive animals.

The application of molecular techniques in *conservation genetics* has assisted in identifying sub-species, detecting genetic 'impurities' in captive populations, analysing genetic diversity and in-breeding, and establishing genome resource banks (Mitchell & Embury 1992). However, these methods tend to reinforce the need for ex-situ technologies and shift the emphasis away from in-situ programs. *Reintroduction biology* offers some promise for increasing the relevance of zoo research. Unfortunately, this area is in its infancy, and zoos are not well-represented in on-going research efforts.

While not traditionally part of zoos' brief, supporting in-situ conservation work offers the most promise for zoos to make more meaningful contributions to preserving biodiversity. The Bookmark Biosphere Reserve discussed in Chapter Six is a case in point. A pioneering effort in the zoo industry, Bookmark was initially established by the Zoological Societies of Chicago and Victoria in cooperation with the ANCA. The Reserve model emphasises the need for ecosystem conservation strategies to be inclusive of social as well as biological considerations. While the management of the Reserve now rests primarily in the hands of a local community group, the

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<sup>8</sup> Soderquist (1995) found a high incidence of mortality among captive-bred phascogales when re-introduced to the wild. The animals were not wary enough to avoid predators. Kleinman (1989), Miller et al (1990), and McLean et al (1994) all concur that re-establishing wild populations of rare or endangered species is often compromised by deficiencies in survival skills of individuals being released.



initial (and on-going) support from a part of the zoo community provides a creative example of how zoos can assist with progressive conservation efforts.

### 4.3 INTERPRETING AND VALUING NON-HUMAN NATURE IN ZOOS

Together, the practice of maintaining collections of 'wild' animals plus the recent alliance between zoos and conservation groups provide insight into significant dynamics of human-nature relationships. Of particular interest are how humans value nature and subsequently rationalise the use of different conservation methods, our treatment of animals, and the kinds of environments in which we feel most comfortable. The metropolitan setting of most zoos is meaningful. There, one needs only to "look at the modern city, that most human of all environments" to "observe what image of nature exists there" (McHarg 1973: 171). Siebert (1992) asserts that zoos actualise a "deep and, some would say, perverted impulse to have our city, our stay against wilderness and disorder, and a walled-in, visitable part of that wilderness as well".

Irrespective of any human ambivalence towards it, it is tradition that non-human nature in zoos has been interpreted exclusively in terms of human values and experiences. In their surprise that so little social sciences or humanities work had been directed towards gaining an (sociological) understanding of zoos, Mullan & Marvin (1987: xvii) note that:

The zoo is a reservoir of a variety of complex human faculties: the anthropomorphic desire to see ourselves in animals: the creation of the illusion of natural habitats for these animals; the desire of humans to distinguish themselves from other animals...

Zoos may say considerably more about the people that design them and visit them than they do about the animals displayed. While zoo principles and practices may have shifted to incorporate more benevolent aims (conservation), they remain problematic. Zoos are highly anthropocentric because they inherently assert (however unknowingly) that only people and our projects have value. Consequently, zoos' particular valuations of *nature* are worth considering. There are limits to which zoos can serve the interests of non-human nature given that zoo animals are constituted in zoo policies primarily by their instrumental - as opposed to their intrinsic - value to humans.

#### 4.3.1 Instrumental and Intrinsic Value for Non-human Nature

Generally there are two kinds of values that may be attributed to an item: instrumental and intrinsic (Fox 1990; Callicott 1986; Norton 1987). Instrumental value is the value an item has because it is useful to a valuer. Intrinsic value is the value something has because it is of value in and of itself. When applied to the context of environmental ethics, rationales that emphasise the right of other living organisms to exist free of human values and interference attribute *intrinsic* worth to conserving biodiversity. These two main classes of values can then be broken down further into several subcategories. The following sections will illustrate how zoos embody these values.

### i. Instrumental Value

There are various instrumental justifications for preserving the non-human world. Leitzell (1986) lists four main justifications for conserving threatened species, two of which could be classified as primarily serving human interests: the aesthetic fulfillment associated with protecting species; and direct human benefits such as consumption or applying the developed talents or defenses of other species to human problems. In a similar vein, Ehrlich and Ehrlich (1981) cite aesthetic value, direct economic benefits and the indirect support from other species needed to maintain ecosystems occupied by humans. Under the heading of Resource Preservation<sup>9</sup>, Fox compiles a comprehensive list of benefits humans enjoy as a result of our conservation endeavours. These reasons for protecting nonhuman nature are presented in Table 8.

According to the Resource Preservation arguments, the benefits humans enjoy by conserving non-human nature are consumptive. Norton (1986) classifies *human* benefits/values on the basis of their 'use'. *Consumptive* benefits incorporate the long term needs of future generations; protection of land; scientific value. *Nonconsumptive* values would include the aesthetic value of species/nature; a love and respect for wild places; protection of cultural connections. That is, most conservation policies emphasise manipulating resources or maintaining the productive potential of ecosystems in order to ensure their availability *to humans* over time. Today, these approaches prevail in zoos as well.

The World Zoo Conservation Strategy is a useful vehicle for illustrating how Fox's (1990) instrumental arguments for preserving non-human nature are applied in zoo reasoning and how these tenets also underly the four pillars that support the existence of zoos: conservation; research; education; and recreation<sup>10</sup>. Life support and early warning system arguments are readily apparent in zoos' conservation role. The Strategy urges that all zoos strive towards effectively managing their "living material" so that they most effectively contribute to the biological diversity upon which our biosphere depends. It is worth noting the Strategy's use of 'material' to represent living beings. Such a reference typifies the instrumental world view which attributes worth to non-human nature on the basis of the benefits it confers to humans. These 'materials' are the endangered species zoos display and breed and whose threatened status verifies the existence of larger scale environmental decline. Conserving these "flagship" species is thought to have an important influence on the conservation of the entire biotope (Captive Breeding Specialist Group & the World Zoo Organisation 1993: 8) which has direct and indirect benefits for humans.

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<sup>9</sup> In addition to Resource Preservation, Fox (1990) lists two other categories which explain how humans confer instrumental value to non-human nature. Unrestrained Exploitation stresses an anthropocentric view of the nonhuman world as it only considers the economic potential that can be fulfilled by physically altering 'nature' in the name of human progress. Such conservative, short term thinking places ultimate faith in an unending supply of natural resources and the capacity of human ingenuity to counter any 'environmental' problems. While a Resource Conservation and Development perspective also focuses on the physical exploitation of the non-human world, its slightly longer term perspective recognises that there are some limits to material growth. Essentially, this approach promotes achieving maximum yields, but is modified by considering availability of resources for future *human* generations.

<sup>10</sup> While the World Zoo Conservation Strategy is largely representative of popular opinion in zoo circles, it was compiled by prominent and active leaders in the international zoo community. Hence, the document is not likely to reflect the views of any dissenting zoo professionals.

**TABLE 8: Justifications for conserving nonhuman nature (Fox 1990)**

**The life support system argument:** non-human nature provides us with certain goods and services that are necessary for our survival;

**The early warning system argument:** certain areas or species function as indicators of more general types of deterioration that adversely affect the quality or quantity of those environmental goods and services;

**The laboratory argument:** nonhuman nature provides a richly informative focus for numerous forms of scientific study;

**The silo argument:** certain species provide an important source of genetic diversity for agricultural, medical and other purposes;

**The gymnasium argument:** there are numerous recreational activities derived from non-human nature

**The art gallery argument:** nonhuman nature offers numerous aesthetic pleasures (eg., beauty, richness of texture, colour);

**the cathedral argument:** non-human nature embodies certain spiritual or religious qualities;

**the monument argument:** the non-human world offers some symbolic instructional value;

**the psychogenetic argument:** the healthy development of human psyches depends on preserving non-human nature.

Zoo's research decree is supported by both the laboratory and silo arguments which stress preserving non-human nature on the basis of what it can tell us about our surroundings and the genetic material and information it can supply to supplement that understanding. In this sense, most zoos' animal collections are seen to provide "valuable study *material* for biological researchers, and still form an unlimited source of information that is of fundamental importance in gaining more insight into the biology of countless species" (Captive Breeding Specialist Group & the World Zoo Organisation 1993: 9, emphasis added). Again, animals are referred to as 'materials' that have a specific *use*. Zoo animals are defined, in part, by whether their genetic material contributes to the integrity of our 'supply' of biological diversity. Animal collection planning in zoos draws on specific population management methods that distribute "genetic material" (zoo animals) among institutions in such a way that optimises species' "chances of survival, increases longevity and reproduction, ... regulates the population size of each species", maintains healthy population structures, and avoids genetic degeneration and selection leading to domestication of wild animals (Captive Breeding Specialist Group & the World Zoo Organisation 1993: 58). Consequently, developing a host of artificial reproductive technologies is seen to be "of the utmost importance" in order to "save the genetic inheritance of species as completely and thoroughly as possible as a genetic resource for the future" (Captive Breeding Specialist Group & the World Zoo Organisation 1993: 58). In this context, zoos become a repository for select components of non-human nature. At some point, the maintenance and refinement of ex-situ methodologies may become an end in itself, working against the ameliorative processes it was intended for.

While a certain component of zoos' heritage can be directly traced to the sacred menageries of the Egyptians, modern zoos avoid most religious overtones of the cathedral argument. However, the recreation and education justifications of zoos draw heavily upon the reasoning in the gymnasium, art gallery and monument arguments for conserving non-human nature. While the psychological benefits to be gained from viewing certain zoo animals or knowing that some species are being preserved are not necessarily made explicit by zoos, they are certainly implied. The zoo community openly and enthusiastically promotes numerous recreational and aesthetic pleasures that can be gained from the range of their educational and conservation programs. Indeed, zoo professionals see the zoo itself as an instructive symbol for conservation, providing an oasis of 'nature' in barren, urban areas and raising the awareness of millions of annual visitors of the need for protecting global ecology. Zoos' ex-situ conservation programs for "large, majestic, compelling higher vertebrates" are the central focus for these inspirational experiences, providing a more persuasive tool than "the less appealing, often hidden, or apparently invisible smaller species" (Captive Breeding Specialist Group & the World Zoo Organisation 1993: 52).

There is no doubt that zoos are compelling and instructive. The symbols and lessons embodied by these institutions, however, are not limited to conservation. Indeed, we have already seen the doubt that surrounds zoos' capacity to instill in the general community an ethic of concern for

and increased knowledge about non-human nature. Zoos essentially isolate individual members of species from their habitats and other species by placing them in totally constructed environments. The zoo becomes a living museum, exhibiting select components of non-human nature, and zoo animals become representatives of a particular species, "ambassadors" for their wild counterparts. Zoos' selection, display and breeding of animals compartmentalises nature and removes it from its context. Unfortunately, in so doing, the zoo community falls far short of advancing more holistic, ecologically-oriented conservation goals.

### ii. Intrinsic Value

There are several approaches to environmental studies in which the intrinsic value of at least some of non-human nature is considered. These non-anthropocentric values promote an ethic of care for species as a class, individual members of selected 'high order' species, or individual members of an endangered species, on the basis of moral rights inherent to them, because of intrinsic values in nature, or in order to avoid disruption of habitats because this action reduces suffering of individual animals (Leitzell 1986; Norton 1986). Conservation and compassion for species other than our own become ends rather than means for achieving human happiness, although some level of human satisfaction can be derived from knowing that biodiversity is being preserved<sup>11</sup>. Some assert that until we can devise an environmental ethic that does this, we will be at a loss for any true progress towards resolving our environmental ailments.

Fox (1990) lists four main approaches to intrinsic value theory: ethical sentientism, biological or autopoietic ethics, ecosystem ethics and cosmic purpose ethics. Each of these represents an attempt to widen the human sphere of concern to include other life forms, on the basis that they have and pursue interests of their own. Singer (1977) is the chief proponent of the *sentience approach* which states that those beings that can sense pain and pleasure will have an interest in pursuing pleasure and not pain. Those activities that impose harm on sentient beings should not be undertaken. *Biological or autopoietic ethics* extend the realm of moral consideration beyond notions of sentience to include all those organisms that seek some states of being irrespective of whether they are aware that they are doing so. Ecosystem ethics embody a kind of holism insofar as such ethics attribute value to whole entities such as ecosystems, rather than to individuals. *Cosmic purpose ethics* extend moral considerability not just to humans, but to those entities that embody views about the ultimate ends of evolution or the nature of God or God's purposes (Fox 1990).

Attributing intrinsic value to non-human nature has certain practical ramifications for zoo conservation justifications and practices. Given that non-human nature has interests worthy of our moral consideration, once a species becomes endangered it should be entitled to protection. The question, however, remains whether removing a species from its ecosystem and placing it in

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<sup>11</sup>Norton (1986) classifies *human* benefits/values on the basis of their 'use'. *Consumptive* benefits incorporate the long term needs of future generations; protection of land; scientific value, etc. *Nonconsumptive* values would include the aesthetic value of species/nature, a love and respect for wild places, and protection of cultural connections. The four basic justifications for zoos include consumptive and nonconsumptive values. However, conservation in zoos is consumptive insofar as it attributes instrumental value to endangered and non-threatened species alike.

a zoo, especially where the presence of that species is critical to that ecosystem's function, is actually in the best interests of either the ecosystem, the species or the individual animal.

### 4.3.2 Applying Value Theory to Zoos

The distinction between instrumental and intrinsic value is relevant to zoos because it partly informs the treatment of captive animals. On one set of assumptions, non-human animal species are accorded only instrumental value. People and their projects are sometimes accorded intrinsic value, but may also have instrumental value. In terms of zoos and conservation, there is an important and fundamental difference between conserving a species because it is useful to humans and conserving a species because it is valuable in and of itself. On instrumental value alone, a species that is no longer useful to people may no longer be conserved. But the same species attributed with intrinsic value as well as instrumental value will still be worth conserving.

The kind of value that people attribute to animals in the zoo partly determines whether the conservation argument is an appropriate justification for zoos. The historical analysis of the previous chapter intimates that zoos retained animals exclusively for animals' instrumental value to humans - they satisfied human curiosity and the desire to demonstrate the power and wealth of particular individuals. There seemed to be little or no pretence that such practices might have conferred any benefits on animals. Modern zoos, however, profess to be serving the interests, not only of humans, but of individual animals and species as well.

Today's conservation rationales in zoos are utilitarian in nature, predicated upon the benefits that biodiversity can provide for *human* life. People are the consumers per se, applying instrumental value to species on the basis of the direct economic benefits and/or aesthetic, emotional and spiritual pleasures derived from ensuring the survival of certain species. We profit from 'nature' in an indirect manner as well: it behoves us to endeavour to preserve an array of ecosystems on which our survival depends (Ehrlich & Ehrlich 1981; Leitzell 1986; Norton 1986). There is an underlying assumption that our welfare is of the utmost importance, reinforcing notions of nature as a 'resource' to be appreciated, used, consumed, even manipulated for its own benefit. It is usually utilitarian defences of conservation that tend to characterise most environmental policies and zoos' rationales are no different.

#### i. Conservation Justifications

We have seen previously that the conservation role of zoos partly comprises the practice of sustaining populations of endangered species in captivity in order to return them (in some cases) to their natural habitats at a later date. These measures have had some rather spectacular successes, such as in the case of the scimitar-horned oryx, the mauritius kestrel, or the St. Lucia parrot. Nevertheless, whether practiced by zoos or by government wildlife agencies, ex-situ conservation is a seriously limited methodology for addressing biodiversity loss on both an ideological and methodological level. Yet, breeding endangered species in captivity does provide an especially seductive rationale for the development and existence of zoo conservation policies and programs. A central goal for many professionals in the zoo community is to secure a conservation role for their institutions in order to ensure the zoo's relevance to society and

perhaps more importantly, its ultimate survival<sup>12</sup>. Hence, captive breeding of endangered species in zoos necessarily does more to advance human interests than the interests of animals (even in those cases where species are 'saved' from extinction). It also divulges our predilections for conservative, technically-oriented conservation approaches. Jamieson (1995: 62) emphatically asserts that:

... we should have the honesty to recognise that zoos are for us rather than for the animals. Perhaps they do something to alleviate our sense of guilt for what we are doing to the planet, but they do little to help the animals we are driving to extinction. Our feeble attempts at preservation are a matter of our own interests, values, and preoccupations rather acts of generosity toward those animals whom we destroy and then try to save. Insofar as zoos distract us from the truth about ourselves and what we are doing to nature, they are part of the problem rather than part of the solution.

A consequence of the 'conservation' aspirations of zoo professionals (even those among the most well intentioned individuals or groups) is that individual animals and species are valued more in terms of how they service conservation objectives (as defined by the zoo community), than on the basis of their intrinsic value. This mindset is implicit in the World Zoo Conservation Strategy which states that:

An important premise in determining the composition of the collection is that *every animal must have a function* within the framework of the objectives of that zoo. Conservation goals should be an important part of these objectives (CBSG & the IUDZG 1993: 30; emphasis added).

These ideologies are manifest in a particular kind of planning for animal management. Chapter Six presents a detailed discussion of the ASMP and other plans like it in the international zoo community. These schemes place a greater emphasis and priority on collection planning for endangered species that are the focus of inter-agency conservation efforts and/or are managed regionally by more than one zoo. Unendangered species which lack a high level of regional coordination are ranked lower. Such a preference for species under threat mirrors wider wildlife conservation strategies which place endangered species at the highest levels of a hierarchy of protection for wildlife (Garner 1994). These highly managed species and individual animals are more likely to *directly* assist conservation efforts and, in so doing, function to further legitimise zoos in the eyes of other conservation organisations and the wider community. Another example can be found in the highly corporatised practices of the statutory zoos in Australasia. 'Performance indicators' discussed in Chapter Eight are used by zoo professionals to rationalise animal collections (and individual animals therein) in terms of how well specimens advance organisation-specific objectives. Non-human nature is also commodified through corporate sponsorship of zoo exhibits or of individual animals. In this case, an animal's value is defined essentially in terms of whether a corporation can generate a favourable image for itself and promote its products by being associated with a particular species (and zoo).

Recognising the intrinsic worth of animals means that the zoo community would somehow have to rationalise confining animals to captivity on the basis of the benefits such actions conferred to

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<sup>12</sup> Such institutional and professional aims do not rule out the existence of zoo staffs' personal beliefs that conservation is a worthy cause to be promoting, and one that provides them with a great sense of satisfaction.

those *animals*, irrespective of any organisational or species benefits. Generally speaking, from an animal rights and welfare perspective, animals do have important interests because they can be harmed. Hence we should be morally concerned about them (Singer 1977; Regan 1988). This consideration should form the basis for our judgements about how we treat domesticated and captive animals on farms and in laboratories and in zoos (Garner 1994). Zoo Check is a British organisation that has invited the zoo community to take up compassionate, rights-based grounds for any of its conservation programs. Table 9 lists the specific challenges of the Zoo Inquiry campaign conducted by Zoo Check<sup>13</sup>.

To date this mandate has proven rather problematic for the zoo community. We have already seen how zoos are hard pressed to show that ex-situ conservation can save any more than a mere fraction of species (and individuals belonging to those species). Nonetheless, captive breeding and contemporary animal collection planning systems are still used by the zoo community as a defence against the barrage of contemporary criticisms which assert that its attempts to assist conservation are faulty, superficial and motivated primarily by self-interest. Zoo opponents also assert that, despite the zoo community's claim to be assisting conservation, there remains a moral presumption against keeping animals in captivity. An integral component of this argument is the sanctity of animals' 'wildness'. Jamieson (1985, 1995) asserts that depriving a wild animal of its basic freedom is not likely to be in its best interests. The liberty of those wild species maintained in zoos will be restricted insofar as they are not able to hunt or forage, maintain social orders, or generally behave as they might were they existing in their natural habitats. Worse still, in all cases animals are removed from their native habitats.

In response to these alleged wrongdoings, zoo proponents such as Bostock (1993), play down the distinction between 'wild' and 'domestic' and assert that zoo animals' needs are largely being met and that they enjoy considerable benefits by virtue of their captivity. That is, because we have sufficient knowledge to care for domesticated animals, and zoos' wild animals are partially domesticated, we can sufficiently accommodate their needs. Such competent guardianship removes the cruelty from maintaining animals in zoos. More significant, perhaps, is the assertion that zoo animals are relieved of the hardships of wild life such as disease, predation, starvation, or extinction. Where there is some discomfort or compromising of an animal's interests, it is far better to have that animal representing its species than not to have the species at all. Extinction is often seen by zoo professionals as the "ultimate cruelty" (Conway cited in Luoma 1987: 67).

This argument does not deny zoo professionals' concern about the suitability of the zoo environment to which they subject animals, nor the positive changes made in husbandry techniques that are a product of that concern. Substantial advancements in environmental and

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<sup>13</sup> Australian and New Zealand branches of Zoo Check and the Royal Society for the Prevention of Cruelty to Animals distributed pamphlets to zoos and the general public. Zoos were asked to respond to the Zoo Inquiry challenge. In 1995 a ZBV working party compiled staff views from each of its three properties (Melbourne Zoo, Healesville Sanctuary and Werribee Zoo). The document addresses the Inquiry's challenges by highlighting each zoos' achievements. However, it has yet to be released to the animal welfare and rights lobby community.



**TABLE 9: The Zoo Inquiry challenge to zoo directors**

(World Society for the Protection of Animals & The Born Free Foundation 1994)

*Does the keeping of animals in zoos in any way help the survival of ecosystems and their animals in the wild?*

- What proportion of your resources are spent on in-situ conservation?
- Should any animal be kept in captivity if it cannot be provided with appropriate physical, social and environmental conditions? Are your animals provided for?
- Should zoos be devoting captive space to species that are not categorised as being under threat and which are not part of recognised captive breeding and reintroduction programmes? How many such species do you have?
- Does exhibition of live captive animals at your zoo significantly advance the conservation of species and ecology?
- Does your zoo promote the importance of individual animal welfare?
- If these challenges cannot adequately be answered, what is your zoo achieving?



behavioural enrichment have gone far to ameliorate captive conditions for animals. Innovative techniques do afford animals more control over their own lives, alleviate boredom and reduce the incidence of aberrant behaviours (Bostock 1993; Ames 1993; Green 1987; Markowitz 1982; Tudge 1992b). Nonetheless, while these efforts elevate the quality of life for some zoo animals, they also legitimate the fundamental tenet of zoos: maintaining wild animals in *captivity*. This reasoning is evident in Bostock's (1993: 50) assertion that

... we can go a long way towards providing good conditions in zoos, and this backed up by the now very serious conservation reasons for keeping animals, means that, given really good conditions, we are not trespassing upon their [animals'] rights to freedom.

Yet, the degree to which those developments represent systemic and systematic shifts in zoo philosophy and architecture remains in question. Prohibitive costs associated with state of the art exhibit designs means that only those zoos with access to extensive resources will be able to afford these advances. Moreover, several critics are concerned by what motivates these wealthier zoos to construct expensive naturalistic exhibits. The zoo community has been accused of trying to conceal the obvious state of confinement it subjects its animals to on the basis of a financial need to present a more acceptable image to the general public (Jamieson 1985, 1995; World Society for the Protection of Animals & The Born Free Foundation 1994; Mullan & Marvin 1987; Sussman 1991; Seidman 1993; Davis 1993; Ormrod 1994). New exhibits often serve strategic public relations functions for the zoo (looking to draw more visitors) and for image-conscious politicians wishing to associate themselves with a 'good news' story of a new exhibit. Opening events often impose overly-rigid completion schedules on exhibit development. Hurried construction can result in exhibits that are not well-matched to the needs of animals or animal keepers, and animals may be forced to occupy exhibits before they have had a chance to acclimatise to them. For example, I was told of an incident in one zoo where a pair of highly endangered animals was confined to a small holding enclosure while their exhibit was being completed. Because the animals had been continually disturbed by ongoing construction, they refused to enter the new exhibit on the day of the official opening. The animals were apparently sprayed with a fire hose in order to force them out of the holding enclosure in time for the Environment Minister's arrival (Anonymous 1994: pers comm; Anonymous 1993: pers. comm). If true, such practices provide some evidence of how myriad political and economic imperatives make it virtually impossible to implement policies that fully acknowledge and respect the intrinsic worth (and rights) of animals in zoos.

These conditions do not rule out zoo policy makers making more concerted efforts to ensure that zoo principles are consistent with a stronger ethic of concern for individual animals as well as species. Jamieson (1995: 45) argues that:

... if animals have any moral standing at all, then it is reasonable to suggest that depriving them of their liberty is wrong ... since an interest in liberty is central to most morally significant creatures. If it is morally preferable for animals to be free ... keeping animals in captivity is a privilege that involves assuming special obligations for the animal's welfare.

Zoo professionals could recognise their unique responsibilities to the animals in their care and in so doing, come to understand that ex-situ conservation provides, at best, only a limited justification for confining animals to zoos.

#### *ii. Education and Research Justifications for Zoo Practices*

The World Zoo Conservation Strategy urges the international members of the zoo community to organise their collections so that :

*Animals already in the collection or animals to be acquired should have their individual role within the areas of conservation-related education, increase of knowledge (conservation - related research), conservation of that species, or a combination of these three. This rule should not only apply to endangered species, but rather to all animals in the collection ... even some common animals - because of their charismatic appeal to the public - may be important to a zoo's contribution, simply because by attracting large numbers of visitors they support the economic well-being of the zoo which is the basis for the institution's conservation efforts (Captive Breeding Specialist Group & the World Zoo Organisation 1993: 30; emphasis added).*

This passage provides a consummate example of an economic instrumental argument to attribute worth to non-human nature. It is quite apparent that the value of zoo animals is rationalised on the basis of how effective they are in enticing people to attend zoos and help zoos fulfil their educational objectives. While there is considerable evidence to show that people do enjoy themselves when they attend zoos and wildlife parks, at best there is only a tenuous connection between those experiences and the acquisition of substantial knowledge or motivation to act in favour of conservation. Whatever benefits these experiences may confer upon people, the act of amusing us or educating us does little for individual animals, and it is highly questionable that these practices serve the interests of species. In the case of research conducted in zoos, there are some areas of inquiry that improve the conditions of captive animals. While these studies may assist individual creatures, most research does more to assist the viability of zoos by allaying the criticisms of the animal welfare and rights groups, than it does to service conservation objectives. Research conducted *on* animals that is only marginally relevant to conservation upholds human interests at the expense of the individual animals involved.

#### **4.4 CONCLUSION**

Today western society is still coming to terms with zoos' conservation identity. This chapter opened a window into the zoo debate, exploring the arguments that underlie the questioning of zoos. These inquiries target the appropriateness of zoo goals. That is, should zoos maintain wild animals in captivity, and on what basis are such practices justified. Today the most common responses emanating from the zoo community in the context of these critiques is to emphasise the integrity and utility of zoo-based conservation, education, research, and recreational programs. Some very strong arguments have been put forward in recent times that soundly criticise not just the suitability of zoo aims, but zoos' ability to actualise their stated goals. For example, there is some rather daunting evidence that highlights the numerous ideological and methodological flaws inherent in ex-situ conservation programs. Nevertheless, the degree to which these oppositional views can facilitate fundamental change in zoos remains tempered by Western society's preference for technocratic conceptions of and responses to

environmental problems, the likes of which are embodied by zoo-based captive breeding programs and management systems.

Having introduced some broad international political, economic, historical and philosophical settings for zoo conservation roles, the following chapter will begin to place these trends in their regional context. A profile of the ten study zoos will be constructed. Examples will be drawn from zoos' geographical settings, organisational arrangements, exhibit designs and animal collection schemes, and will illustrate that certain features of zoo conservation policy can be both unique to a particular institution and common to the whole zoo community.

## **CHAPTER FIVE: VISITING THE STUDY SITES**

*Our zoos by being in the right latitude are in an excellent position to show a diversity of the world's wildlife. Yet because we are even more fortunate in having been so isolated from the rest of the world, our continent is in a sense a vast zoo, a kind of ark which carries a precious cargo of remarkable animals (Serventy 1979: 156)*

### **5.1 COMPARING AND CONTRASTING AUSTRALASIAN ZOOS**

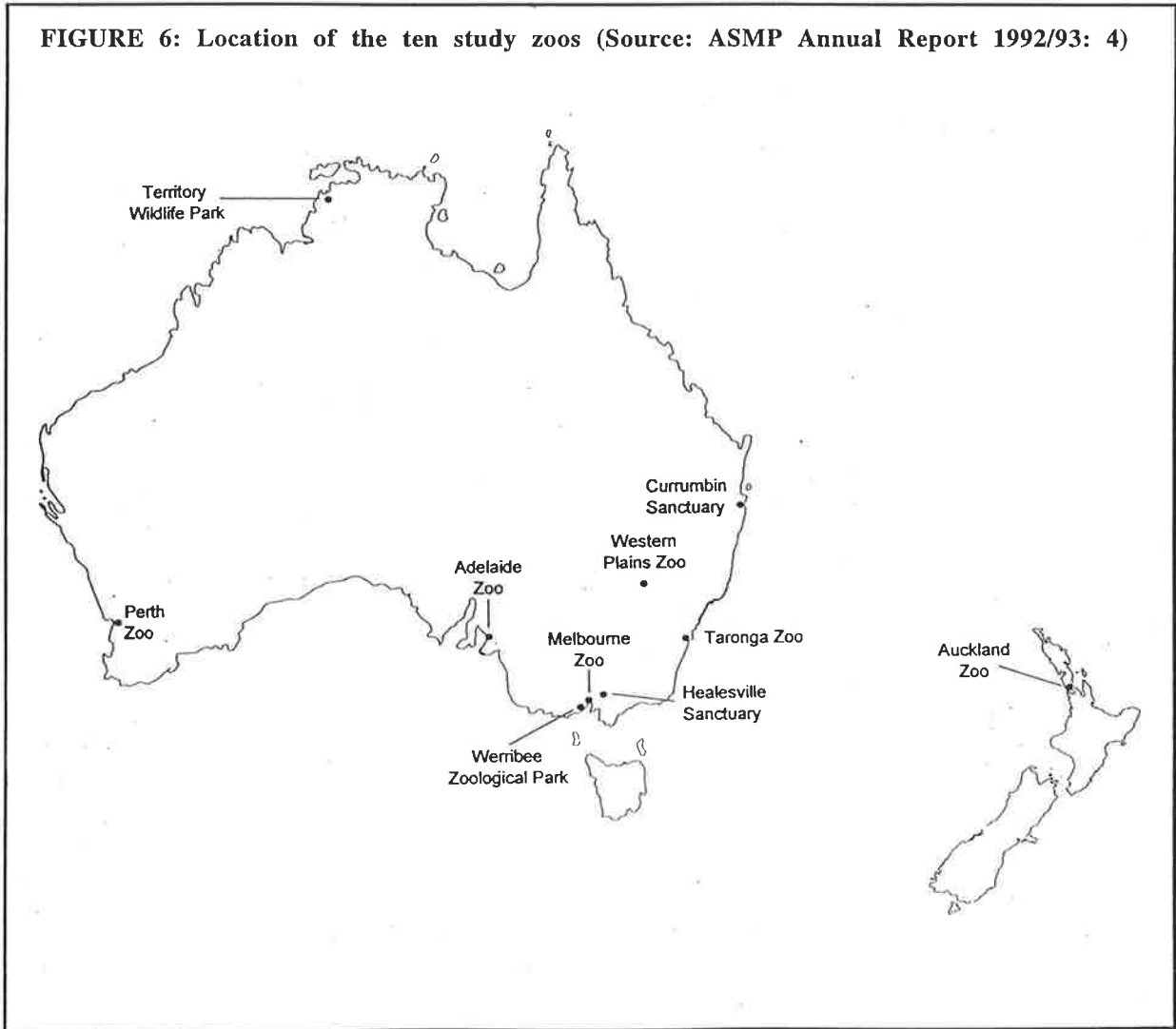
This chapter will introduce and describe the ten study sites for this research (Figure 6). The focus of previous chapters has been more diffuse, considering the complexity of the overall research problem and exploring fundamental tenets that constitute contemporary zoo conservation policy. These broad theoretical issues will now be applied to specific zoos. These matters are manifest in individual zoos in both similar and different ways, and are integral components of each institution's capacity to deliver conservation programs.

A basic portrait of Australasian zoos participating in this study will be constructed by examining an array of characteristics which typify most zoos and which distinguish a particular zoo from the rest. Several features are listed such as zoos' geographical context, animal collection and exhibits, and visitation patterns. These distinguishing characteristics and trends in zoo policy are also portrayed in a series of photographs for each zoo. Descriptions of each zoo's organisational arrangements are provided. These details are supplemented by a short discussion about which sub-groups in zoos are involved in certain aspects of conservation policy. The implications that organisational structures have for conservation effectiveness will be expanded upon in Chapter Seven. Additionally, Chapter Nine will consider how perceptions of individual zoo staff at various organisational levels colour conservation principles and activities.

#### **5.1.1 Animal Collections and Exhibit Designs**

Hancocks (1971) identifies several typologies for zoo exhibits and emphasises that these categories are not mutually exclusive; most zoos have been planned to include a selective combination of the five themes. *Systematic* displays present groups of zoologically related species in close proximity to one another and are reminiscent of zoos from the nineteenth and early twentieth centuries. While these designs can confer educational benefits to zoo visitors, in particular relating different species on the basis of morphological characteristics, understanding how species interact with their environments is not a central focus (Mullan & Marvin 1987). *Zoogeographic* collections are organised according to animals' continents of origin. Unlike the systematic pattern, these designs do not necessarily separate species. Rather, different species are linked together on the basis of their geographical distribution. In *Habitat* displays, species from similar habitats such as rainforests, savannas or aquatic environments, are grouped together. This design trend is growing in popularity and is most consistent with ecological issues in environmental education. The *Popularity* of certain species is another exhibit philosophy. Charismatic fauna may often be strategically placed in central locations in order to attract zoo visitor attention. Finally, the *Behavioural* exhibit philosophy informs animal collections on the basis of ethological factors such as swimming, burrowing or flying. Rather than focusing on species per se, the primary interest of this approach lies in illustrating

**FIGURE 6: Location of the ten study zoos (Source: ASMP Annual Report 1992/93: 4)**



relationships between physical characteristics, psychological-social characteristics and adaptations to the environment (Mullan & Marvin 1987).

Most of the zoos in this study mix different patterns of display. The systematic pattern is most evident in the Australasian zoo animal collections, yet influences from zoogeographic, habitat and popularity patterns may also be found. The older, metropolitan zoos in Perth, Adelaide, Melbourne, Sydney and Auckland provide the most striking examples of the old and new in both their collection philosophies and exhibit designs. While these zoos often contain collections of exotic and native species more diversified than the wildlife parks and sanctuaries in this research, a necessary consequence of such variation is that it encompasses more inconsistencies among exhibit philosophies. Components of these zoos represent traditional, conservative systematic and popularity collection philosophies, while newer exhibits and master plans embrace zoogeographic, habitat and behavioural groupings. This contrariety was one of the most impressive dynamics that I observed in the zoos over the course of my research. One could hardly avoid noticing the old and the new existing side-by-side, as well as efforts to make the old function and look like the new, all evidence of the staggered nature of development given limited available resources. Intermittent modernisation of zoo exhibits most likely frustrates zoo professionals' efforts to convey progressive conservation messages to the general public.

Another important basis of comparison for exhibit styles can be found between the metropolitan zoos and the wildlife park/sanctuary formats. Generally, the wildlife parks, sanctuaries and open-range zoos are more successful in portraying a 'natural' or 'wild' setting than the metropolitan zoos. In the cities zoo professionals are constrained by their urban surrounds and produce simulations of nature that tend to be more contrived than those habitats constructed in less developed areas. The rural and more naturalistic atmosphere of the wildlife parks and sanctuaries, in conjunction with collections that are primarily comprised of native species, may convey enhanced experiences of habitats (and conservation information) that surpass those of metropolitan properties. The influence of zoo environments on visitors is explored further in Chapter Nine where the results of zoo visitor questionnaires are discussed.

### **5.1.2 Organisational Structures**

Organisational arrangements provide another example of striking similarities among different Australasian zoos. This feature has been largely neglected by zoo policy-makers and academics in the context of researching zoo conservation roles. While there are significant differences in size and detail among the ten study zoos, in my assessment these institutions also exhibit very similar compartmentalised and hierarchical organisational structures. Such arrangements are consistent with the notable presence of highly-ordered, systematic patterns of animal collection plans. Another feature common to many zoos is a frequent rearranging of organisational structures<sup>1</sup>. Over the course of this research, several zoos were undergoing organisational

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<sup>1</sup> The major zoos in Victoria, New South Wales, the Northern Territory and Western Australia are government instrumentalities. This 'official' status makes these zoos more vulnerable to the whims of reigning political regimes than are the private zoos and wildlife parks. Hence, the incidence of re-organising institutional structures (a prevalent type of reform in the public sector) has been higher in the public zoos.

modifications. While some of the diagrams appearing in this Chapter may not detail such changes, they remain largely representative of the general structures that identify each zoo.

Figure 7 portrays the structural arrangements that typify most Australasian zoos' immediate organisational environments. A standard hierarchy of authority is for Boards of Directors to answer to a State Government official and advise Zoo Directors on broad policy matters. Zoo Directors then manage the daily operations of respective properties. Stroud (1996) has found a high incidence of conservatism in regards to environmental ideals at these organisational levels.

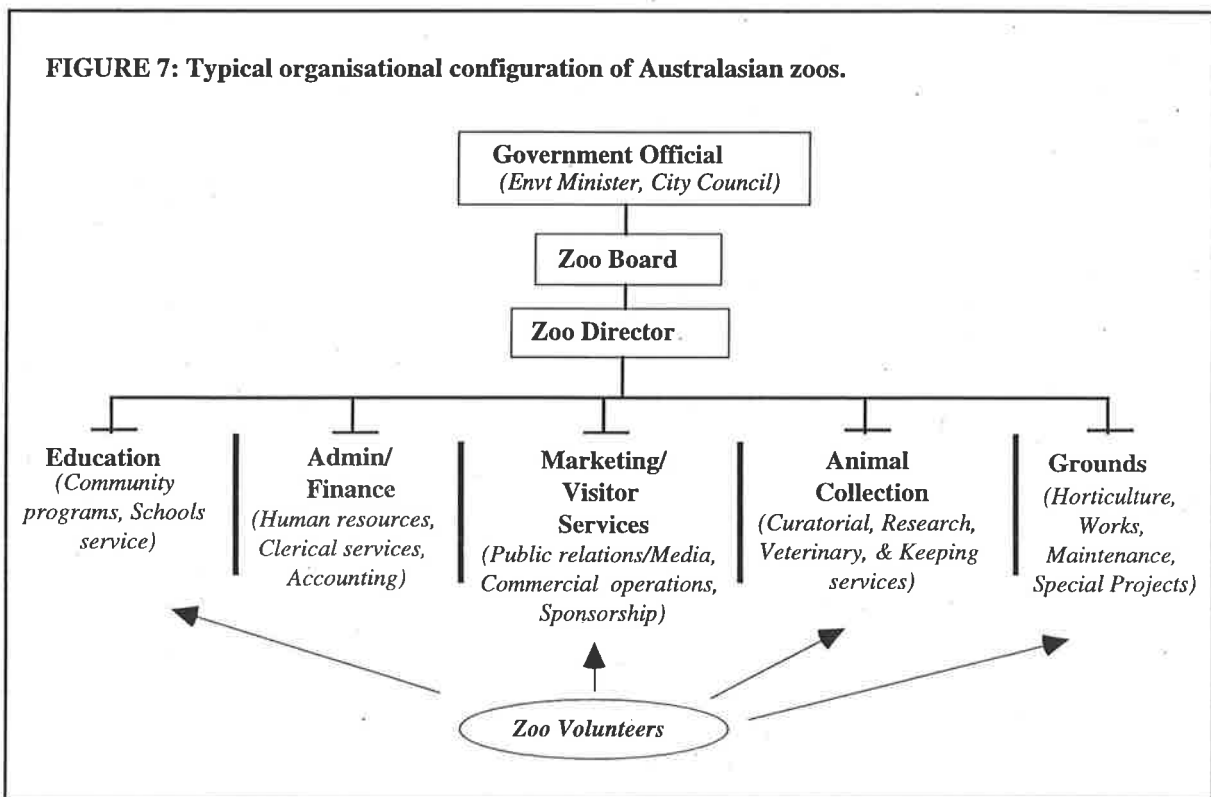
Below the Director are often several distinct departments supervised by personnel of some seniority. Most zoos separate animal management, administrative/business, education, and property maintenance spheres and functions and assign a manager to each department. Major departments are often broken down further into sub-departments, the heads of which form a middle management structure. Depending on the number of personnel employed in a zoo, there may be several more organisational layers. For example, animal collection divisions in larger zoos' often consist of a senior curator, curators for several animal sections, section heads or senior keepers, specialist keepers and regular keepers. Stroud (1996) finds that these staff - led by middle managers - tend to be key agents for change, striving to incorporate conservation ideals into their organisations.

*Animal Collection Departments* are directly responsible for managing living specimens. These duties most often entail caring for animals and in some cases may include managing the botanical collections as well. Staff in these departments attend to the basic care and husbandry requirements of animals and, in more recent decades, their activities have become the focus of implementing conservation in zoos through cooperative species propagation schemes and by fostering research activities. *Education Departments* also play a key role in zoo conservation. These divisions are responsible for facilitating an increased awareness of wildlife, their habitats and conservation, by designing and implementing formal and informal education programs for schools and zoo visitors.

There are often several zoo departments whose part in conservation is less obvious. Nonetheless, these areas will have some influence on the nature of conservation principles and programs. Commercial matters in zoos are primarily the responsibility of *Marketing* or *Visitor Services Departments*. These divisions are generally concerned with generating financial support for the zoo by increasing attendance rates, developing fundraising programs and promoting the recreational, educational and conservation functions of the zoo both to the local community and tourists. *Works or Capital Development Departments* are responsible for managing certain components of the zoo landscape such as coordinating the construction of new exhibits, maintaining existing facilities, and implementing safety requirements into zoo operations. *Corporate Services* provides an array of human resources, financial and information management services and, where applicable, often coordinates the provision of state government funding.



**FIGURE 7: Typical organisational configuration of Australasian zoos.**



Zoo volunteers are another important component of zoo operations. Volunteer labour most commonly supports the programs of *Animal Collections, Education and Marketing* divisions. Formalised zoo membership associations constitute the base of most volunteer operations. Elected officers coordinate volunteer activities and liaise with paid zoo personnel to determine where the volunteer work force is most needed. The zoo staff contact person is located in different departments depending on the zoo in question. These member associations also provide financial assistance for their respective zoo. A percentage of subscription funds are channelled towards supporting exhibit development, conservation and research activities, and securing some equipment. In exchange for their support, members of zoo groups often receive free admission to the zoo as well as a host of other privileges.

## **5.2 THE ADELAIDE ZOO**

The Adelaide Zoo is located near the heart of Adelaide's central business districts. The Zoo is on eight hectares of land and is the smallest of its kind in the southern hemisphere. Located adjacent to the City's Botanic Gardens and Torrens River, the Zoo is easily accessed by Adelaide residents and visitors who can walk from the city centre or take a tourist boat which cruises the Torrens and stops at the Zoo.

Over 300,000 people attend Adelaide Zoo each year<sup>2</sup>. The survey from this research found that 82% of people coming to the Zoo are repeat visitors (82%) and 74% of visitors come from within the State and the wider metropolitan area. Most people (50%) attending the zoo have visited zoos in other Australian states and, to a lesser degree, some (36%) have also been to overseas zoos. Collectively, 65% of Adelaide Zoo visitors report that they visit zoos anywhere from once a year to once every five years. Yet, 20% visit *more* than three times in a single year, and another 15% visit approximately two to three times a year.

### **5.2.1 Animal Collections & Exhibit Designs**

Like the other metropolitan zoos in this study, evidence of Adelaide Zoo's evolution is everywhere to be seen. The obsolete and the modern exist side by side. Adelaide Zoo is the second oldest zoological institution in Australia. Zoo staff place a strong emphasis on preserving and restoring the most worthy examples of the Zoo's architectural heritage. The Zoo's administration building, restaurant, rotunda and main entrance gates provide several examples of Victorian structures which have been restored and renovated. The Zoo's European-style setting includes a large picnic lawn and winding pathways heavily planted on either side which lead visitors to the exhibits. While the overall atmosphere is rather pleasant, there are less favourable artefacts of the Zoo's history (such as several barred and wire cages for large cats and some birds) which intrude upon the otherwise agreeable ambience. While there are still a number of these outdated enclosures present in the Zoo, there are also many naturalistic exhibits such as the newly developed primate precinct, and the yellow-footed rock wallaby and little penguin displays, to name just a few.

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<sup>2</sup> Adelaide's total population is 1,023,546 (Australian Bureau of Statistics 1991).

The Zoo embodies an amalgamation of Hancock's (1971) systematic, zoogeographic and popularity patterns of animal collections. Numerous species originating from a range of geographic regions such as Africa, South America, North America, Asia and Australasia are represented and are often presented in taxonomic groupings. Many charismatic species such as kangaroos, primates and big cats are prominently featured. In keeping with popular opinion, however, the Zoo administration did transfer both its elephant and polar bear to other locations in an attempt to provide these animals with more appropriately-sized enclosures or climatic conditions<sup>3</sup>. Most exhibits at the Zoo tend to house individuals from a single species, but there are a few examples of mixed-species exhibits. For example, two large walk-through aviaries feature several bird species from eastern Australian sub-tropical rainforests and northern coastal Australia. The Rainforest Exhibit, which is in its planning and development stages, will house several different mammals in a single habitat enclosure. In total, the Zoo holds 79 species of mammals, 161 species of birds, 35 species of reptiles and 1 species of amphibians (ASMP Regional Census 1996). Some of the more highly endangered species held by the zoo for breeding and display include the Golden-lion tamarin, mallee-fowl, greater stick-nest rat, pygmy blue-tongue lizard, scimitar-horned oryx, Sumatran orang-utan, and the Gouldian finch, to name a few.

The Adelaide Zoo's sister property, Monarto Zoological Park, is located 70 kilometres east of Adelaide near Murray Bridge. A relatively new organisation, the Zoo is not fully complete and will be developed further in several stages as funds become available. Currently, the Zoo is open every Sunday and on public and school holidays. Visitors have a choice of using a regular schedule of guided, bus safari tours to view the animals or may walk along designated trails accompanied by interpretation guides. The Zoo's 1,000 hectares simulate Asian and African geographic habitat areas and feature exotic, grassland dwelling animals. Also featured are some threatened species such as the highly endangered Przewalski's horse, Scimitar-horned oryx, rufous hare wallaby, addax, and mallee fowl. These species and others are part of ongoing ex-situ conservation schemes.

Plates 1 - 10 provide a visual representation of the features discussed above.

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<sup>3</sup> The Zoo management had long been under pressure from its own staff and the public who were becoming increasingly upset by viewing these animals' neurotic, stereotypic behaviours and poor condition. Samorn, the elephant, was shifted to the open-range facility, Monarto Zoological Park. The polar bear was transferred to an overseas zoo.

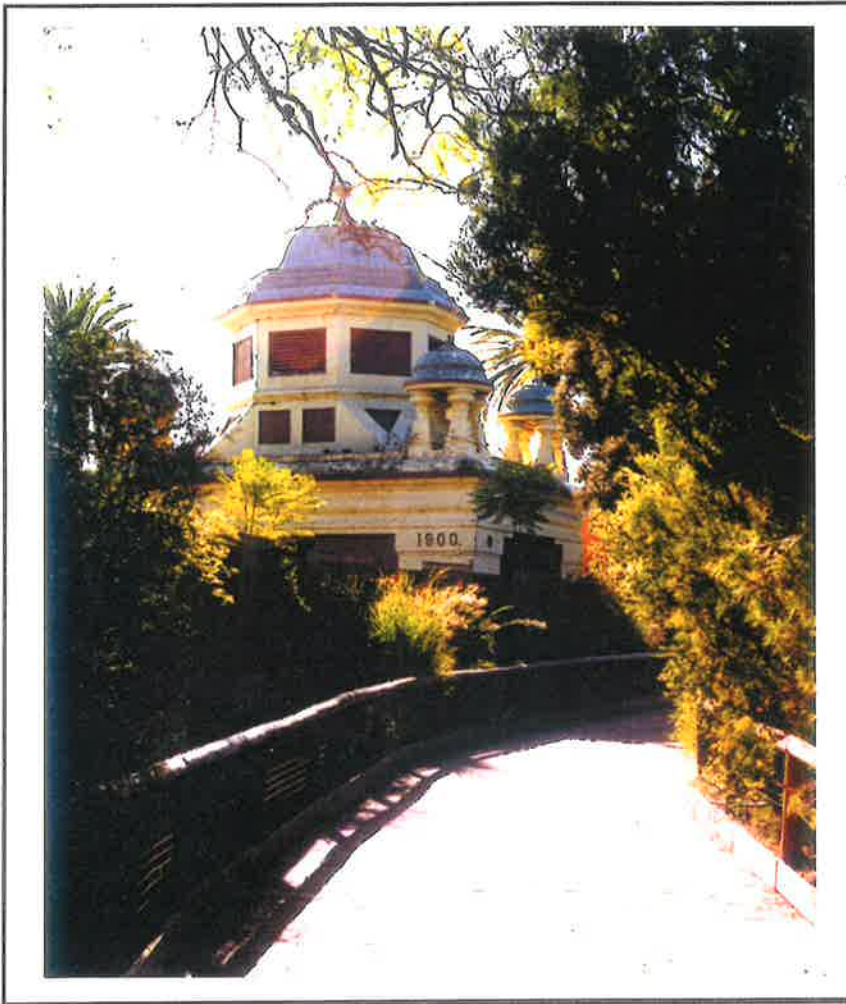
**Plate 1:** Adelaide Zoo's main entrance proudly displays both the Zoo's European heritage and its contemporary endeavours (eg new exhibits, major sponsors).



**Plate 2:** Inside the Zoo, the restored rotunda and picnic lawns are also reminiscent of the Zoo's 19th century origins.



**Plate 3:** Change is readily apparent in the Zoo's modernisation of its exhibits. Works staff make adjustments to an exhibit in the new naturalistic primate precinct.



**Plate 4:** Occasionally, zoos' need to change can conflict with preserving their own history. This heritage-listed elephant house has been standing empty for several years after the Zoo shifted its elephant to its satellite property, Monarto Zoo.





**Plates 5 & 6:** Charismatic fauna displayed in single exhibits remain the predominant style at the Zoo and continue to fascinate visitors. In some exhibits glass has replaced the older means of restraining animals, providing the illusion that there are no barriers between the visitors and the animals they are viewing.





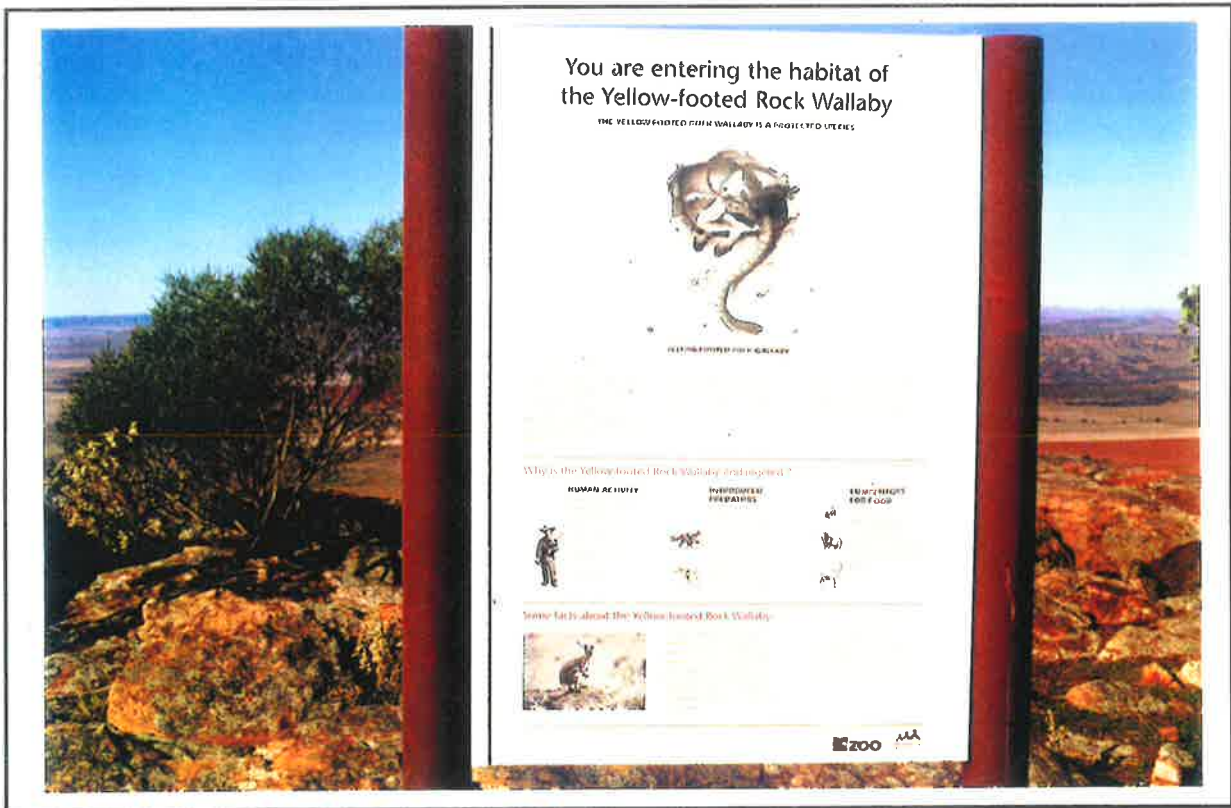
Plates 7 & 8: Mixed species exhibits that simulate an ecosystem are the newest collection and display trends. In the foreground are dusky leaf monkeys and in background is the Malayan tapir. This South-east Asian Rainforest exhibit has been sponsored by McDonalds. The company also supports similar exhibits at Auckland and Taronga Zoos.



**Plate 9:** Modern zoo signs implore visitors to develop more environmental awareness and behaviour.



**Plate 10:** The use of conservation-oriented signs is not restricted to the inside of the Zoo. This sign appears in the southern Flinders Ranges near Hawker, South Australia, providing an 'in-situ' complement to the Zoo's yellow-footed rock wallaby exhibit.





### 5.2.2 Organisational Structures

Figure 8 illustrates the organisational structure of the Adelaide Zoo. The Board of the Royal Zoological Society of South Australia and a Director guide the affairs of both the Adelaide Zoo and its satellite property - Monarto Zoological Park. While the Zoological Society is not overseen by a State government official, it does have State and City of Adelaide (local government) representatives on its Board and has a direct line of communication to the State Treasury. Adelaide Zoo employs approximately 95 full time, part-time and regular casual staff. Monarto has eleven staff and essentially functions as a separate department within the overall zoo structure, its Director reporting directly to the CEO and Director of Adelaide Zoo<sup>4</sup>. Other departments include Administration, Commercial Development, Veterinary Services, Animal Collection, Property Management, and Education. The Assistant Director of the Zoo oversees the Administration Department which is inclusive of clerical, accounting and human resource services. Commercial Development combines public relations, publicity, promotions, membership, fundraising, retail and catering. The Animal Collection is divided into two large sections, mammals and birds/reptiles, each with a senior curator acting as manager for those sections. The Curator for Birds/Reptiles also supervises Animal Records and Transactions staff. The Mammals section comprises three subsections: Carnivores/Primates, Ungulates/Native Animals, and Staff Development. Property Management includes horticulture and general maintenance operations.

Adelaide Zoo's overall operations receive substantial assistance from its Volunteer Program. The formalised program consists of a part-time paid volunteer coordinator who oversees the activities of members of the Royal Zoological Society of South Australia and several committees. A Members' Centre at the zoo functions as the volunteers' base where monthly meetings are held which feature guest speakers, slide shows, open forums and training course for new guides. Zoo volunteers assist paid staff at Adelaide and Monarto undertaking research on animal safety, husbandry and animal behaviour; provide guide services and touch tables<sup>5</sup> for zoo visitors; and help with special functions held at each zoo.

#### *i. Zoo Personnel and Conservation Practices*

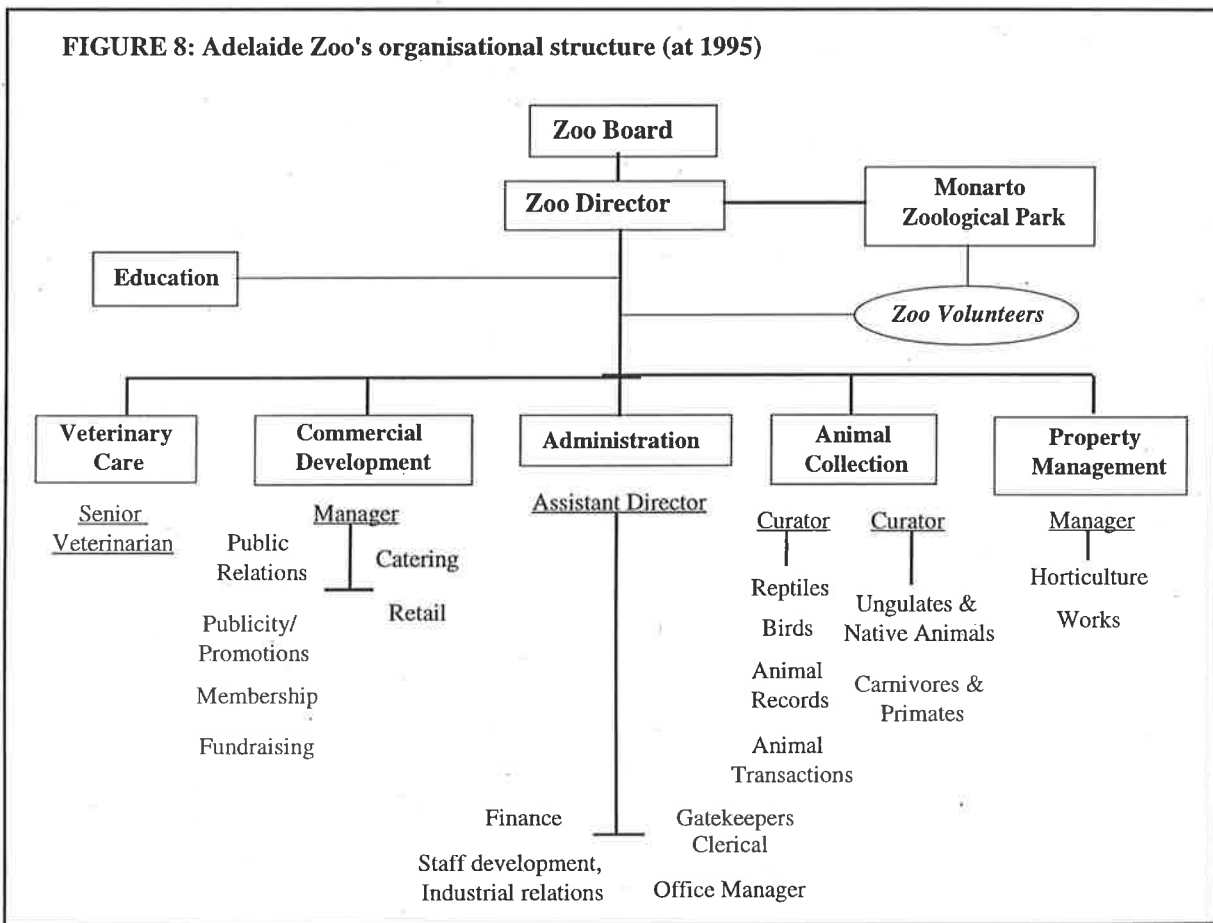
Within the overall Adelaide Zoo structure, the Director of Monarto Zoo (who previously served as Acting Director of Adelaide Zoo) has played an active role in establishing and developing Monarto, as well as the captive breeding and reintroduction programs conducted from there (such as Przewalski's horse). This individual is also an avid spokesperson for zoos' conservation role and was instrumental in facilitating research on visitor perceptions of zoos and conservation (Mazur 1991). The amiable management style of the current Director of Adelaide Zoo, his personal involvement in the Zoo's endangered species projects, and his recent appointment as ARAZPA President may foster further conservation advancements. Moreover,

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<sup>4</sup> The duties of CEO and Director are carried out by one person.

<sup>5</sup> Touch tables are a popular interpretive technique used by most Western zoos. In an effort to increase the interactive educative component of a zoo visitor's experience, an array of animal skins and bones are displayed on a table set up in varying locations in a zoo. A zoo guide is assigned to the table and encourages visitors to approach the display. Visitors are able to handle the exhibit items while the Guide explains the importance of each piece.

FIGURE 8: Adelaide Zoo's organisational structure (at 1995)



the recent appointment of a zoology professor with strong views about realistic conservation aspirations for zoos as Chairman of the Zoo Board may ensure that debates regarding the Zoo's role in wildlife policy remain lively.

Adelaide Zoo's senior curators have traditionally been critical influences in maintaining a vital conservation profile for the Zoo. The relative autonomy afforded to these positions by senior management has enabled these people to translate their considerable experience and interests into actual conservation policies and programs. Currently, there is now one curator for the Zoo. This person continues to be involved in species management policy formulation at a regional level and is responsible for implementing these principles at his own institution. Additionally, several of the keepers under his charge have taken on voluntary coordinating positions for the region's collection plans. The Zoo's previous Records Officer increased the clerical duties of this position to include regional animal management responsibilities and representation on government wildlife recovery programs. The current Records Officer brings extensive experience working with endangered species and will probably conduct her duties in a manner similar to her predecessor. Finally, the Zoo's Education officer, who has post-graduate training in Environmental Studies, continues to bring important environmental knowledge to the range of programs under his jurisdiction.

### **5.3 THE PERTH ZOO**

The Perth Zoo is located close to the heart of Perth's central business district in the suburb of South Perth. Visitors can reach the Zoo by car from a number of major thoroughfares leading in and out of Perth, or by travelling on the Swan River ferry. From the ferry terminal, it is only a five minute walk to the Zoo. This central site has certainly been advantageous; the Zoo remains one of Perth's major tourist attractions and brings in many local visitors as well. Attracting close to 600,000 visitors annually, the Zoo boasts a high attendance rate per capita for an Australian zoo<sup>6</sup>. The visitor survey taken during this research showed an extremely high frequency of visitors (91%) who had been to the Zoo before, as well as ample amounts of people who visited zoos frequently. Thirty-five percent of survey respondents reported they visit zoos from over three times to two times per year. Forty-seven percent stated they attend zoos between once a year and once every two to three years.

#### **5.3.1 Animal Collections and Exhibit Designs**

The Zoo is nineteen hectares in size and similar in design to the other metropolitan properties. It has a garden setting and visitors travel to the exhibits along paved pathways which meander throughout the Zoo, in some places leading out to large, open picnic lawns, in others taking visitors through narrow, densely-planted corridors. There are several older exhibit precincts which make use of wire cages and display single species. Such areas have been targeted for redevelopment, or are in the process of being redeveloped. The Zoo's animal collection consists of a wide variety of exotic and native species including Australian mammals, birds, reptiles, carnivores, primates, ungulates and hoofstock. In total, the Zoo holds 112 different

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<sup>6</sup> Perth's population was 3,022,533 in 1991 (Australian Bureau of Statistics 1991).

species of birds, 66 species of mammals (including 20 species of marsupials, 28 species of primates, 12 species of carnivores, Malayan elephants, common zebra, southern white rhinoceros, giraffe, banteng, and Himalayan tahr), 36 species of reptiles and 2 species of amphibians (ASMP Regional Census Plan 1996). Some species are grouped in zoogeographic patterns, others on the basis of their taxonomic similarities.

Alongside some of the more traditional species groupings and exhibits are more modern display areas featuring contemporary exhibit designs which include simulated habitats. One of the most prominently featured exhibits is the African Savanna which depicts a grasslands ecosystem and displays animals such as the giraffe, zebra, white rhinoceros, cheetah, cape hunting dog, meerkats, hyena, and scimitar-horned oryx. Apart from the zebra and giraffe which are displayed together, the other species occupy separate enclosures. Two of the Zoo's most progressive exhibits embody important environmental themes. Harmony Farm simulates an agricultural operation that displays farm animals to touch in a setting designed to demonstrate ways of using less water, saving human energy and conserving fossil fuels. Micro-World is an interactive exhibit that uses models of giant invertebrates to demonstrate life cycles in healthy soil and how degraded landscapes are created from unsustainable land-use practices.

The Zoo also operates a satellite property on the outskirts of the Perth metropolitan area. The Endangered Species Centre at Byford is currently being developed for conducting endangered species breeding, research and education programs and an off-limit zoo service area. The Zoo secured a 20 year lease of the degraded Plaistowe Homestead and will have to undertake substantial development and renovations of existing buildings before the thirty-nine hectare property is fully functional. There are currently twenty-four animal enclosures built behind fox-proof fences which will form the primary breeding area. Most of the Zoo's behind-the-scenes activities such as propagating live food and browse for its animals will be carried out at this new facility.

Several of the features discussed above are illustrated in Plates 11 - 22.

**Plate 11:** This is the first sign visitors view after they have entered Perth Zoo. The graphics advertise both the Zoo's and its corporate sponsors' conservation aspirations.



**Plate 12:** The picnic lawns still featured at the Zoo are reminiscent of Perth Zoo's origins which lie in the European zoo model.



**Plate 13:** While the old bear pits at the Zoo were eventually torn down to make way for a modern Rainforest Exhibit, the Zoo still features other 'dangerous' carnivores.



**Plate 14:** The presence of Perth Zoo's carousel illustrates another tradition (carnival-type entertainment) that lingers on, constraining zoo modernisation.

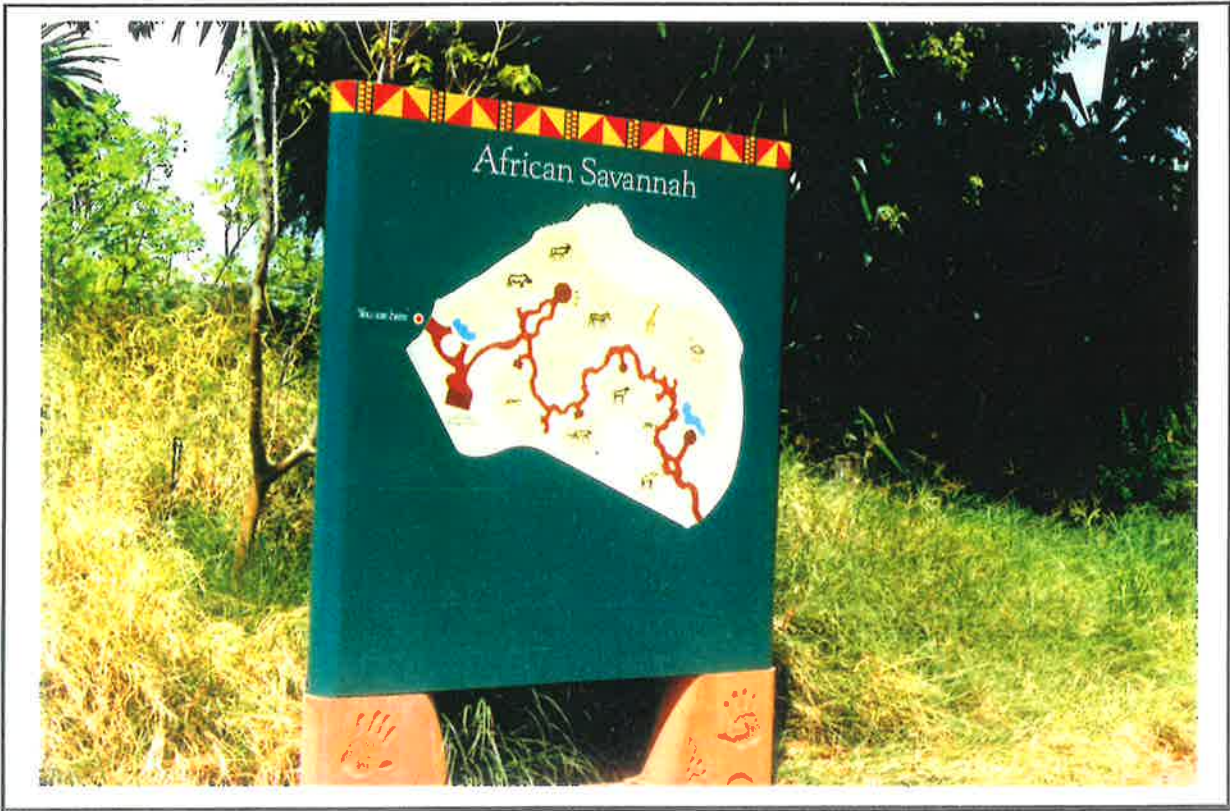


**Plate 15:** While the elephant enclosure's naturalistic design does provide the animals with more space and stimulus, it was also designed to portray an image to visitors of elephants in their 'natural habitat'.



**Plate 16:** The Zoo's orang-utan colony is a favourite among visitors, particularly when keepers can be viewed interacting with these charismatic animals.





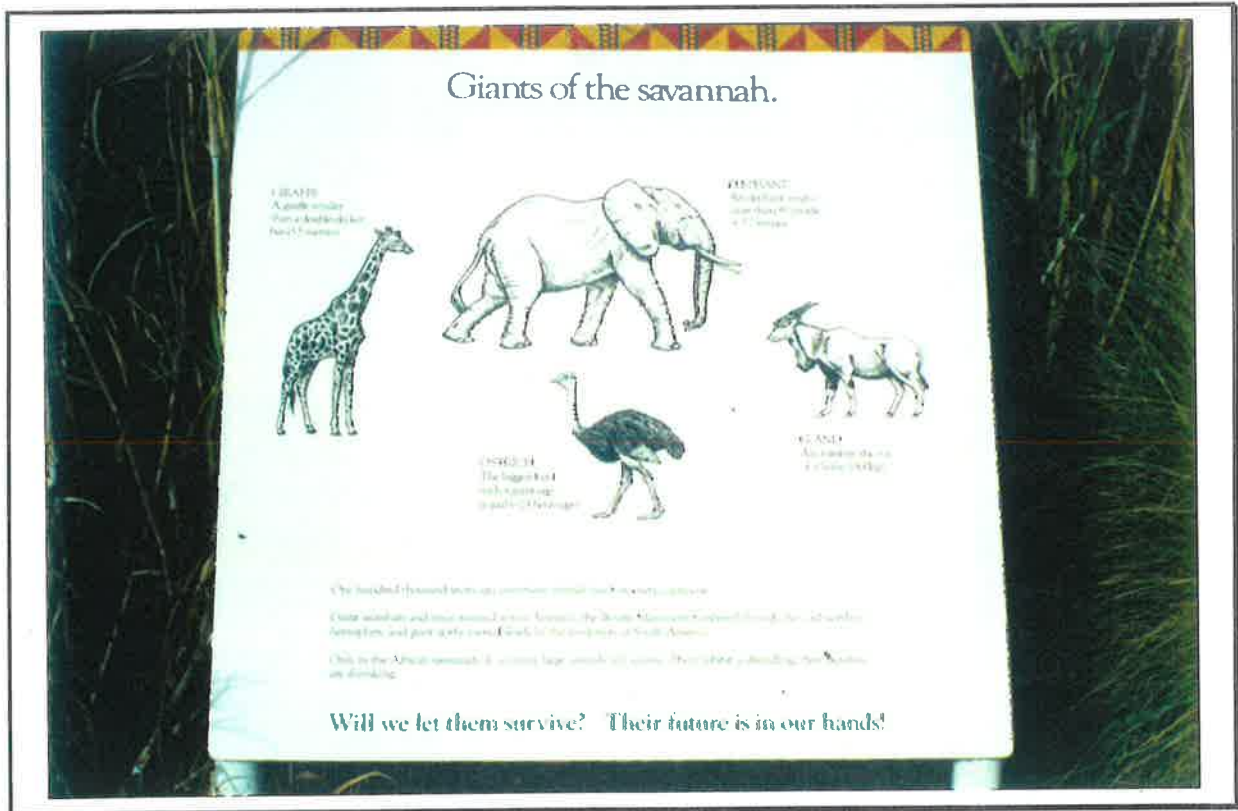
**Plates 17 & 18:** The Zoo's Savannah exhibit typifies contemporary trends in exhibit design and philosophy. An entire habitat or ecosystem is simulated, charismatic animals previously featured in traditional enclosures are now displayed in 'natural habitats', and interpretive aids feature conservation issues relevant to this particular area.







**Plates 19 & 20:** Signs are an important means of interpretation and convey a variety of information, such as community involvement in conservation, the threatened status of animals featured in zoo exhibits and zoological data specific to zoo animals.





Plates 21 & 22: Cultural features of the Savannah are also re-created in this exhibit precinct.



### 5.3.2 Organisational Arrangements

Figure 9 illustrates the organisational structure of the Perth Zoo<sup>7</sup>. The Zoo is governed by a Director and Zoological Gardens Board of Western Australia which answers to the State's Environment Minister. Perth Zoo is constituted by several major divisions or departments. The heads of these departments form the senior management structure of the Zoo and report to the Director. In the *Collections Program* a Curator oversees three sub-departments: horticulture, veterinary services, and the Zoo's collection of animals. The horticultural and animal collections each have a curator and a senior veterinarian manages the animal hospital and support staff. Also included in the Animal Collections Program is the Animal Records Officer. There are several sections in the animal keeping division: Australian, Hoofstock/Carnivores, Birds, and Primates. The *Marketing Program* assumes a public relations function for the Zoo and supervises the operation of the Zoo Shop and Train Ride. The *Corporate Services* branch is essentially the administrative arm of the Zoo, attending to human resources and accounting issues and providing the bulk of clerical support for zoo operations. The *Park Facilities Department* provides maintenance services and coordinates visitor admissions.

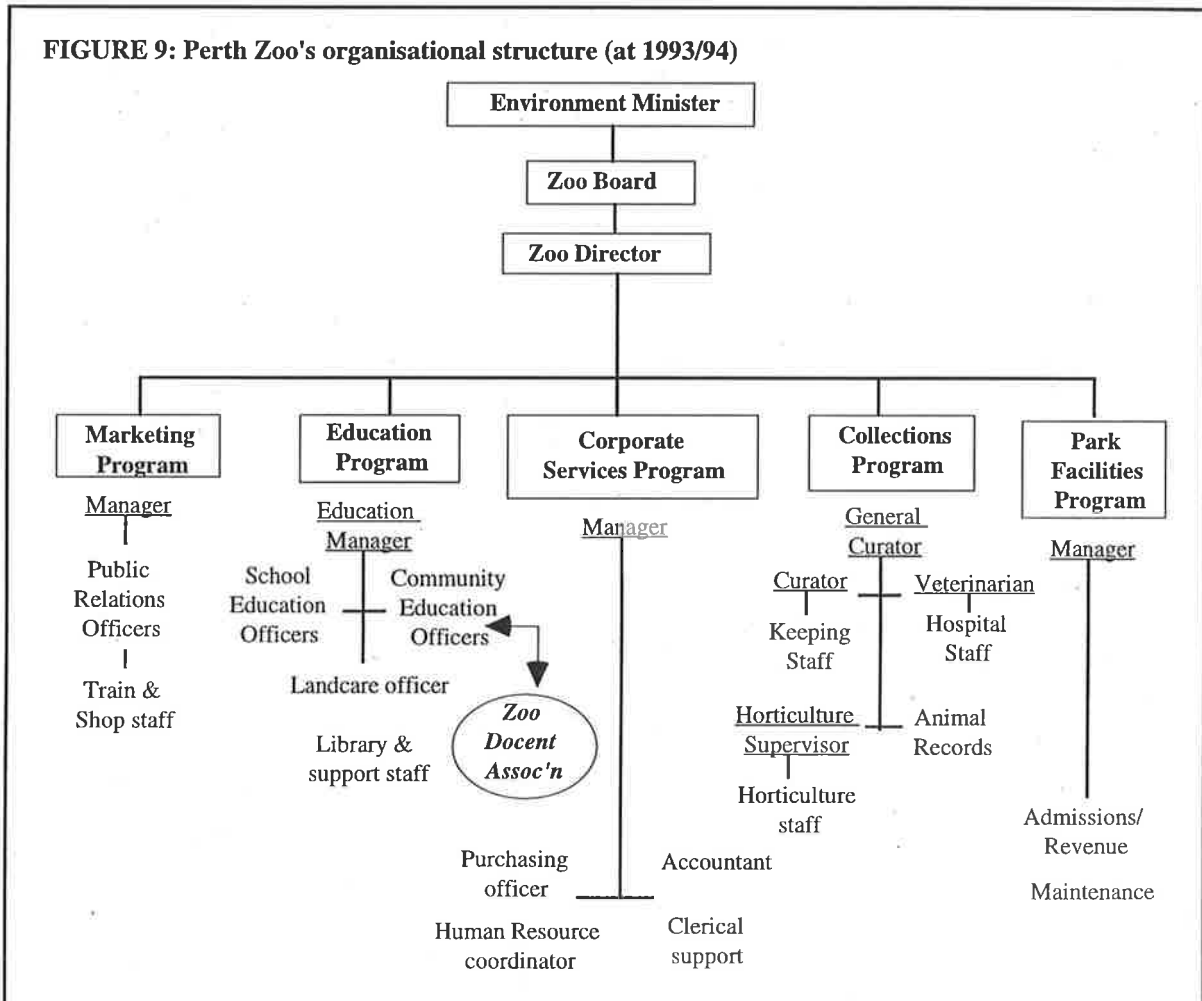
The Docent Association is Perth Zoo's volunteer association, whose members endeavour to support the Zoo's conservation and education mission by providing an array of services (conducting guided zoo tours, assisting with the delivery of special community and corporate fundraising programs) for zoo visitors. The Docent Association has been operating at the Zoo for twelve years, and in more recent times contributes an estimated 25,000 hours per year of voluntary service to the running of the Zoo. The group liaises with zoo staff in Community Education and is managed by an elected committee who conduct a comprehensive training program for would-be zoo guides and organise volunteers on fortnightly rostered duties.

#### i. Zoo Personnel & Conservation Practices

The Director's position at Perth Zoo has traditionally been an important determinant of strengths and weaknesses of the Zoo's conservation program. The Zoo's new Director, who comes from a human resource management background, has been spending most of her time redressing severe staff morale problems left by her predecessor, and is also implementing extensive organisational restructuring. In addition to internal problems, there were allegedly antagonistic relations between the Zoo's past Director and the head of Western Australia's conservation agency. It is unlikely that such conflict, along with some logistical difficulties with some of its endangered species programs, would have helped the Zoo establish a reputation for having conservation competencies. Nonetheless, the previous Director, who was very active in the international zoo community, was successful in realising many of his forward thinking ideas about the role of zoos in conservation. Unconventional beliefs have not been limited to this realm of power. The Zoo's education service, headed by a particularly determined and competent individual, has been able to incorporate important environmental themes into exhibit designs and formal education programs. A new senior curator has been appointed recently,

<sup>7</sup>Throughout the course of this research, the Perth Zoo was experiencing considerable organisational strife and upheaval. By early 1995, there was a significant shift in personnel occupying senior management positions and the Zoo was to undergo significant restructuring for the remainder of the year and well into 1996.

**FIGURE 9: Perth Zoo's organisational structure (at 1993/94)**



bringing with him extensive experience in inter-agency endangered species projects and regional zoo coordination issues. Lastly, several of the Zoo's keepers and Animal Records Officer have shown considerable enthusiasm and initiative for regional collection planning. One person convenes a regional species plan, while other staff coordinate seven regional collection schemes for different zoo animals.

#### **5.4 THE TERRITORY WILDLIFE PARK**

The Territory Wildlife Park is located in Berry Springs approximately forty-five minutes drive south-east of Darwin in the Northern Territory. The Park features native and introduced animals of the Northern Territory and boasts a modified open-range format located on 400 hectares of tropical woodland, monsoonal rainforest, and natural wetlands. Unencumbered by a historic pattern of mixed exhibit and animal collection philosophies, the staff of the relatively young Park have been able to capitalise on this unique setting and provide consistent bushland themes throughout the exhibits. The Park also provides an appropriate complement for tourists eager to view the Territory's wildlife which is often not easily spotted 'out bush'. Tourists on their way to the Northern Territory's celebrated National Parks can incorporate a stop at the Wildlife Park with relative ease.

The Park receives approximately 100,000 visitors per year<sup>8</sup>. The visitor survey component of this research found that a large proportion of these visitors (64%) are interstate travellers. However, a sizeable amount (23%) are from the local community. Most of these visitors (70%) had *not* been to the Park before, but do attend other zoos, albeit less frequently than visitors at Adelaide and Perth Zoos. Only 14% of respondents report they visit zoos more than once in a single year, while 74% stated they attend zoos somewhere between once a year and once every five years.

##### **5.4.1 Animal Collection and Exhibit Designs**

The Park can be viewed in its entirety on foot or aided by a visitor train which circumnavigates the Park and stops at all the exhibits at regular intervals. The Park's atmosphere is decidedly different from that of any of the metropolitan zoos - one has a distinct sense of being 'out bush' in the Northern Territory's unique environment, strolling through the Park's meandering paths. While one can view some free-ranging animals that come into the Park, most viewing of animals is limited to those exhibited in naturalistic enclosures. Displays assemble animals on the basis of similar taxonomic groupings, popularity, special adaptations to their environments and similar habitats. The Park holds 37 species of fish, 5 species of amphibians, 28 different reptile species, 102 species of birds and 38 mammal species. This collection features kangaroos; feral animals - water buffalo, banteng, sambar, rusa deer, pigs, camels; water birds in two lagoons; dingoes; birds of prey; arthropods; several species of reptiles; and an aquarium featuring native fish, amphibians and reptiles. There are two exhibits that stray from zoo exhibit traditions. Invertebrates are represented in the Arthropod exhibit. The feral animal display tells the story of

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<sup>8</sup> This attendance rate exceeds Darwin's base population of 78,401 (Australian Bureau of Statistics 1991).

how the introduction of several foreign animals upsets fragile ecological balances in the Northern Territory environment.

The Park staff place most educational emphasis on interpretation of signs. However, there is an Education Officer in residence to conduct a Schools Program. Consistently-styled signs orient visitors to the facility, identify distinguishing features of exhibit animals, and relay information about habitats on display. Additionally, visitors gain educational information with two forms of direct interaction with Park staff. A short narrative about the Park and its animal inhabitants is provided by staff driving the Park's train-cars. Visitors can also learn more specific information about the Park's animals by attending several presentations: birds of prey, animal care centre, aquarium fishfeeding, pelican feeding, and a 'bat chat'.

Several examples of the Park's exhibits and surrounding environment are featured in Plates 23 - 38.

**Plate 23:** The unique tropical environment of Northern Territory bushland is readily apparent at the Territory Wildlife Park. The Park's geographical context provides an unmistakeable contrast to cooler, more temperate settings of most Australasian zoos which are located in western, eastern and southern states of Australia and in New Zealand.



**Plate 24:** Encountering free-ranging animals in the Park may heighten visitors' sensation of being 'out bush'.



**Plate 25:** Signs at the Park identify exhibits, some of which group animals according to shared taxonomies.



**Plate 26:** Invertebrates featured at the Park are representative of a progressive shift away from zoos' traditional bias towards exhibiting cute mammalian species. The decision to feature less winsome creatures can further conservation knowledge by acknowledging the value of diverse life forms and their importance to ecosystem functioning.

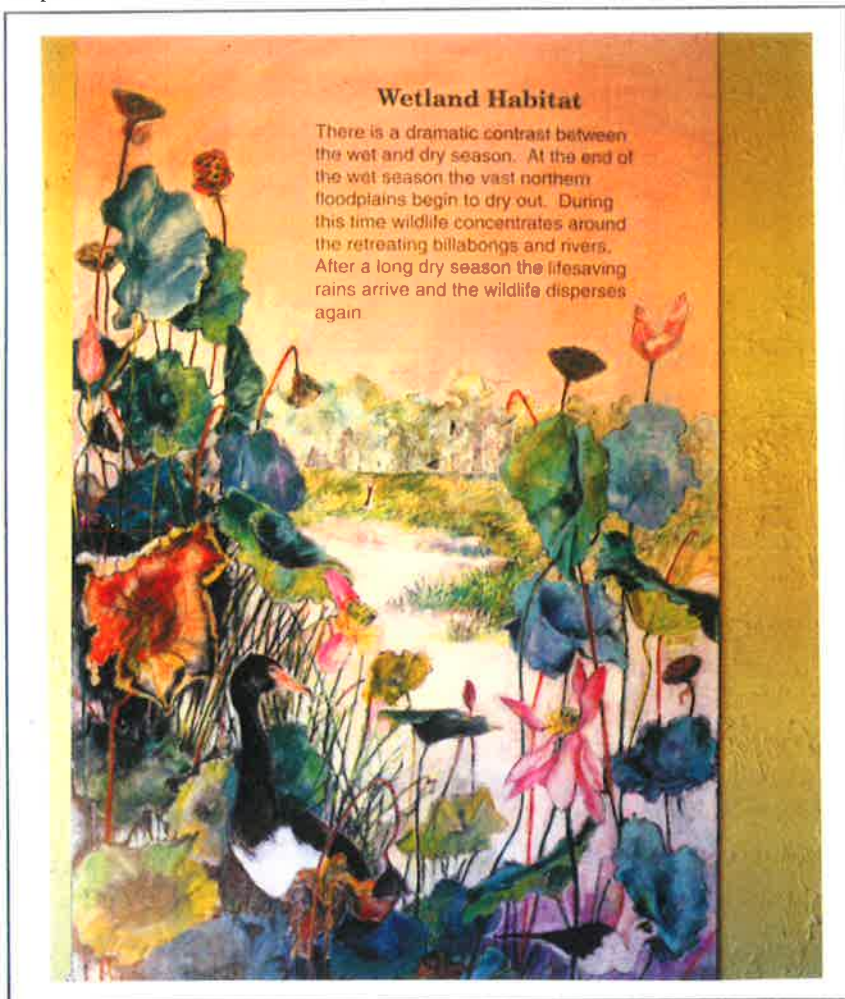




**Plate 27:** All the Park's exhibits display animals in naturalistic habitats.



**Plate 28:** There is a consistent emphasis in the Wildlife Park's interpretive aids on providing experiences and knowledge of animals in the context of their habitats.





**Plates 29 & 30:** Visitors can view naturally existing micro-habitats where free-range animals are not at all constrained by enclosures.





**Plate 31 & 32:** Interpretation of some of the Park's free-ranging animals is provided for by keeper talks and special feeding sessions.





Plates 33 & 34: Assisted by signs, visitors can identify specific animals, orient themselves to the Park, and access information on some of the Territory's environmental problems.





Plates 35 & 36: The feral animal display is an example of unique and progressive thinking in zoo exhibit philosophy. It endeavours to educate visitors about serious environmental problems plaguing the Northern Territory, the specifics of which are provided in the accompanying signs.



**Plate 37:** The Animal Care Centre display provides visitors with the opportunity to view some of the Parks behind-the-scenes activities.



**Plate 38:** Some interpretive aids encourage Park visitors to enhance their understanding of animals by engaging in some animal behaviours.



#### **5.4.2 Organisational Arrangements**

There are fewer large departments in the Territory Wildlife Park than in the metropolitan zoos. However, the philosophy behind its structure is similar to other zoos (Figure 10). A general manager who answers to a senior manager in the Northern Territory Conservation Commission, oversees three main departments: Technical and Maintenance, Wildlife, and Commercial Services. The Technical and Maintenance division includes works and cleaning services as well as horticulture and park ranger operations. The Wildlife division, headed by a curator, functions as the animal collections branch and is subdivided into five main components approximating taxonomic groupings of species (eg large mammals, aviaries, aquarium, nocturnal animals, and invertebrates and reptiles). Each of these sections has a supervisor who oversees animal keeping staff. Record keeping for the division is the responsibility of the Animal Records Officer. Commercial Services operates the Park's retail activities and promotions, and manages the Guides Service for Park visitors. Additionally, this department comprises the reception, admissions, financial accounting and general administrative functioning for the Park. At the time of this research the Park did not have a Volunteers program.

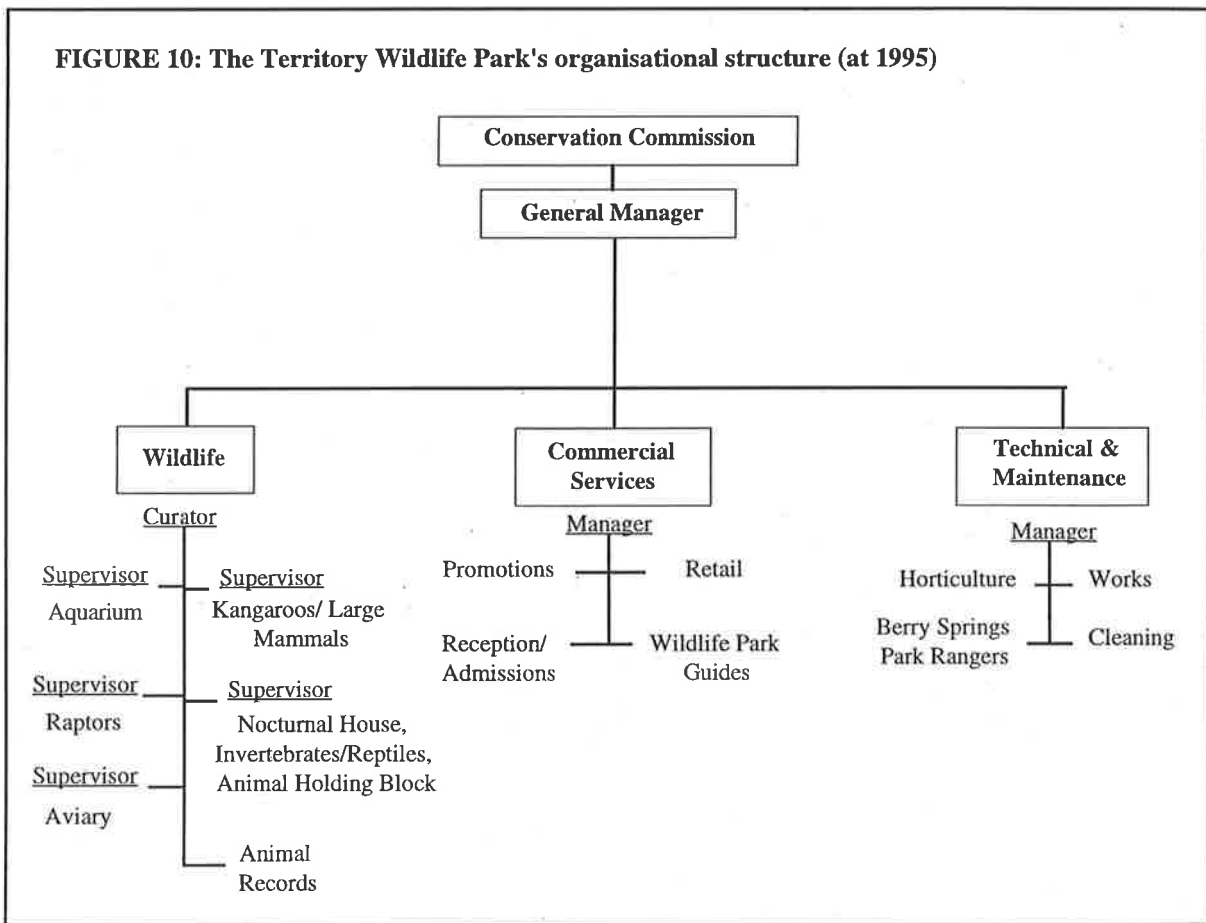
##### *i. Zoo Personnel & Conservation Practices*

While the Wildlife Parks affiliation with the Conservation Commission may facilitate some of its participation in endangered species programs, the benefits of this association are likely to be tempered by senior Commission personnel who believe that the Wildlife Park's role is primarily that of serving tourism and promoting conservation education. Many Wildlife Park staff share a concern for environmental protection. However, most initiatives for implementing conservation imperatives emanate from the Wildlife division. The Senior Curator has ample experience working in zoos and a pronounced interest in endangered species protection. His easy management style enables keeping staff to work with some autonomy and, in some cases, facilitates the transformation of their conservation interests into policies or programs. There is currently one regional collection plan under development by a member of the keeping staff. Up until late 1994, the Parks Education Officer, an active member of the Australian Association for Environmental Education (AAEE), was another important catalyst for the incorporation of conservation values into education programs.

#### **5.5 CURRUMBIN SANCTUARY**

Currumbin Sanctuary is located on the Gold Coast highway 18 kilometres south of Surfers' Paradise, approximately an hour travelling time by car south from Brisbane. The Sanctuary's twenty-seven hectares of partially modified bushland provides a stark contrast and retreat from the highly developed and commercialised Gold Coast. The influences of this tourist mecca on the atmosphere and management of the Sanctuary are readily apparent. While the Sanctuary benefits from being able to offer tourists a unique experience relative to the other recreational destinations that dominate the Gold Coast region, there is still a sense that Currumbin must compete for the tourist dollar. Considerable effort is devoted to creating promotional materials and activities that stress the Sanctuary's 'natural' experience and its role as a wildlife refuge and to its aim to increase visitor numbers.

**FIGURE 10: The Territory Wildlife Park's organisational structure (at 1995)**





The Sanctuary is visited by an estimated 430,000 people<sup>9</sup> each year, approximately sixty-percent of whom are repeat visitors. Seventy-three percent of Sanctuary visitors have attended zoos in other Australian states and a majority of them attend zoos or wildlife parks on an occasional basis (34% visit once a year, 25% visit once every 5 years).

### **5.5.1 Animal Collections and Exhibit Designs**

The visitor experience of the Sanctuary's immediate physical environment and atmosphere compares to that at the Territory Wildlife Park, Healesville Sanctuary, and Western Plains Zoo. While the Sanctuary's bushland setting has been modified, there is a sense of being in the bush, particularly in comparison to the heavily-urbanised surrounding area. Visitors wander along paths which meander through several different exhibit areas heavily vegetated by gum trees and various shrubs, and may view free-ranging bird life or interact with kangaroos and wallabies in large enclosures.

Currumbin is well known for its display of some of Australia's more charismatic native animals. However, its most prominent feature is the large flocks of free-ranging rainbow and musk lorikeets that come in twice-daily for feedings. Visitors have been coming to the Sanctuary for many years to experience the close viewing of and interaction with these lively parrots (see Appendix 5). Many people happily have their photos taken by Sanctuary staff while the birds perch on visitors' heads, shoulders and arms, and feed from trays filled with a special nectar mixture. The Sanctuary is also recognised by the local community for its wildlife hospital which cares for sick, injured or orphaned animals. The rest of the animal collection is displayed in naturalistic enclosures and includes an array of Australian reptiles, water birds, parrots and cockatoos, predatory birds, predatory mammals (tasmanian tiger and dingo), wombats, kangaroos, koalas, some rainforest animals (tree kangaroo, cassowary, rufous bettong), and a rainforest aviary. In total, the Sanctuary holds 7 amphibian species, 25 reptile species, 155 bird species, and 27 species of mammals (ASMP Regional Census 1996).

There are several programs designed to enhance visitors' interpretive and educational experiences in the Sanctuary. Presentations and demonstrations executed by wildlife officers feature the Sanctuary's animals, and are scheduled at approximately half-hour intervals throughout the day. Visitors can attend these programs as they proceed through the Sanctuary. Lorikeet feedings are offered at the beginning and end of the day. A series of keeper talks feature kangaroos and wallabies, tree kangaroos, birds of the subtropical aviary, crocodiles, waterbirds, reptiles, tasmanian devils, dingoes, koalas and wallabies, and the animal nursery. There is also a wildlife presentation that utilises several conditioned animals to educate visitors about different species and the need for conservation.

The grounds of Currumbin Sanctuary and several of its exhibits are featured in Plates 39-52.

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<sup>9</sup> The Gold Coast City region has a resident population of 157,857 (Australian Bureau of Statistics 1991).

**Plate 39:** Currumbin Sanctuary is set in one of the last remaining 'green corridors' of bushland on Queensland's Gold Coast.



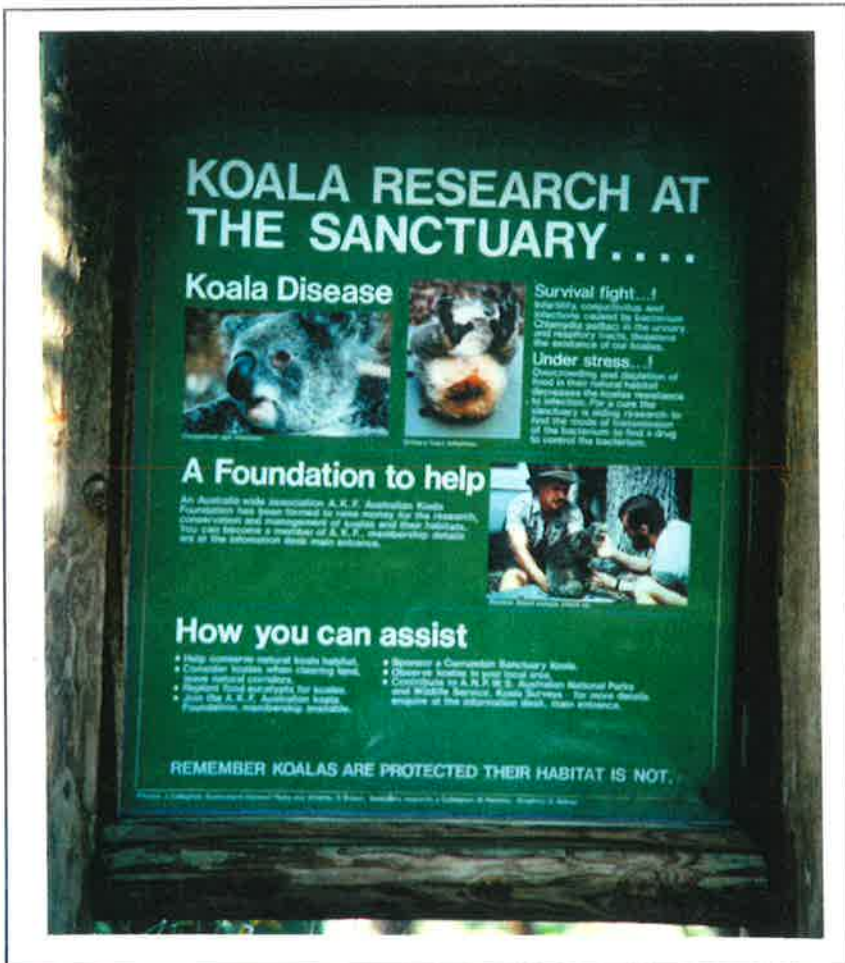
**Plate 40:** The wild lorikeet feedings are an integral component of the Sanctuary's widespread popular appeal.



**Plate 41:** Informative signs are placed around the lorikeet feeding area in an effort to facilitate a more educative experience for Sanctuary visitors taking part in this popular activity.



**Plate 42:** As at other zoos and wildlife parks, signs are an important tool for conveying the Sanctuary's role in wildlife conservation and in enlisting public support for this role and for particular programs.



**Plate 43:** Many animal exhibits at the Sanctuary are grouped according to similar taxonomic groupings as well as their popular appeal.



**Plate 44:** The Sanctuary is able to take advantage of the surrounding bushland in exhibiting its koalas. Visitors standing on platforms can view the koalas at almost eye-to-eye level.





Plates 45 & 46: The Sanctuary's train, children's playpark, and several concession stands and shops provide a stark contrast to its emphasis on habitat exhibits. The presence of such opposition may be conveying (however unknowingly) somewhat misleading conservation messages that commercial developments in natural settings can be undertaken without imposing significant negative environmental impacts or disturbances.





Plates 47 & 48: The Habitat Aviaries embody a progressive exhibit philosophy: an overall emphasis on ecosystems, while simultaneously featuring the animals found in those habitats.



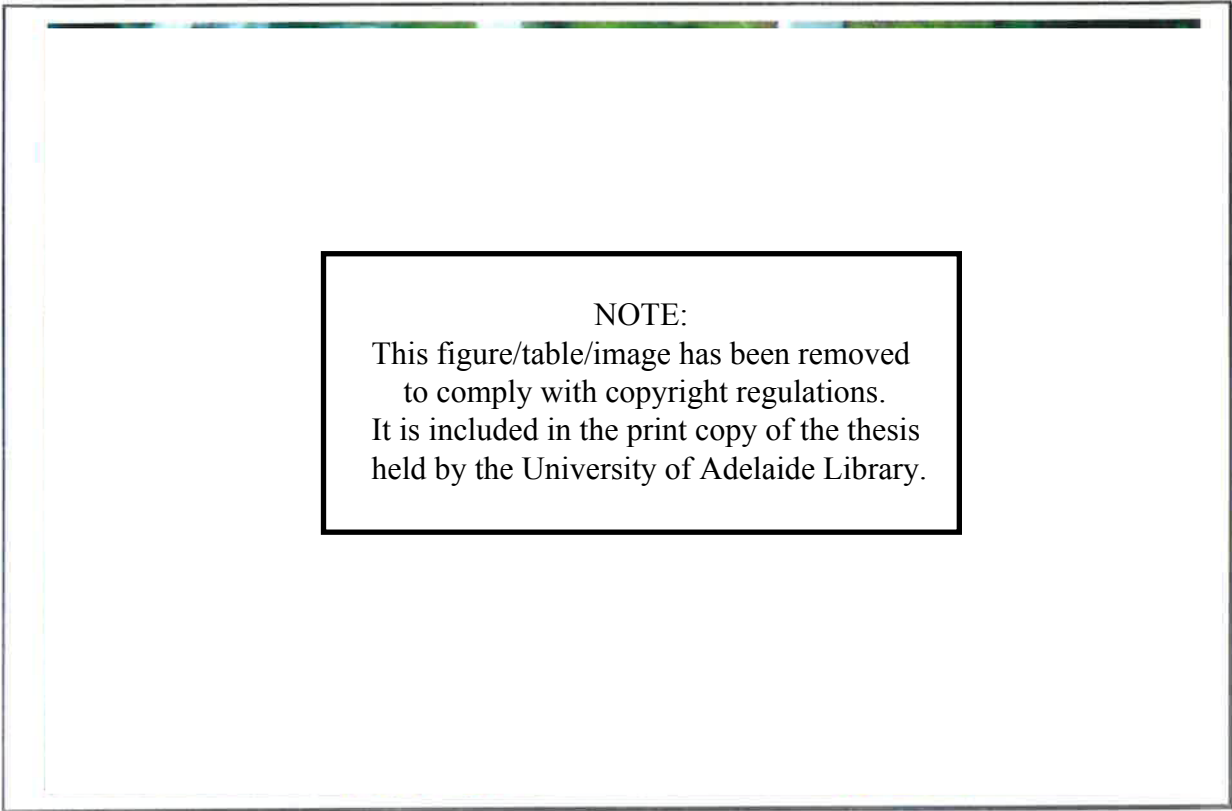
**Plate 49:** In addition to displaying select species of fauna, Sanctuary staff endeavour to present various forms of local flora. This exhibit preference represents their desire to emphasise the importance of habitats.



**Plate 50:** The Sanctuary's unique experiment in developing more sustainable practices by establishing its own source of eucalypts draws on the koala's popular appeal both to educate visitors and to enlist their support for the Sanctuary.



**Plate 51:** Wildlife shows and keeper talks are offered at regular intervals throughout the day.



**Plate 52:** Some free-ranging wildlife and a walk-through kangaroo exhibit enable visitors to have direct contact with animals.





### **5.5.2 Organisational Arrangements**

The National Trust of Queensland (NTQ) oversees the affairs of Currumbin Sanctuary. The Sanctuary is comprised of six major divisions: Wildlife, Education, Marketing, Corporate Services, Operations, and Commercial (Figure 11). The Wildlife Division is managed by the Sanctuary's Assistant Director and includes veterinary, curatorial and animal keeping services, and research. The Assistant Director also acts as the Senior Curator for the Sanctuary and is aided by an Assistant Curator. Mammals and birds are two major groupings in this department, each group supervised by a Head Keeper who supervises the remainder of the keeping staff. Animal records is another important function for this department. 'Marketing' at Currumbin encompasses media, sales, international marketing, and business development. These departmental components are attended to by middle-level managers. Corporate Services consists of financial and administrative functions such as human resources, accounting and clerical services. The Operations Division is inclusive of horticulture, maintenance, planning and visitor services. The Commercial Division comprises retail and catering operations. A volunteer program is currently being developed for the Sanctuary.

#### *i. Zoo Personnel & Conservation Practices*

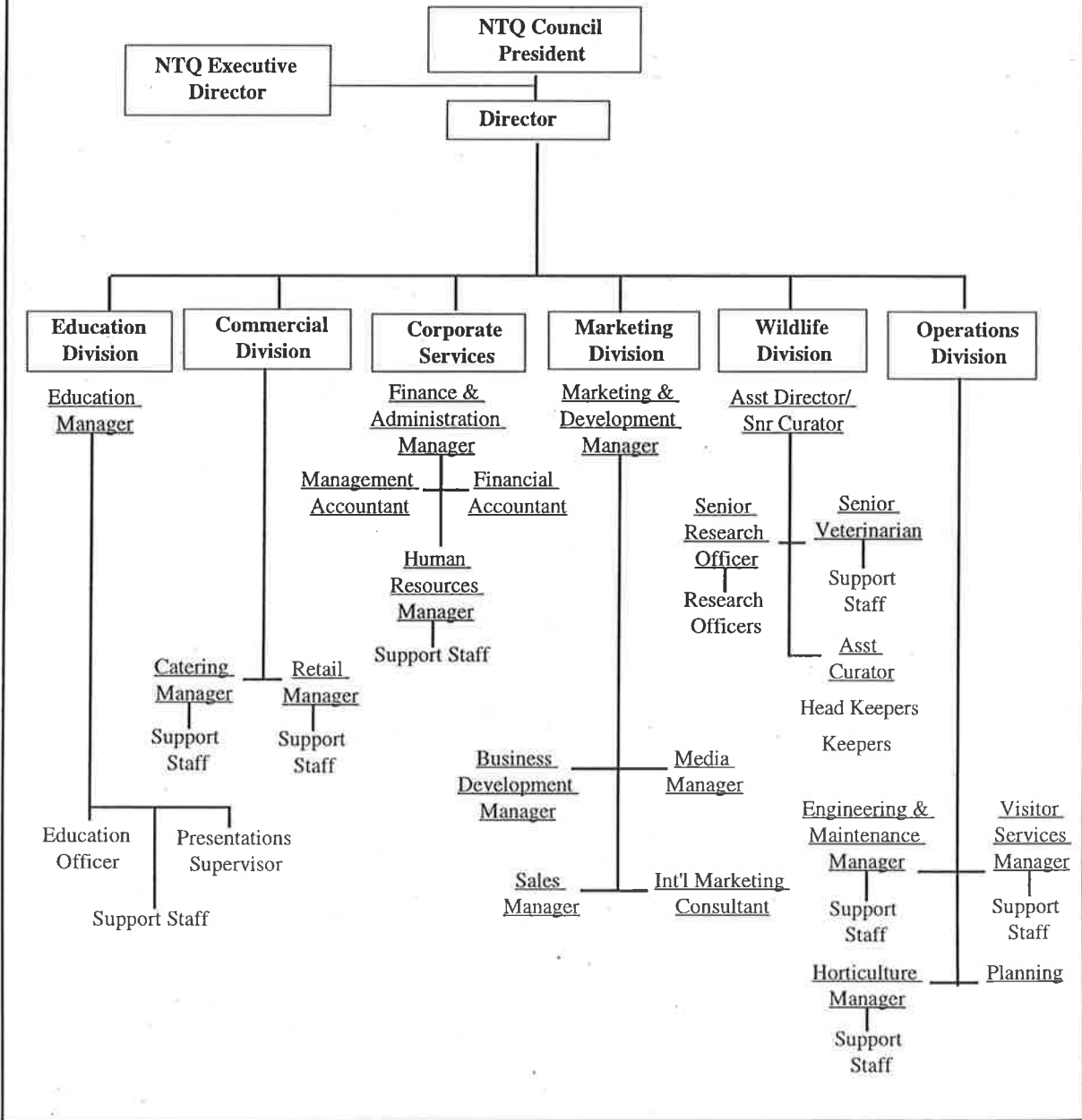
At the senior management level, conservation is implemented most directly through the Assistant Director who also acts as the Sanctuary's curator. This individual has strong environmental interests and extensive zoo experience. Given that he is easily approached by most staff under his charge, their conservation interests are likely to be represented (to some extent) in decision-making forums. The Assistant Curator is responsible for ensuring that the Sanctuary implements industry-defined species management priorities and programs. This individual's experience with and dedication to zoo conservation programs and her easy temperament make her particularly well-suited to this role. She currently acts as convenor for a group that assesses the region's collection of animals within a particular taxonomy. In addition to these duties, she coordinates several of the region's species collection plans. The Sanctuary's Education staff also have well-articulated environmental interests. These values are readily apparent in the range of education programs and materials on offer.

## **5.6 ZOOLOGICAL PARKS BOARD OF NEW SOUTH WALES (Taronga and Western Plains Zoos)**

### **5.6.1 Taronga Zoo**

Taronga Zoo is perhaps the most prominent zoo in Australia. It has received numerous awards for being one of Sydney's premier tourist attractions. No doubt the Zoo's harbourside location plays an important part in its popularity. Taronga is located in the north Sydney suburb of Mosman and is accessible by car or a twelve minute ferry ride across Sydney Harbour. Promotional materials depict the Zoo as having "the world's best view" and indeed, there are many vantage points inside the Zoo for viewing the magnificent city and harbour. The Zoo is also positioned in promotional materials as being able to offer tourists and Sydneysiders a unique experience as is evidenced by its slogan "Wildly Different".

FIGURE 11: Currumbin Sanctuary's organisational structure (at 1995)



Taronga is frequented by approximately 810,000 paying visitors per year<sup>10</sup>. This research's visitor survey found that a majority of visitors (78%) had been to the Zoo before. A healthy representation of people are frequent zoo-goers, 30% reporting they attended zoos between more than three and two to three times in a year, the remainder (70%) being irregular visitors who call into a zoo between once a year and once every five years. The Zoo also receives a substantial percentage of local visitors (66%) relative to its interstate (21%) and overseas visitors (13%).

*i. Animal Collection & Exhibit Designs*

As you make your way through Taronga, there are many places where the old and the new can be viewed alongside one another. Like the other metropolitan zoos, the European model of zoo design is evident in the garden setting and plantings of exotic flora. However, the Zoo's striking views, hilly terrain, wider paved footpaths and less densely vegetated surrounds create an atmosphere slightly different from that of other city zoos. Consistent with other zoos, though, staff at Taronga are proud of its history, restoring and renovating heritage buildings, while continually modifying its exhibits, and upgrading outdated enclosures when and where financial resources permit.

Taronga's animal collection is large and diverse. The Zoo holds 87 species of mammals, 197 species of birds, 80 species of reptiles, 9 species of amphibians, and 5 species of fish (ASMP Regional Census 1996). Some of its more high profile endangered species include the malleefowl, eastern-barred bandicoot, greater bilby, north island brown kiwi, leadbeater's possum, orang-utan, asiatic golden cat, Sumatran tiger, and scimitar oryx. Different species are generally exhibited in separate enclosures and are often grouped according to taxonomic similarity. There are some exhibit precincts which group species from geographic regions as for several Australian animals, Australian birds, the African Waterhole, the Rainforest species, and the future reptile complex, to name a few. Most exhibits attempt to varying degrees of accuracy, to recreate some semblance of an animal's natural habitat.

The Zoo offers a full program of Keeper Talks during animals' feeding times and for special presentations which includes: Chimpanzee Keeper Talk, Farmyard Feed & Cow Contact, Discovery Theatre Show, Seal Show, Kodiak Bear Keeper Talk, Reptile Keeper Presentation, Giraffe Keeper Talk, Seal Show, Dingo Keeper Talk, Penguin Keeper Talk, Koala Keeper Talk and Koala Encounters where visitors can have their photographs taken while standing next to a Koala. Visitors may also take advantage of special morning tours conducted before and after regular operating hours. Interpretation is also provided through Taronga's distinctive signs, many of which are hand drawn, brightly coloured oil paintings. The signs often incorporate conservation themes in the information provided.

Plates 53 - 69 illustrate some of the outstanding components of Taronga Zoo's animal collection and exhibit designs.

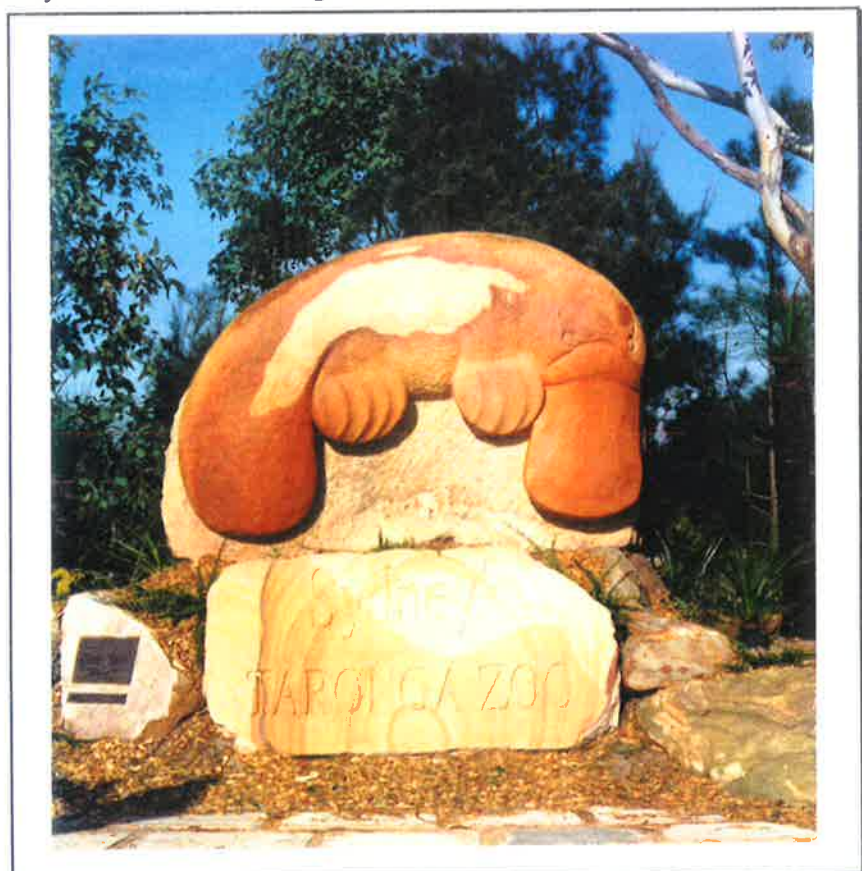
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<sup>10</sup> Taronga's visitation figures are quite high relative to Sydney's last population tally of 3,538, 448 (Australian Bureau of Statistics 1991).

**Plate 53:** Taronga Zoo's colonial origins are evident in the carefully-preserved heritage entrance facade.



**Plate 54:** Other structures convey a more modern image and function for the Zoo.



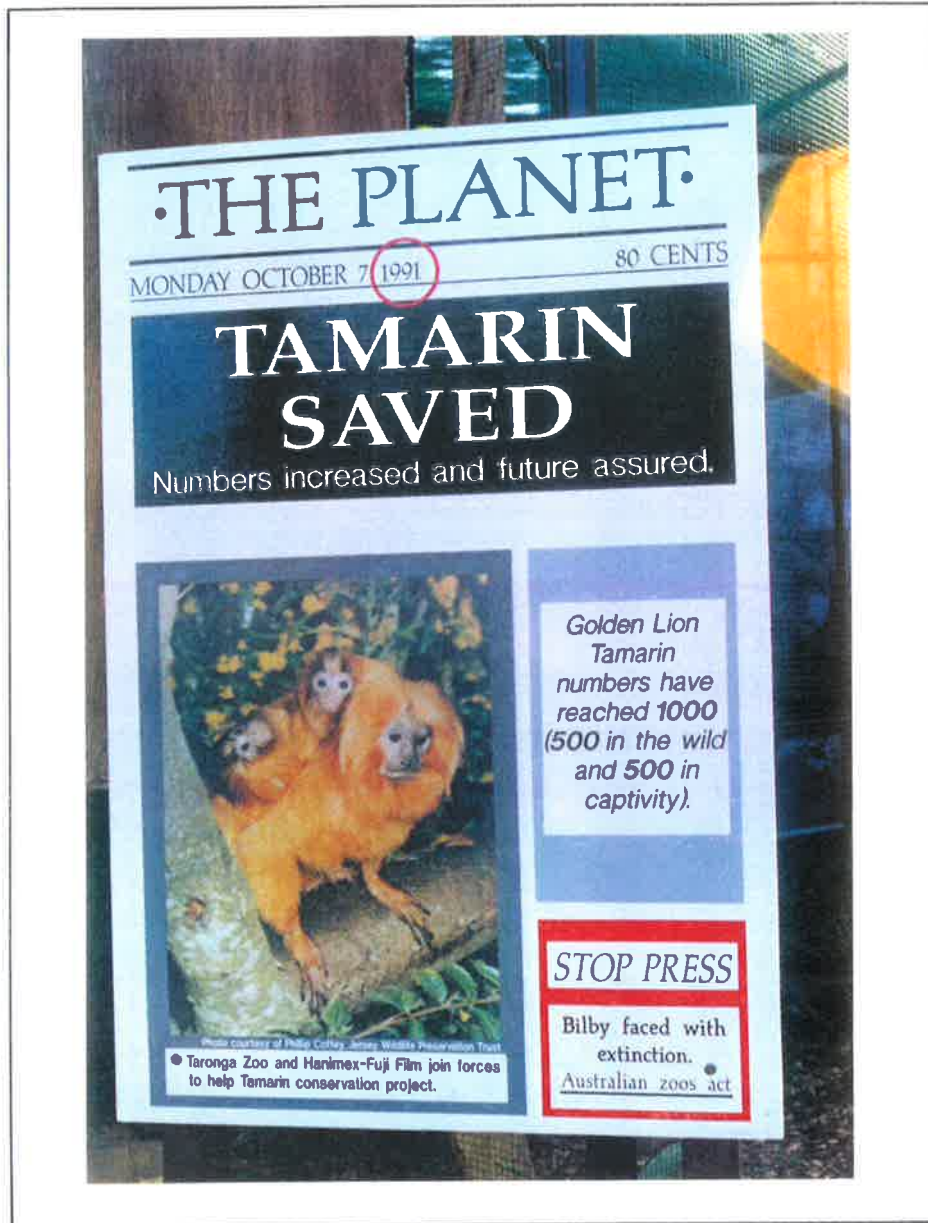
**Plate 55:** At the time of this research, these dated cages were soon to be replaced by a new orang-utan exhibit simulating a rainforest habitat.

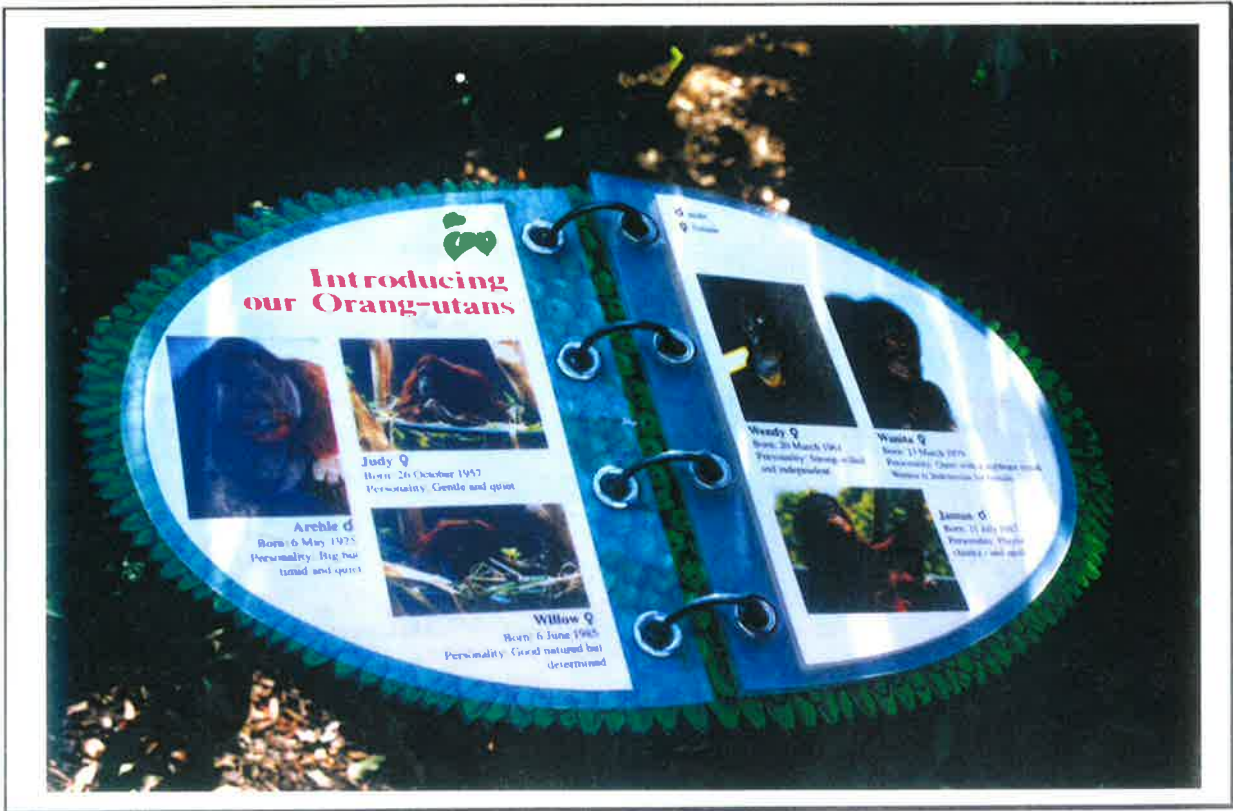


**Plate 56:** Zoo management make a concerted effort to notify the visiting public of its efforts to modernise.



**Plate 57:** Signage with a multiple purpose: this sign outside the golden lion tamarin enclosure advertises zoos' conservation role and intimates that Taronga Zoo and its corporate sponsor, Fuji Film, are significant contributors to the program.





Plates 58 & 59: Signs at the new McDonalds orang-utan Rainforest Exhibit are used to identify individual animals and make requests for public donations.





Plates 60 & 61: Grandiose statements in this sign at Taronga's tiger exhibit about zoos' contribution to international tiger conservation efforts are used to transform the traditional practice of exhibiting charismatic fauna such as the large carnivores.

## SAVING THE SUMATRAN TIGER

### ZOOS AT WORK

■ **No Room in the Wild**  
There are only about 400 Sumatran tigers left in the wild - most in protected areas. And human pressure means there's no room for any more.

■ **A Worldwide Breeding Program**  
If tigers are to survive, they must be bred in captivity. But there needs to be a central control point - otherwise, unrelated and often closely-related animals could be mated.

■ **The World Needs Zoos**  
The world's zoos have room for only 50 Sumatran Tigers. With each breeding member placed for every tiger must be carefully managed.

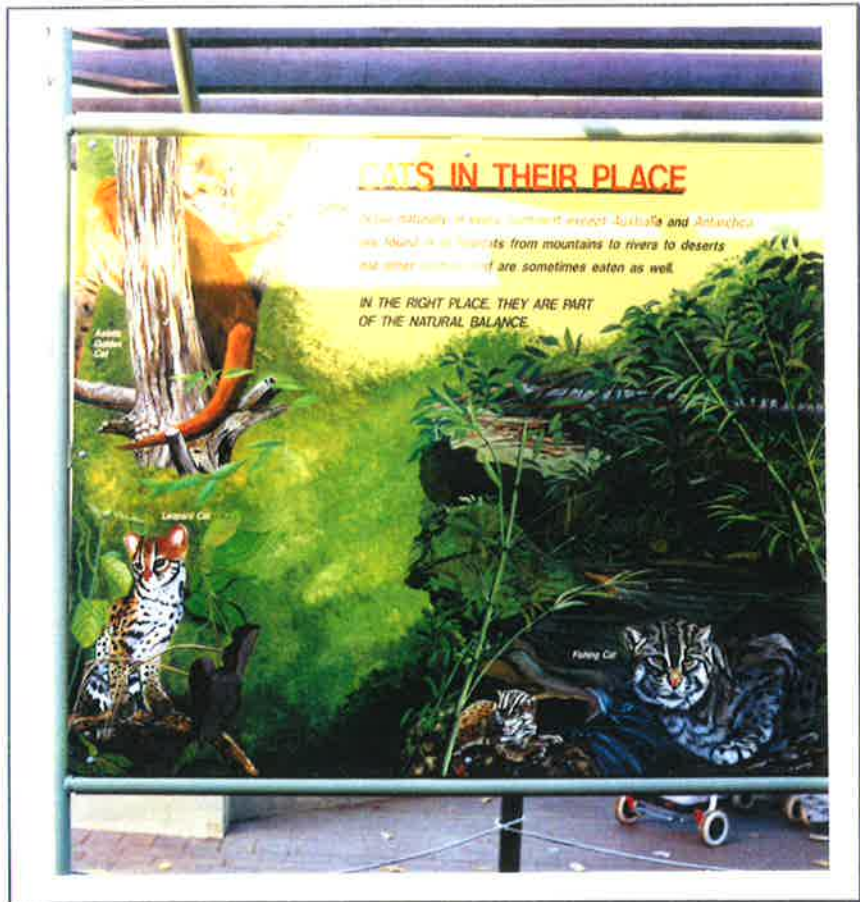
■ **Preserving the Status Quo**  
The world's zoos and Indonesia's national parks are working together to keep the population steady and save the Sumatran Tiger.

breeding program for our region  
need for only 25 tigers - but how to  
to be imported from overseas zoos.





Plates 62 & 63: Interpretive signs at Taronga complement the Asian cat exhibit and are used in the attempt to educate visitors about 'natural' habitats for wild feline species, as well as inappropriate environments for domestic cats.





Plates 64 & 65: Interactive interpretive aids such as the ones found next to the Kodiak bears and Fennec fox exhibits aim to increase visitors' understanding of animal physiology and behaviour.





**Plates 66 & 67:** Carnivores such as the highly endangered snow leopard or the imposing Kodiak bears, are popular exhibits at Taronga. However, the naturalistic design of these exhibits belies their small size and stereotypic behaviours in the animals may result. The bears are given ice blocks with fish frozen in them to help alleviate their boredom.





**Plates 68 & 69:** Like other zoos, Taronga features a series of keeper talks and animals shows to educate its visitors about zoo animals.



### 5.6.2 Western Plains Zoo

The Western Plains Zoo is located five kilometres outside of Dubbo in mid New South Wales. The Zoo functions as Dubbo's premiere attraction and its location is an integral part of the city's marketing strategies. Promotional materials position the Zoo as "the biggest attraction on the Newell" in the hopes of luring tourists or weary travellers to this country town. The Zoo receives approximately 210,000 visitors annually<sup>11</sup>.

#### *i. Animal Collection & Exhibit Designs*

Western Plains Zoo provides a noticeable open-range contrast to what is experienced by visitors to its sister property, Taronga Zoo. While it is constituted by approximately 350 hectares of bushland which has undergone extensive modification due to several different land uses<sup>12</sup>, it still conveys a sense of openness and naturalness that cannot be offered by the garden-like settings of the metropolitan zoos. Visitors travel to each of the exhibits along six kilometres of sealed roads either by driving to them in private cars or in group coach tours, or by traversing six kilometres of walking trails that run throughout the Zoo. The Zoo also hires out bicycles or mokes. Once at the displays, visitors are separated from the animals by deep grassy gullies or moats which surround the enclosure, and can observe animals moving freely in their exhibits. These enclosures range in size from 0.4 to 3.2 hectares and have been designed to evoke the animals' 'natural' habitat. Behind most of the exhibits are night holding yards and paddocks where animals are kept after the Zoo closes. Many paddocks are heavily planted with grass and trees and there are several islands in the middle of small lakes which are used to display water birds and primates.

Western Plains' animal collection is grouped primarily according to a zoogeographic pattern. The Australian section includes several species of kangaroos, wallabies, and waterfowl; dingoes; koalas; echidna; wombat; and the emu. South American species include the maned wolf, Galapagos tortoise, rhea, tapir, capybara, and the spider monkey. The bison is the lone North American representative, while the Eurasia section displays Przewalski's horse, several varieties of deer and antelope, Asiatic lions, water buffalo, Persian onager, and Bengal tigers. The African species represented are the hippopotamus, scimitar horned oryx, African elephant, cheetah, white rhinoceros, Grants zebra, giraffe, eland, sitatunga, ostrich, camel, barbary sheep, black rhinoceros, and Cape hunting dog. There are also several other major displays such as the children's zoo and animal nursery and an area containing various species of water birds. The Zoo also holds several endangered species that are part of on-going conservation programs such as the malleefowl, eastern-barred bandicoot, greater bilby, rufous hare-wallaby, and black rhinoceros. However, these species are kept in special off-display areas for breeding purposes. In total, the Zoo possesses 62 species of mammals, 22 species of birds and 5 different reptile species (ASMP Regional Census 1996).

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<sup>11</sup> The population for the northwestern statistical region, of which Dubbo is a part, is 114,804 (Australian Bureau of Statistics 1991).

<sup>12</sup> This land was cleared and has been used for a variety of agricultural and military purposes (see Appendix 5).

The Zoo also offers several keeper talks throughout the day that feature animals such as the giraffe, lions, elephants, and hippopotamus. In some cases, visitors are able to have direct contact with some of these animals while being supervised by the Zoo keepers.

A visual representation of Western Plains Zoo is provided in Plates 70-83.

**Plate 70:** The open spaces of Western Plains Zoo's bushland setting provide a stark contrast to the metropolitan context of Taronga Zoo. Visitors can walk or drive to each exhibit.



**Plate 71:** Despite the fact that most animals are exhibited in the large, open enclosures, they must spend approximately 15 hours in considerably smaller night yards.





Plates 72 & 73: The Asiatic lion exhibit is typical of many of the exhibits at Western Plains. Visitors are separated from animals by moats and view what appear to be free-roaming animals. These animals will also be enclosed in night-yards after opening-hours.







**Plates 74 & 75:** Many primates are kept on naturalistic islands which keepers must access by raft in order to tend to the animals. Such a sight often proves to be as entertaining for visitors as viewing the animals themselves.





**Plates 76 & 77:** The relatively minimal use of signs at Western Plains Zoos, relative to other zoos, is supplemented by keeper presentations which are an important feature of the overall interpretive program. Some talks afford visitors the opportunity to have close contact with the animals.



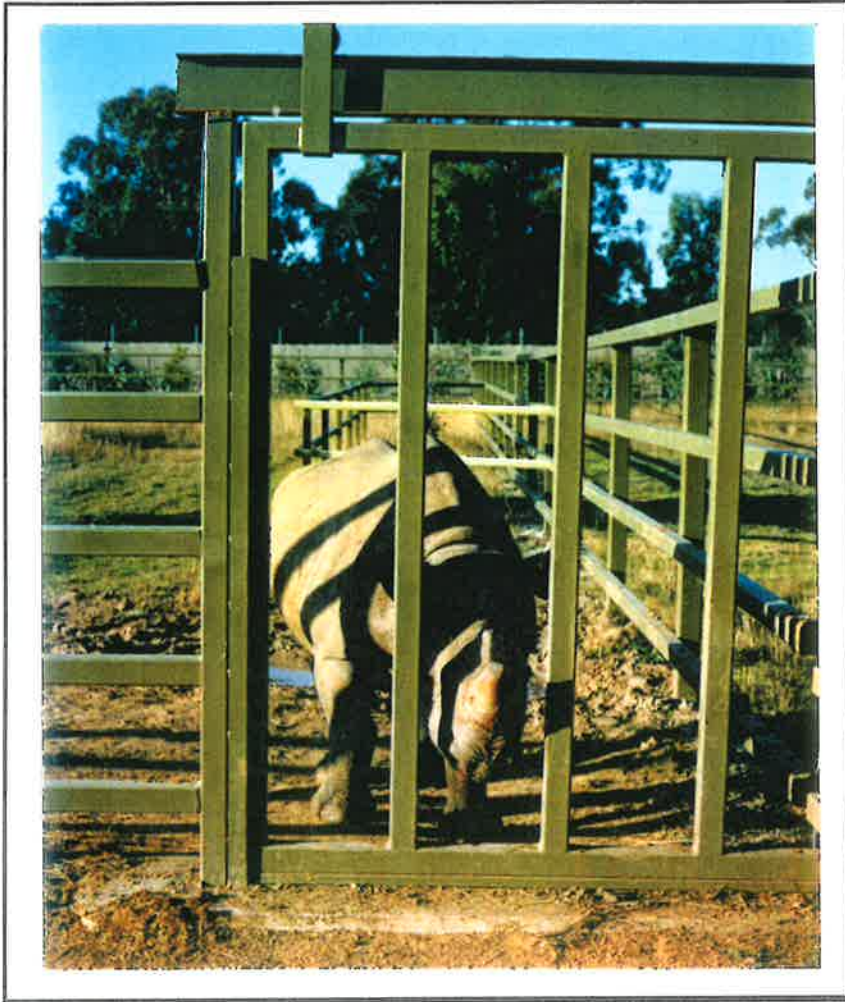
**Plate 78:** While some behavioural conditioning for zoo animals such as the elephant enable zoo staff to manage animals more safely, parts of the elephant presentation at Western Plains Zoo have circus overtones to them.



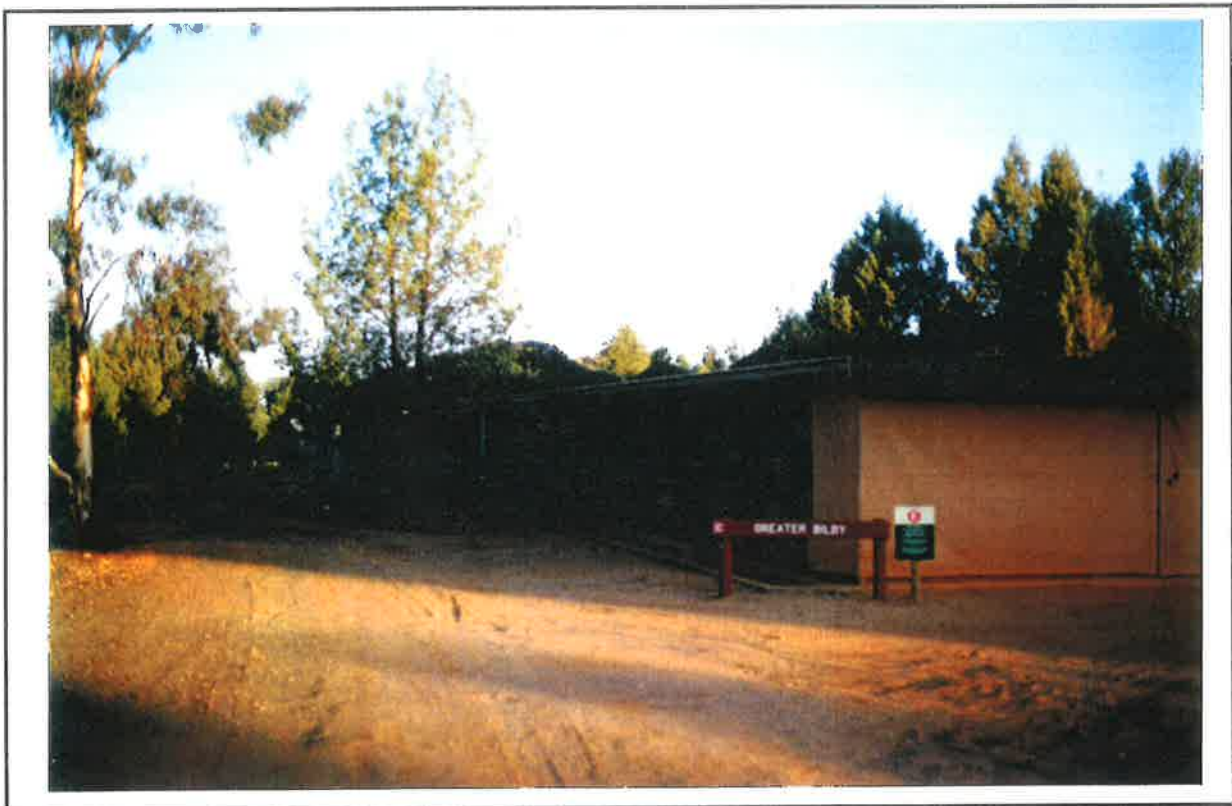
**Plate 79:** Visitors can view certain aspects of 'behind the scenes' zoo operations, such as the animal nursery.



**Plate 79:** The ZPB of NSW takes part in the high profile, international black rhinoceros captive breeding program. The rhinoceros are housed in the breeding facility at Western Plains.



**Plate 81:** Like the Mallee-fowl program, both the black rhinoceros and bilby projects are conducted in off-exhibit areas at Western Plains.





**Plates 82 & 83:** As is the custom for most zoos, the signs at Western Plains help visitors to identify animals and encourage them to understand and experience animal behaviour first-hand.



### 5.6.3 Organisational Arrangements

The Zoological Parks Board of New South Wales provides the overarching organisational and authoritative framework for Taronga and Western Plains Zoos (Figure 12). The ZPB of NSW comes under the State Environment Minister's portfolio and employs approximately 400 people<sup>13</sup>. A Director/Chief Executive and an Executive Staff manage six major divisions: Life Sciences, Conservation and Research, Marketing, Corporate Services/Finance/Development, Environmental Management & Education Programs, and Western Plains Zoo. Western Plains Zoo's organisational structure largely mirrors the supra-structure of the Zoo Board and contains Life Sciences, Marketing, Works, and Commercial departments (Figure 13). The Conservation and Research Centre conducts research projects, consultancies, conservation programs, and some public education courses and must generate its own revenue to sustain itself. The Life Sciences Division is the equivalent of Animal Collection sections in other zoos and manages Taronga Zoo's animal and botanic collection. This division is broken down further into several subsections. The animal keeping section is organised according to seven separate departments: Asian animals, African animals, Marine mammals, Birds, Australian mammals, Reptiles, and Special Operations Support. Each of these departments is supervised by a Divisional Manager. Additionally, a Unit Leader assists the Divisional Manager in overseeing the activities of their respective departments.

The Association of Zoo Friends provides a funding base and volunteer support services for both Taronga and Western Plains Zoos. Zoo Friends is a large organisation, operating with a membership base of 29,000 people. As much as 50% of all membership subscriptions equalling \$300,000 and \$60,000 worth of donations have been paid to the ZPB of NSW by Zoo Friends. This group has also generated \$750,000 worth of paid staff hours in volunteer labour for the ZPB of NSW (ZPB of NSW Annual Report 1994/5). Zoo Friends also employ a full-time coordinator who manages the association and liaises with zoo staff about education programs and needed services.

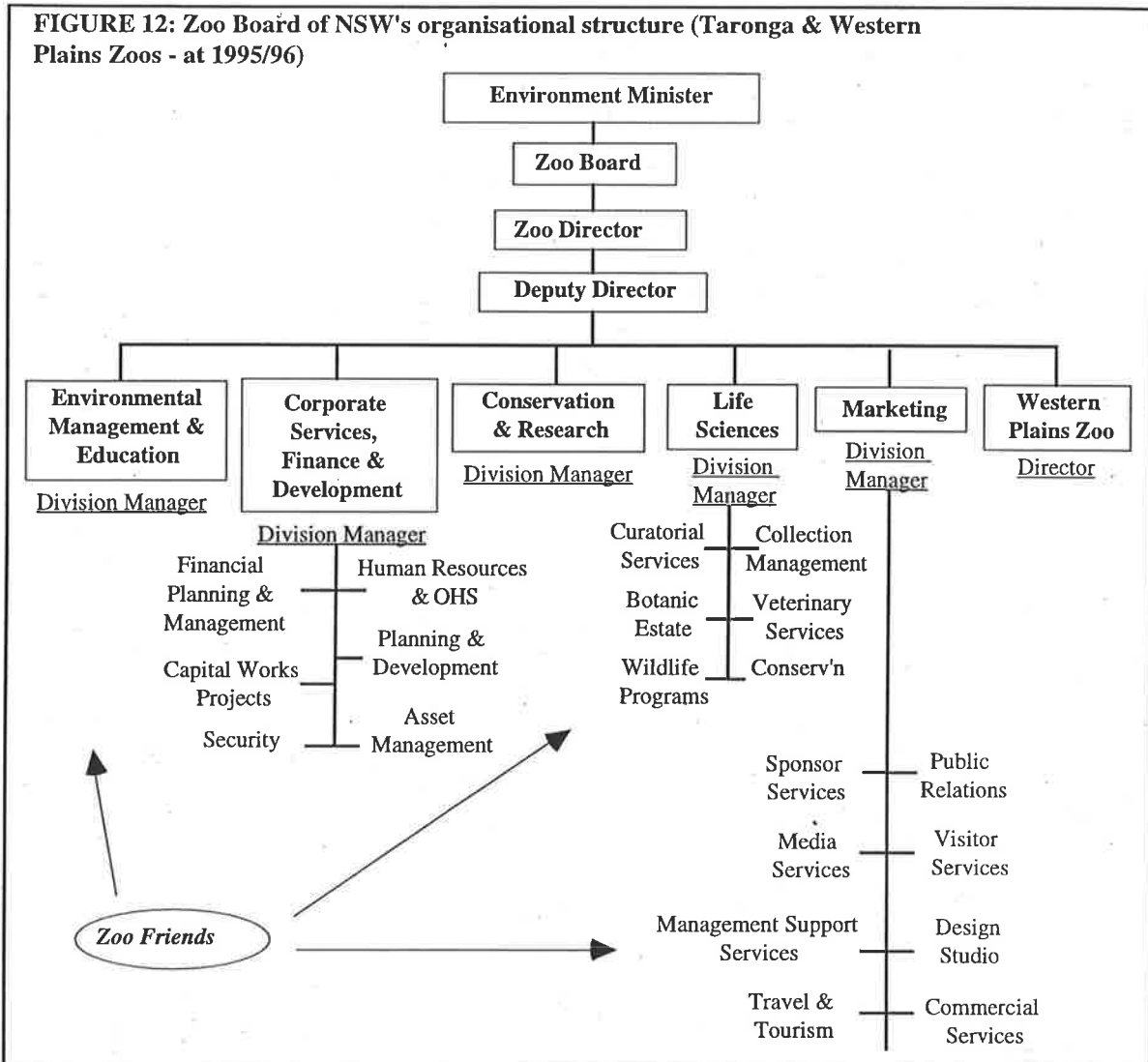
#### *i. Zoo Personnel & Conservation Practices (Taronga & Western Plains Zoos)*

The ZPB of NSW's Life Sciences, Conservation and Research, Environmental Management, and Schools Education are linked most obviously to conservation activities. Senior curators have traditionally been responsible for implementing regional and organisational species management programs and, to some degree, propagating the Zoo's involvement in inter-agency wildlife conservation programs. Indeed, a previous senior curator played an integral role in developing the conceptual framework for the ASMP and its attendant data base. The current Life Sciences Division Manager convenes a taxonomic planning group for the region's zoos and serves as coordinator for two regional species management plans. There are numerous other keeping staff with strong environmental interests who endeavour to see these values reflected in their professional responsibilities. One keeper acts as a convenor for a regional taxonomic scheme, and other keeping staff coordinate five regional species plans. In addition to these

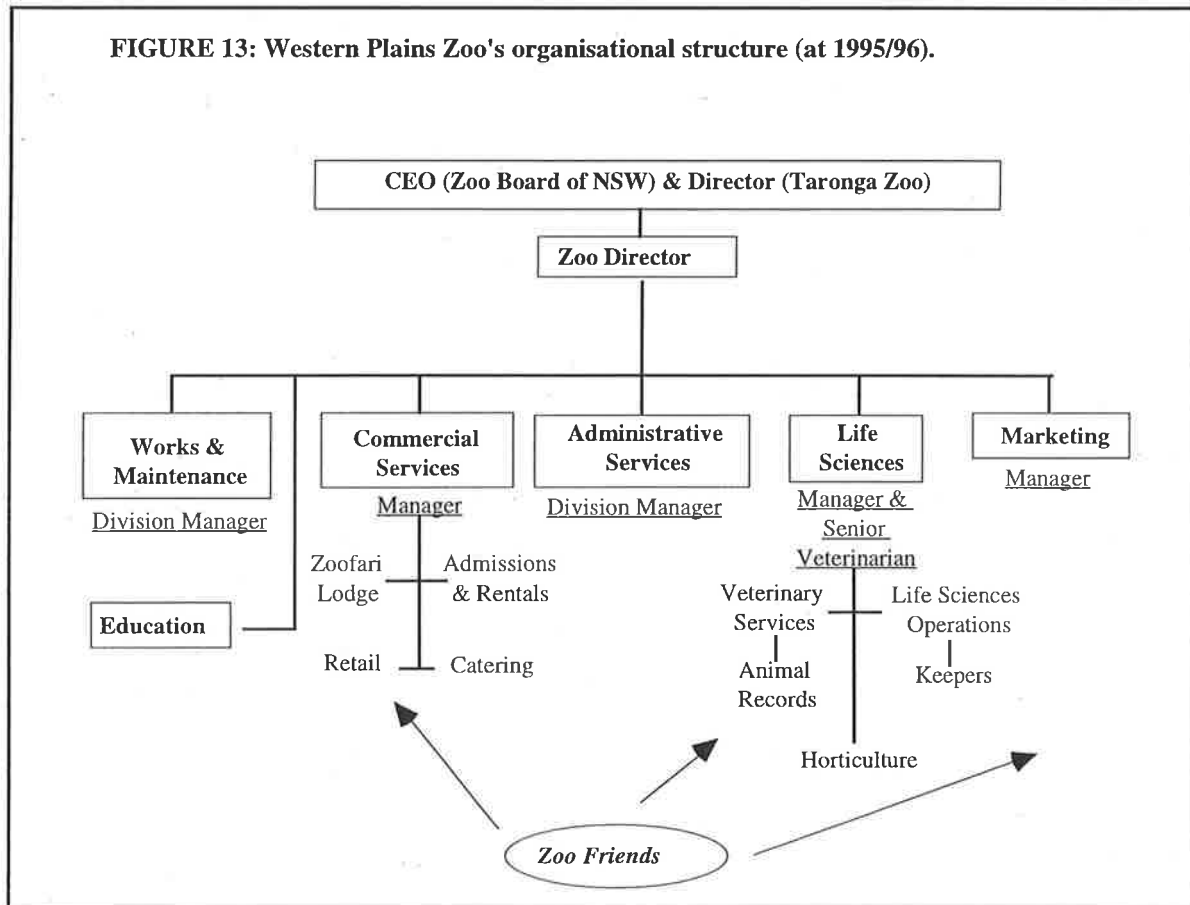
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<sup>13</sup> Of that total, 300 are permanent staff, 25 are temporary staff, and another 116 are casually-employed (ZBV of NSW Annual Report 1994/95).

**FIGURE 12: Zoo Board of NSW's organisational structure (Taronga & Western Plains Zoos - at 1995/96)**



**FIGURE 13: Western Plains Zoo's organisational structure (at 1995/96).**



established exercises, there are four species plans and seven record books for Australasian zoos currently being developed by Taronga keeping staff.

Numerous conservation projects have been established by the Conservation and Research Division. Given his previous employment in the National Parks and Wildlife Service (NPWS), the manager of this section is able to call upon an extensive list of wildlife professional contacts to help initiate research activities. The Director of Environment and Education is primarily responsible for developing conservation training schemes conducted by the Australian Conservation Training Institute described in Chapter Six. It is worth noting that, while this Institute and the Conservation and Research Division produce and disseminate valuable conservation knowledge (and kudos for the ZPB of NSW), they are designed to be self-funding bodies which do not draw directly on the Zoo budget.

Schools Education staff are also strongly motivated to deliver environmental education to school children, as well as to other zoo visitors. During the course of this research, this section operated largely outside formal Zoo structures and tended to rely upon the initiative of individual education staff for ensuring their conservation concerns were heard by Zoo management. Schools Education was recently brought under the umbrella of the Marketing Divisions. It is unclear what, if any, effect these new arrangements will have on conservation education for school and casual visitors. What seems more apparent is that board members and senior managers of the ZPB of NSW have been interpreting certain financial imperatives in such a way that a perceived need for affordable and/or commercially viable conservation programs has been created. This mandate is imposed on the rest of the organisation without allowing much room for dissent.

At Western Plains Zoo, a large portion of conservation programs are managed by the animal collection department. Wider conservation policy is decided upon by senior managers and members of the ZPB of NSW. Western Plains is home to several high profile inter-agency endangered species breeding programs which are the specific responsibility of the Life Sciences Manager. Several keepers with specialised skills have been assigned to assist with some projects such as the Malleefowl Recovery project. Until recently, this section included two people who constituted the Zoo's curatorial staff. One position is oriented towards operational matters within the zoo and manages the keeping staff. The other party oversaw some of the Zoo's research activities, administered and developed approximately ten Australasian and international zoo collection planning schemes, liaised with government wildlife agency staff, and attended conservation forums and conferences<sup>14</sup>. Similar to Taronga's situation, Education staff at Western Plains Zoo display considerable personal initiative in order to ensure their programs reflect the Zoo's conservation achievements and broader environmental principles.

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<sup>14</sup> At the time of writing, this position was under review by the ZPB of NSW.



## 5.7 THE VICTORIAN ZOOS

### 5.7.1 Melbourne Zoo

The oldest in Australia, Melbourne Zoo is set on fifty-five acres of Melbourne's parklands in the northern end of the city. Averaging close to a million visitors per year, Melbourne Zoo enjoys considerable popularity among the local community interstate and overseas tourists<sup>15</sup>. The visitor survey component of this research found that most visitors (89%) had been to the Zoo before. Additionally, many people (79%) are from the local (Melbourne and surrounds) area. The survey results showed that many respondents (64%) visit zoos occasionally, between once a year and once every five years. Only 25% reported they visit zoos two to three times a year or more.

#### *i. Animal Collections & Exhibit Designs*

True to its name, this 'zoological garden' has a distinctly park-like setting typical of the European model of zoological institutions. A series of serpentine paths heavily planted with European and Australian flora lead visitors on and off the main arterial route which possesses grand floral arrangements. Similar to Adelaide Zoo, the environment is at least aesthetically pleasing, if not 'natural.'

Given the specific focus of its sister properties<sup>16</sup>, Melbourne Zoo exhibits a broad cross-section of both exotic and native fauna in an effort to highlight themes of diversity, adaptation and convergent evolution (Embury 1995). The animal collections at Melbourne Zoo were originally developed into a series of taxonomic groupings of animals (big cats, apes). Today, most exhibits contain single species from Africa, Asia, Australia and South America loosely assembled in close proximity to one another. While there are a multitude of outdated caged enclosures, the Zoo is in the process of being redeveloped into naturalistic exhibits organised into bio climatic habitat zones such as a Tropical Rainforest, Eucalypt Woodland and Savanna. Within these groupings will be further geographic subdivisions featuring animals from Africa, Asia, Australia and South America. The Zoo holds 90 species of mammals, 164 species of birds, 87 species of reptiles, and 19 amphibian species (ASMP Regional Census 1996).

One of the newer exhibit areas, the Tropical Rainforest, was the most extensively developed area while this research was being conducted. This precinct has been designed to immerse visitors in a rainforest habitat. Narrow, winding gravel paths heavily planted with rainforest plants lead visitors to displays which contain charismatic species such as the lowland gorilla, pygmy hippo, mandrill, Sumatran tiger, and oriental small-clawed otter. Other zoo specialties are its Butterfly House, the World of Frogs exhibit, the Great Flight Aviary and a small Victorian Grasslands display. The Zoo also offers animal feeding times for its orang-utan

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<sup>15</sup> The population of Melbourne has been estimated at 3,022,439 (Australian Bureau of Statistics 1991).

<sup>16</sup> Staff at Healesville Sanctuary use its location in temperate Eucalypt woodland to display native species and Werribee Staff stress that location's sweeping plains, escarpment and river flats to create an open range experience for displaying large herds or groups of animals.

colony, otters, meerkats, pelicans and penguins. There are also Meet-the-Keeper sessions for the Zoo's Sumatran tigers, elephants, seals, koalas, and gorillas.

A selection of Melbourne Zoo's exhibits and program dynamics are presented in Plates 84 - 104.

**Plate 84:** This enclosure at Melbourne Zoo, which typifies the 19th century style of animal exhibitry, has been heritage-listed. It cannot be altered or destroyed, hence it is used as a display to help illustrate to visitors the changes in zoos.



**Plate 85:** The traditional zoo walkway with European flora and rows of animals in cages.



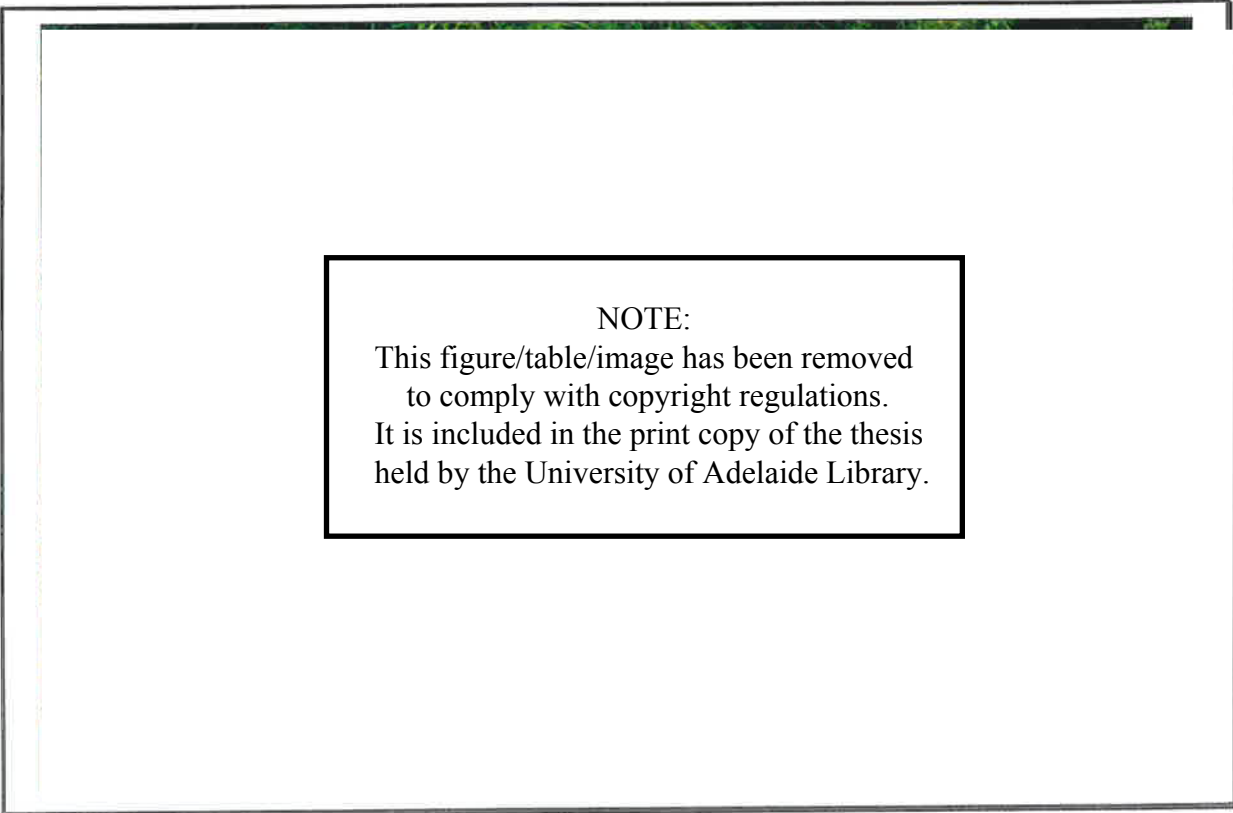
**Plate 86:** Despite the fact that carnival-style entertainment conflicts with modern zoo philosophies, facilities such as these are retained for revenue-raising purposes.



**Plate 87:** Catering facilities provide not only a service to Zoo visitors, but also generate income for the Zoo as well.



**Plate 88:** Friends of the Zoo guides provide interactive interpretation for zoo visitors.



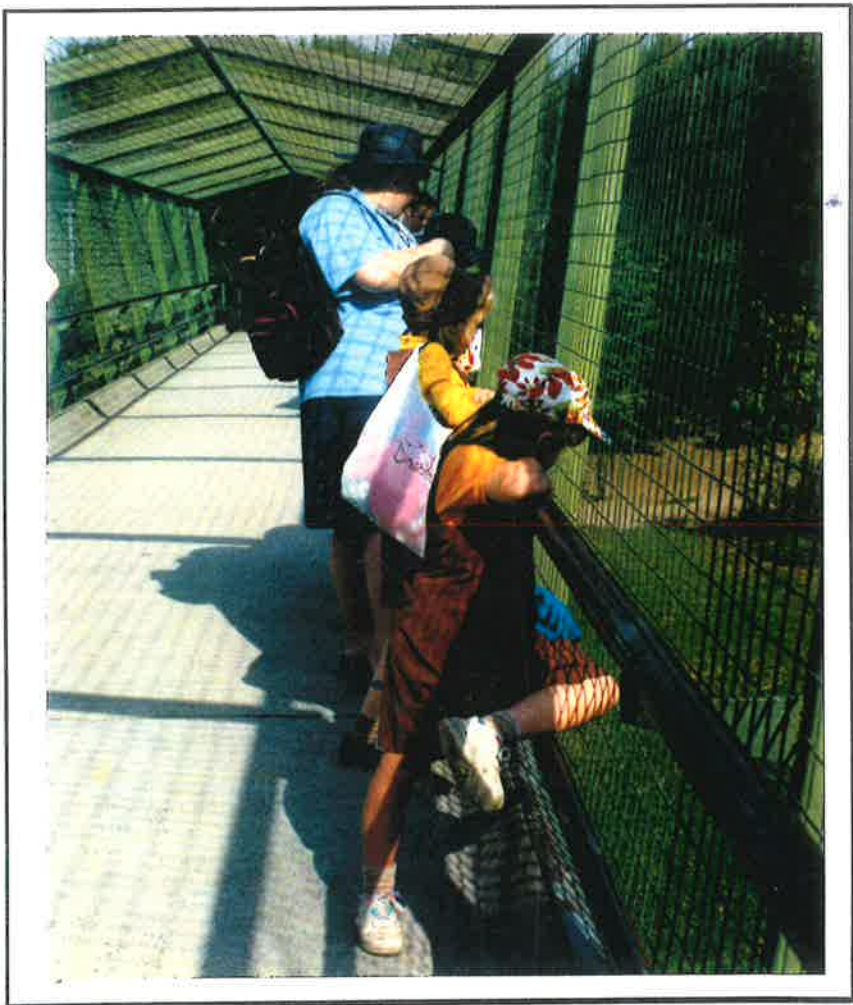
**Plate 89:** Keeper talks and animal shows are another interpretive vehicle. The seal show at Melbourne has been revised to reflect contemporary conservation issues: seals retrieve rubbish placed in the pool while keepers discuss the threat marine pollution poses for these mammals.



**Plate 90:** Some birds, like the parrots located in the centre of the Zoo adjacent to the Kiosk, are still displayed in antiquated aviaries.



**Plate 91:** People in a cage look down at 'dangerous' carnivores: the lions and cape-hunting dogs.



**Plate 92:** The lion is always a popular zoo feature, typifying the charismatic mega-fauna favoured by past and present zoo policy. This enclosure was built in the late 1960s and embodies the naturalistic style used by zoo architects at that time.



**Plate 93:** Lakes, which often feature water-fowl, double as a naturalistic island habitat for ring-tailed lemurs. The lemurs are confined not by cages, but by the surrounding water. This exhibit technique provides an illusion that the animals are unconstrained.



**Plate 94:** A new style of sign is being used throughout Melbourne Zoo. The steel for the signs has been supplied by BHP, one of the Zoo's major corporate sponsors. This sign also advertises the sponsor for the Sumatran tiger exhibit - Esso.



**Plate 95:** Signs are used to convey factual information about endangered habitats. This sign is placed at the entrance to the Rainforest exhibit.





**Plate 96:** More detailed information on rainforests is offered throughout the exhibit.



**Plate 97:** Pathways have been designed to encourage visitors to immerse themselves in a rainforest atmosphere.





**Plates 98 & 99:** The rainforest exhibit's simulated research station ties in with the live gorillas featured in another section of the Rainforest exhibit.



**Plate 100:** While attempts are made to create a more natural looking exhibit, elephants at the Melbourne Zoo are still confined to a relatively small space.



**Plate 101:** Conversely, the considerably smaller - but no less charismatic - pygmy hippo's habitat needs are largely catered for in this unique exhibit.





**Plates 102 & 103:** Both the pygmy hippo and mandrill exhibits provide a unique viewing perspective of these animals: visitors experience a sense of almost being inside the animals' exhibit (or habitat) and can watch the so-called 'wild' behaviours of the animals.





Plates 104 & 105: This exhibit could be considered to be one of the most progressive - even if not the most visited - in the Zoo. It is representative of zoo professionals' concern for raising visitors' awareness and appreciation of *local* and *regional* ecosystems.



### 5.7.2 Healesville Sanctuary

Healesville Sanctuary is located sixty-five kilometres north east of Melbourne on the Marondah Highway in the foothills of the Great Dividing Range. Most people travel to the Sanctuary by private car. However there are tour buses and a limited amount of public transport available. The Sanctuary is frequented by approximately 300,000 visitors per year<sup>17</sup>. The visitor survey in this research found that many of these people (66%) have been to the Sanctuary before and are largely occasional visitors to zoos: 65% report they go to zoos from once a year to once every five years. A majority of visitors (66%) are from the Melbourne area, although there is a fairly high representation of overseas guests (27%).

#### *i. Animal Collections & Exhibit Designs*

The Sanctuary covers thirty-one hectares and is set in forest remnant which once covered a large area of Victoria's Yarra Valley. This bushland setting is an integral component of the Sanctuary's visitor experience, and the degree to which one can imagine being 'out bush' is perhaps strongest here and at the Territory Wildlife Park. There are three kilometres of unpaved footpaths that take visitors to the animal exhibits which are lined on either side in many places by numerous gum trees, wattles and ferns. In four separate spots the path crosses over Badger Creek which runs through the middle of the Sanctuary. There are enough free-ranging animals frequenting the Sanctuary to warrant allocating staff for managing them as part of the collection - albeit a mobile part!

Healesville's captive animal collection reflects its emphasis on presenting "a truly Australian experience". The Sanctuary maintains only Australian native species with an emphasis on fauna from the south-eastern region of Victoria. There are 40 species of mammals, 26 species of reptiles, 4 species of amphibians, and 111 species of birds (ASMP Regional Census 1996). Apart from the Wetlands and Birds of the Bush displays which features several bird species, most exhibits house single species. All exhibits have naturalistic designs. The Sanctuary's main exhibits include cockatoos, kangaroos, emus, pelicans, platypus, agile wallabies, euros, broilgas, parma wallabies, rock wallabies, owls, echidnas, animals of the night, wombats, reptiles, lyrebirds, koalas, Tasmanian devil, tree kangaroo, hawks, brush turkeys, flying foxes, dingoes, large parrots, swans, and eagles.

An important Sanctuary feature is the series of talks that runs throughout the day known as "Animal Close-Ups". Animal keepers provide biological, behavioural, and ecological information on wombats, reptiles, birds of prey, koalas, platypus, pelicans, and parrots. There is often space in these demonstrations for Sanctuary visitors to ask questions, and in some cases they are afforded the opportunity to have some direct contact with the animals. The Sanctuary also has a well developed program for breeding endangered native species such as Leadbeater's possum, helmeted honeyeater, long-footed potoroo, mountain pygmy possum and works closely with State and Federal wildlife agencies. Collectively, the Sanctuary's bushland

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<sup>17</sup> Population figures for the eastern fringe of Melbourne (including Healesville) are 11,755 (Australian Bureau of Statistics 1991).

setting, naturalistic exhibits, visitor interpretation and education programs, and ex-situ conservation work demonstrate why it is commonly regarded as Australia's leading zoological institution.

Plates 106 - 119 display several examples of Healesville Sanctuary's exhibits and lay-out.

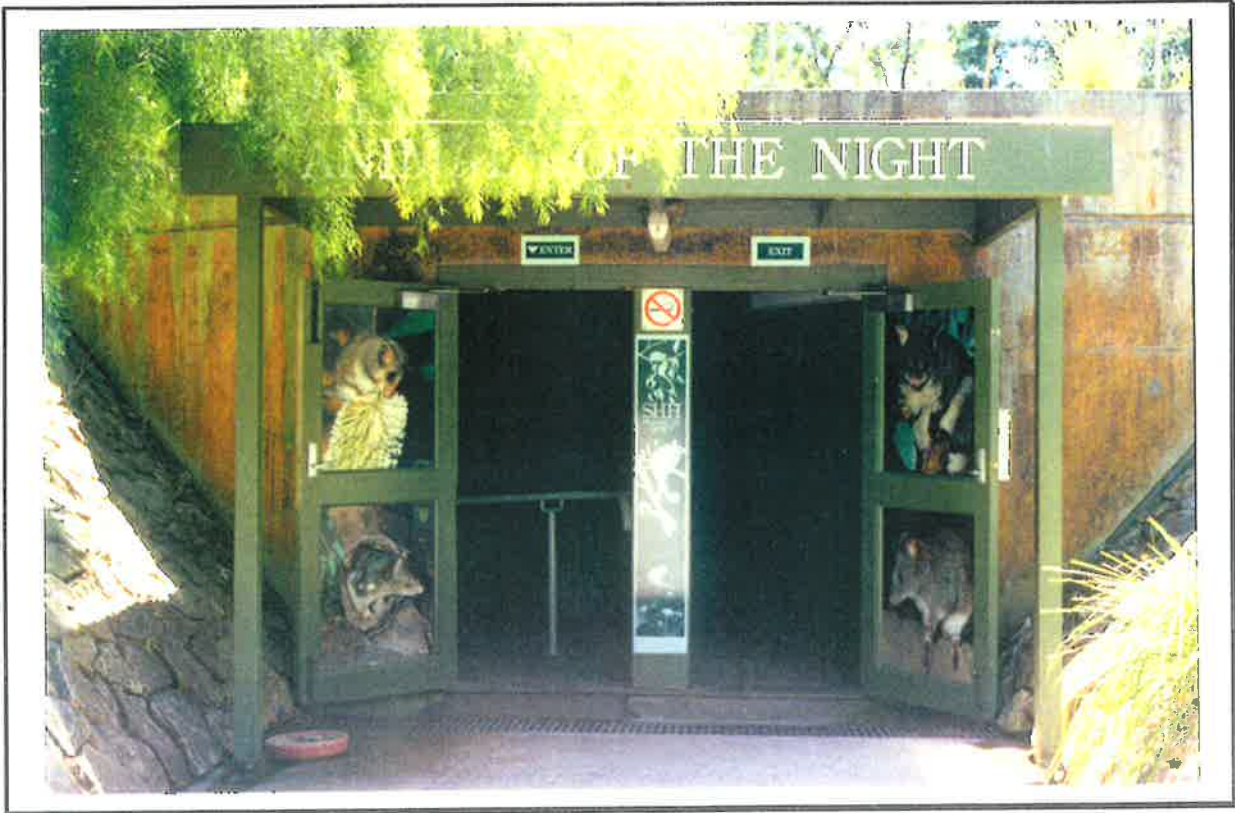
**Plate 106:** The atmosphere of Healesville Sanctuary is designed to reflect the surrounding Victorian bushland.



**Plate 107:** Free-ranging animals can be viewed taking advantage of food and water available at the Sanctuary.







**Plates 108 & 109:** The Sanctuary exhibits only fauna native to Australia. Not surprisingly, marsupials and macropods are prominently featured.



Plate 110: The Sanctuary's heritage has been preserved and made a feature of a specific exhibit. Inside this structure a detailed history of the Sanctuary is provided.

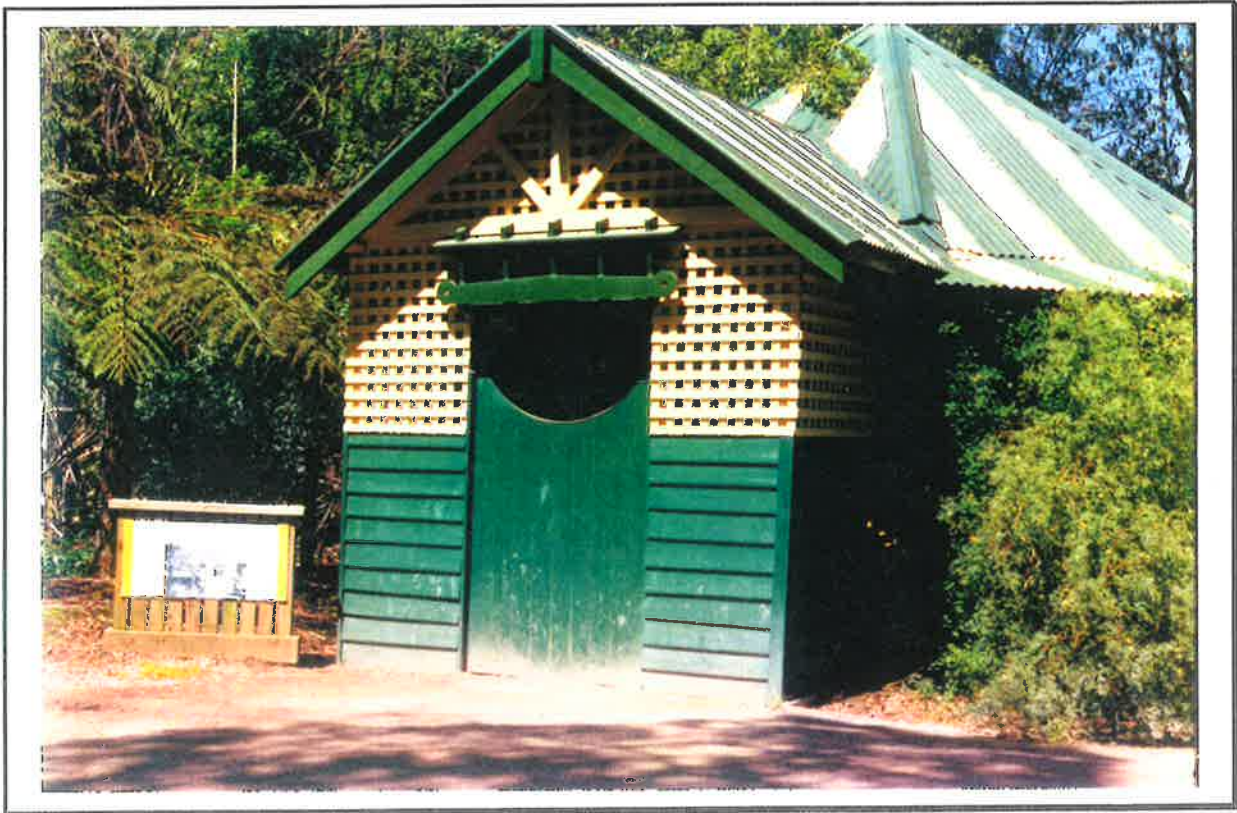
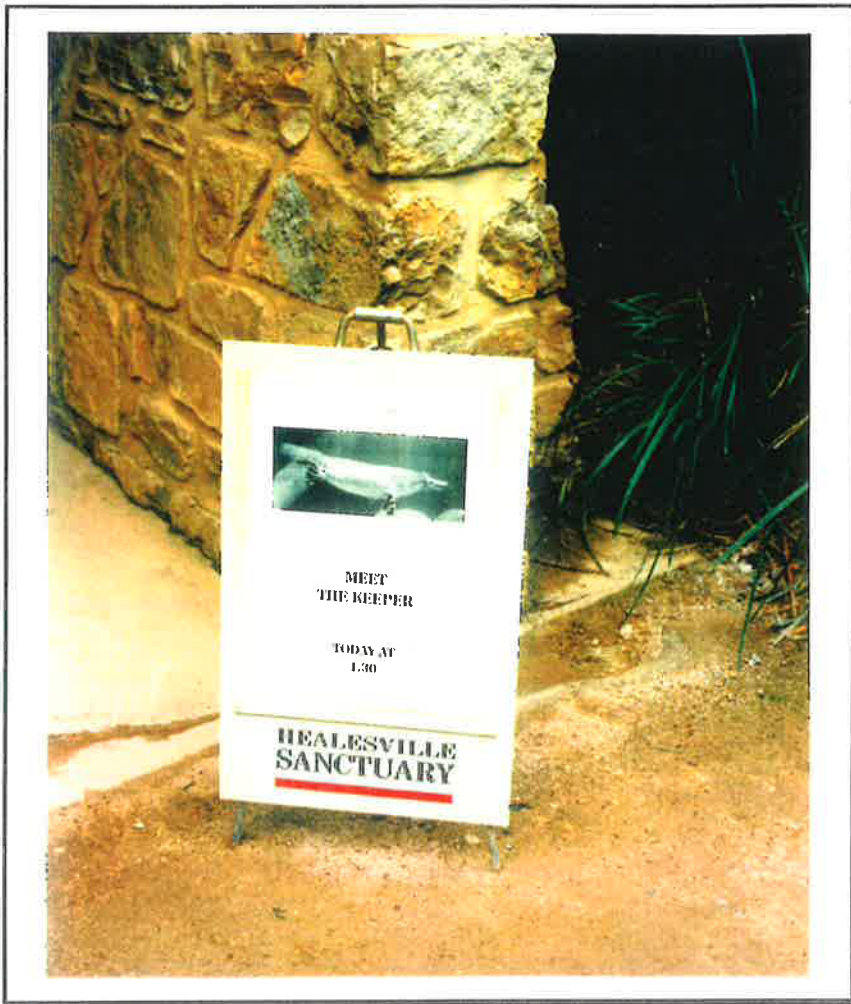


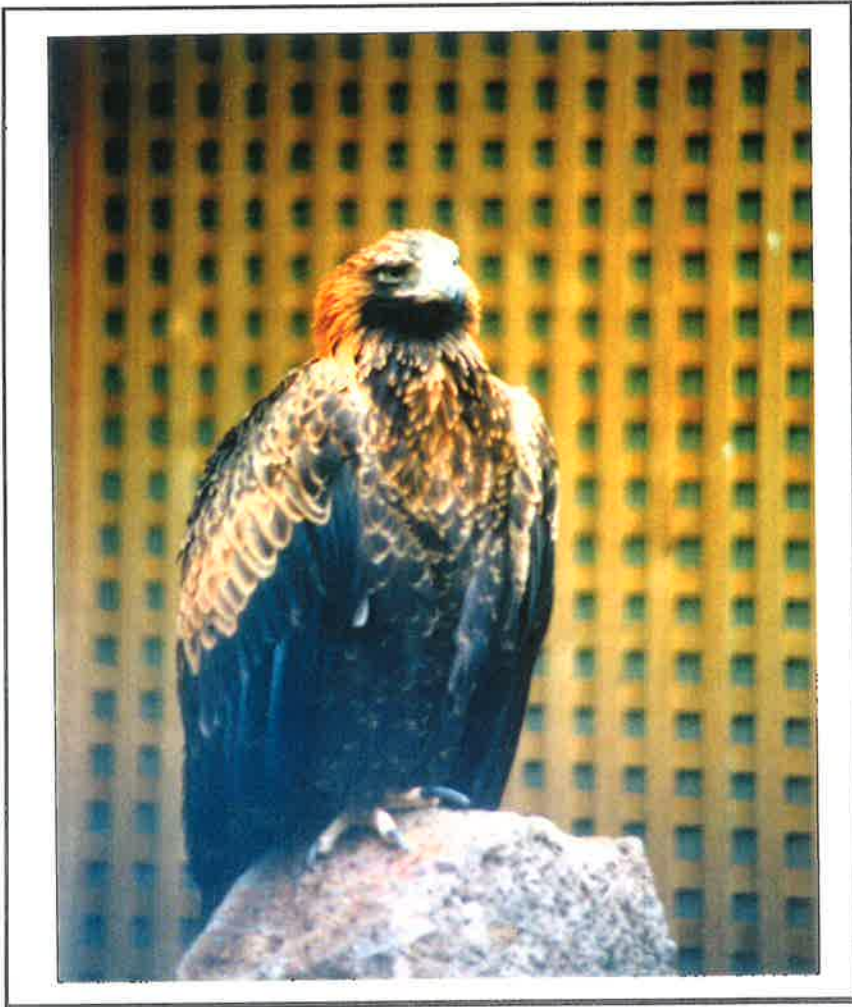
Plate 111: Like other zoos and wildlife parks, the Sanctuary is undergoing further development and modernisation.





Plates 112 & 113: Keeper talks and 'close encounters' with selected animals are an integral component of the Sanctuary's interpretation program.





**Plates 114 & 115:** The Birds of Prey Show serves a dual purpose: it rehabilitates injured native birds of prey while providing a popular and engaging vehicle for educating Sanctuary visitors.



**Plate 116:** In addition to providing animal-specific information, signs in the Sanctuary convey the function of the surrounding bushland.



**Plate 117:** Signs also advertise corporate sponsors' contributions to conservation. 'Conservation' in this sense is constituted by assisting the Sanctuary to revegetate its grounds.





Plates 118 & 119: The Sanctuary's role in wildlife conservation is conveyed to the public, in part, by strategically placed signs which discuss various on-going projects being undertaken at the Sanctuary.



### 5.7.3 Werribee Zoo

Werribee Zoo is located in the south-western outskirts of Melbourne, thirty minutes drive from the city's centre. The Zoo's visitation rates have grown steadily in the last several years and peaked at approximately 100,000 in 1995<sup>18</sup>. Majority respondents (89%) to this research's visitor survey are from the Melbourne area and had not been to Werribee before (60%). Yet, these visitors appear to visit zoos frequently: 46% reported they attend zoos up to three times a year or more, a figure significantly higher than most of the other zoos in this study<sup>19</sup>.

#### *i. Animal Collections & Exhibit Designs*

The Werribee experience is quite different from those of the metropolitan zoos. The Zoo is an open-range facility set on a savanna-like flood plain with sweeping escarpments. The Zoo's slogan, "where Africa meets Australia", is indicative of its animal collection philosophy and design. The Zoo has an African/Australian savanna theme and focuses primarily on animals with a common grassland habitat. It displays mixed groupings of African and Australian animals in enormous paddocks. Zoo visitors view animals while riding in a guided 'safari' bus which is driven through each exhibit. Trained guides accompany zoo visitors and provide a narrative which includes information about the Zoo, its animals and their behaviour, and some conservation messages. The animals exhibited at Werribee include magpie geese, cape barren geese, Bennett's wallaby, swamp wallaby, fallow deer, Egyptian goose, eastern grey kangaroo, red kangaroo, chital, red deer, sambar, ostrich, emu, blackbuck, Chapman's zebra, Arabian camel, American bison, Asiatic water buffalo, Watusi cattle, giraffe, eland, scimitar-horned oryx, addax, southern white rhinocerus, and hippopotamus.

Werribee is currently in the process of substantial redevelopment which, when complete will see several more species added to the collection, along with an extensive interpretation facility to convey the stories of the African and Australian Savannas. Currently, there are few signs in the Zoo and most of the interpretation is provided by the Zoo's guides. There will also be a system of walking trails incorporated into the Zoo in order to offer a more diverse visitor experience.

A selection of Werribee Zoo's animal collection and exhibit designs are illustrated in Plates 120 - 123.

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<sup>18</sup> The population for the western fringe of Melbourne (including the city of Werribee) is 106,966 (Australian Bureau of Statistics 1991).

<sup>19</sup> These results may have been influenced by a strong presence of zoo volunteers in the Werribee sample of respondents. Given their interest in zoos, it is not surprising that volunteers would visit more frequently.

**Plate 120:** The large paddocks typical of most of Werribee Zoo's exhibits enable the display of some animals in groups similar to those found in wild habitats.



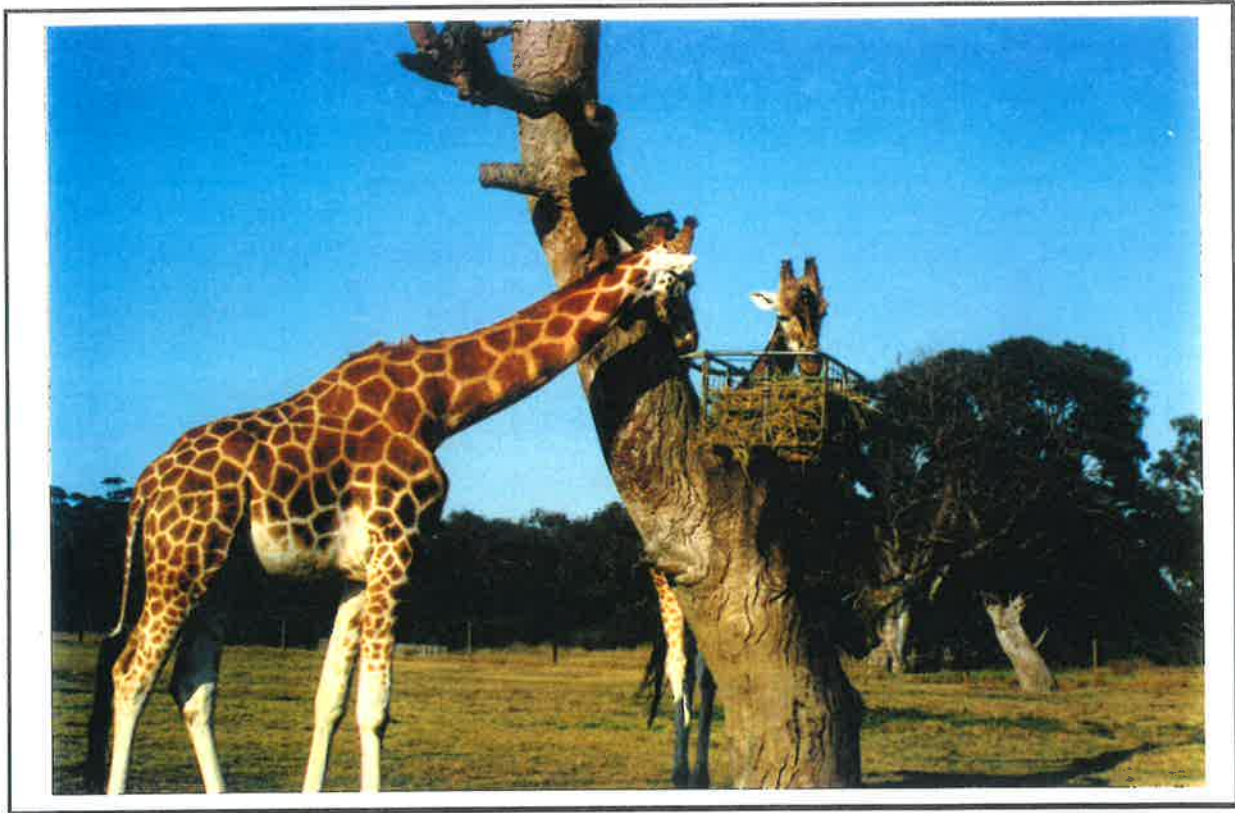
**Plate 121:** The scimitar-horned oryx is an endangered species. Bus tour guides can convey the Zoo's conservation role by explaining that the Zoo participates in an international breeding scheme that has successfully reintroduced the oryx to its original habitat.







Plates 122 & 123: While most animals will be viewed from a distance, most are conditioned not to be distressed by tour buses driving close to them. Visitors can then observe the animals more closely.



#### 5.7.4 Organisational Arrangements

The three zoos in Victoria that are a part of this research are governed by the ZBV. Consequently, there are several layers of authority and numerous departments that constitute the overall structure of the ZBV. These arrangements are displayed in Figures 14, 15, 16 and 17. The ZBV and its Chief Executive Officer manage three zoos: Melbourne Zoo, Healesville Sanctuary and Werribee Zoo and answer to the State's Environment Minister (Figure 14). The CEO also functions as Director of Melbourne Zoo. The Senior Management structure includes the Directors of Healesville Sanctuary and Werribee Zoo, a Director of Marketing /Visitor Services for Melbourne Zoo, a Director of Human Resources/Administration for Melbourne Zoo, and a Director of Education for all three properties. Melbourne Zoo has 158 employees, Healesville has 73, and Werribee employs 24 people.

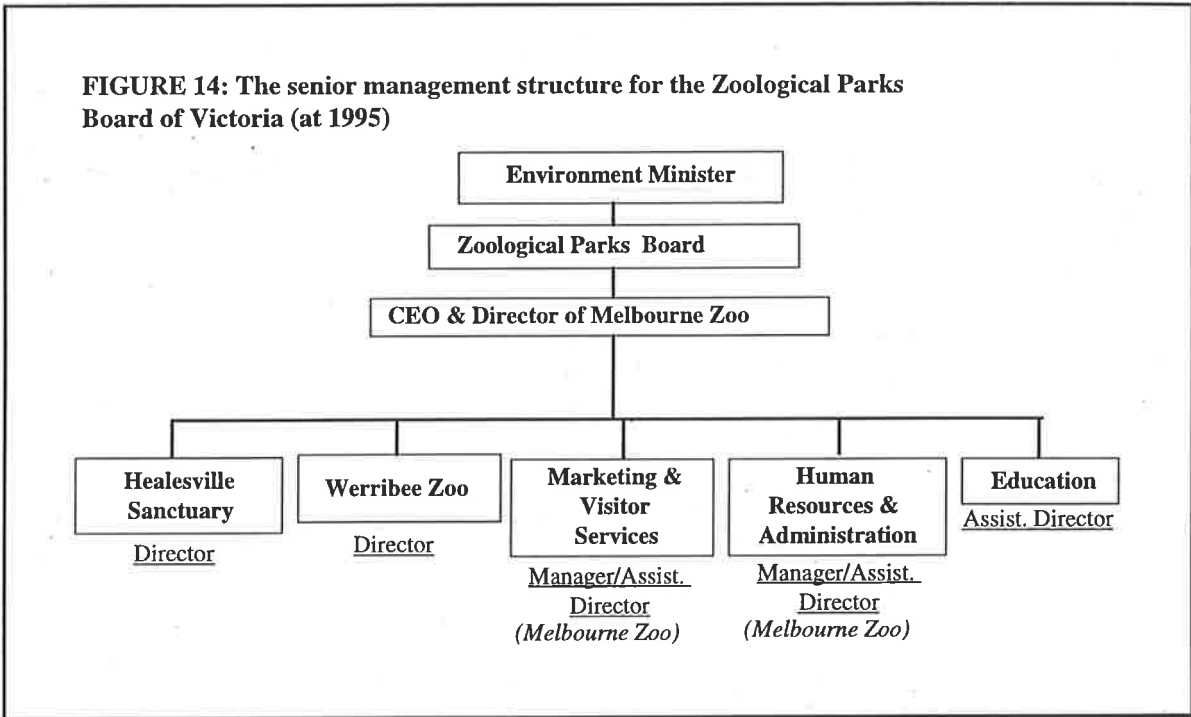
Friends of the Zoo (FOTZ) is an important part of the operations and culture of Melbourne Zoo, Healesville Sanctuary and Werribee Zoo. With a membership base of approximately 22,500 people, the group is well positioned to help support the zoos in delivering interpretive programs (such as zoo touch tables) and provide some funding assistance for zoo activities and conservation programs. FOTZ estimates that Zoo Guides, voluntary workers and speakers provide 37,000 hours of voluntary work to the three zoos. The group produces a quarterly newsletter and FOTZ members also enjoy several fringe benefits such as free admission to Melbourne Zoo and Healesville Sanctuary, discounted admission to Werribee, and reciprocal rights to visit various zoos in Australia and New Zealand.

At Melbourne Zoo the Administrative/Human Resources division includes finance, retail, purchasing, personnel and admissions matters (Figure 15). Visitor Services and Marketing consists of Media, Graphics, Promotions, Sponsorship and some commercial operations. The Animal Division is headed by a scientific curator who attends to animal collections, conservation activities and research. This department is also inclusive of veterinary services. Curators are assigned to several taxonomic groupings of animals (eg Native/Marine Mammals, Herptofauna and Animals used by Education, Carnivores/Ungulates, Primates/Invertebrates, and Birds) and oversee the animal keeping staff. Horticulture, works and major building projects are incorporated into a separate department.

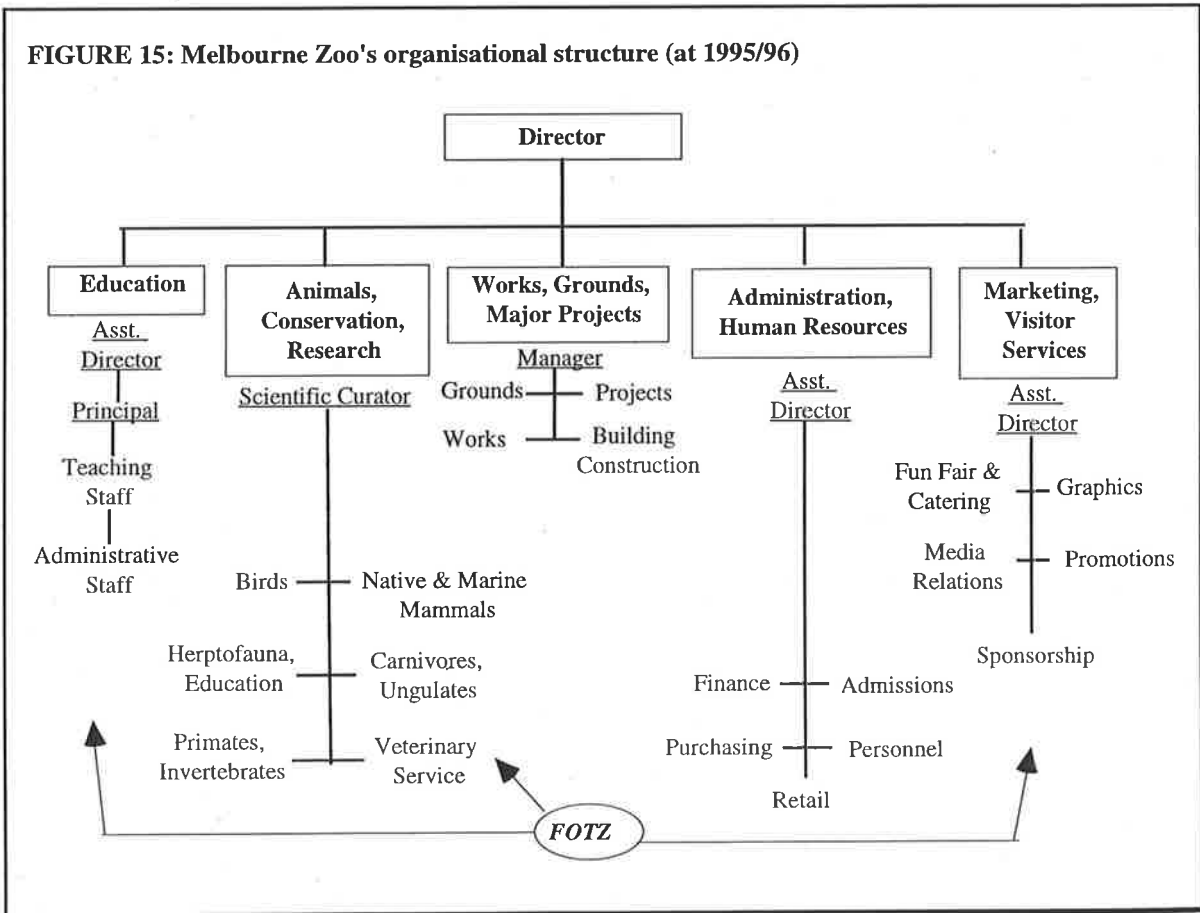
The organisational structure at Healesville Sanctuary varies slightly from Melbourne Zoo, due in part to its smaller size (Figure 16). The Sanctuary employs seventy-five people, while Melbourne Zoo has one hundred and seventy-one employees. Under the Director there are four divisions: Visitor Services, Life Sciences, Administration and Finance, and Works. Visitor services comprises tourism, catering, media, sponsorship, retail, and education. The Life Sciences division includes veterinary services, animal management and ecological (habitat) management.

Werribee Zoo's small size (twenty employees) limits its segmentation (Figure 17). Here, the rationalising of zoo functions mirrors the other institutions (grounds, administration, animal collection, and marketing). However, some of these activities are the duty of a part-time or

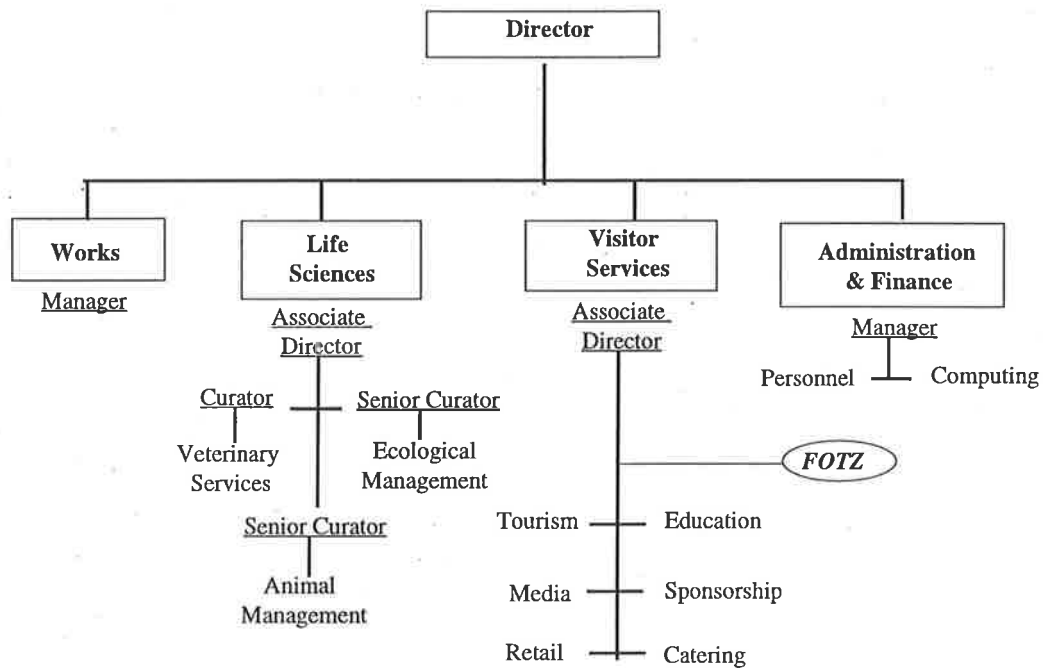
**FIGURE 14: The senior management structure for the Zoological Parks Board of Victoria (at 1995)**



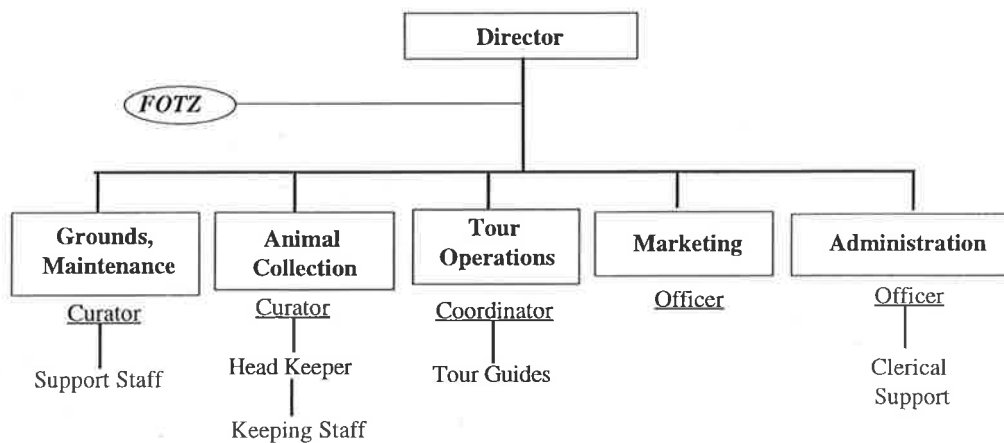
**FIGURE 15: Melbourne Zoo's organisational structure (at 1995/96)**



**FIGURE 16: Healesville Sanctuary's organisational structure (at 1995).**



**FIGURE 17: Werribee Zoo's organisational structure (at 1995)**



single staff member. Additionally, the Zoo Director is likely to have a closer involvement in the activities of the departments she oversees.

*i. Zoo Personnel & Conservation Practices (ZBV, Melbourne Zoo, Healesville Sanctuary & Werribee Zoo)*

The CEO of ZBV/Director of Melbourne Zoo guides broad conservation policies, but must do so in the context of numerous other (economic) imperatives. Initially, the present CEO/Director enthusiastically pursued the conservation ideals set out by the World Zoo Conservation Strategy for the institutions under his charge. In more recent times, however, his regime has been characterised more by authoritative measures and organisational upheaval, epitomised by the dismissal of Healesville Sanctuary's Director and the resignation of Werribee Zoo Director. Unfortunately, these two people were among the most progressive-minded, egalitarian leaders in the Australasian region. In addition to providing input into the ZBV's conservation principles and programs, the Directors at Healesville and Werribee Zoos oversee specific conservation projects carried at their respective organisations. The last Werribee Zoo Director also acted as ARAZPA President and had to balance the region's priorities against those of her own zoo and the ZBV. For two years a senior officer was appointed to develop in-situ conservation projects for the Board, such as the Bookmark Biosphere Reserve described in Chapter Six. The Assistant Director for Education works closely with his teaching staff in an effort to integrate environmental themes throughout his departments (and the rest of the Zoo's) programs.

A scientific curator coordinates the Melbourne Zoo's species management and endangered species programs. He also convenes a taxonomic collection plan for the region and acts as species coordinator for five regional species management plans. An especially dedicated and communicative individual, the curator is particularly well-suited to liaising with national and overseas wildlife agency personnel. He has successfully developed several important in-situ conservation projects for the ZBV and Melbourne Zoo. There are many keeping staff at Melbourne Zoo who strive to realise their conservation ambitions through their current positions. The Education Division is a critical component of Melbourne Zoo's provision of conservation knowledge for the general community. Education staff incorporate environmental themes into the specific programs they conduct and channel their concerns about the Zoo's conservation policies back up through the Director. These teachers are dedicated to the ideals of environmental education, several are active members of the AAEE. Before being transferred to Healesville Sanctuary, the Manager of Works/Grounds/Major Projects worked with his staff to promote valuable environmental ideals into zoo policy through their knowledge of horticulture and energy conservation.

In my assessment, Healesville Sanctuary has the strongest conservation profile of any Australasian zoo or wildlife park. This reputation was facilitated in part by the Sanctuary's origins as a research centre and native wildlife preserve (see Appendix 5) and a past Director who strove to implement numerous endangered species conservation and research programs. In his short tenure, the past Director's convivial leadership skills enabled him to restore considerable staff unity that had suffered due to substantial morale problems experienced under

his predecessor's regime. He successfully encouraged staff to uphold the Sanctuary's conservation' ethos and to continue to excel in their endangered species program performance. Another staff member who has played a crucial role in the Sanctuary's conservation programs is the Associate Director of Life Sciences. His responsibilities include ensuring that conservation and regional species management programs are undertaken. Like his colleague, the Scientific Curator at Melbourne Zoo, this individual has a marked appreciation of intra and inter-organisational processes. Consequently, he has been able to foster communicative partnerships with government wildlife agency staff. He also convenes a highly developed taxonomic breeding plan that has regional and international components, and coordinates two regional species collection plans. The Records Officer also coordinates several species plans for the region, as do some Keepers. The Sanctuary's Education Program staff have long demonstrated their substantive and progressive environmental knowledge, and creativity when designing and executing programs. As the current Associate Director of Visitor Services was previously the Sanctuary's Education Program manager. Hence, some of these environmental ethics will no doubt be injected into this more commercially-oriented division.

The previous Director of Werribee Zoo has played a decisively important role in establishing and improving the Zoo's conservation breeding and education programs. These achievements can be attributed in large part to the Director's professional training in education, her egalitarian management style and the small organisational size of Werribee Zoo. The Zoo's curator has also been a valuable asset to conservation policy development. Similar to the Assistant Curator position at Currumbin Sanctuary, Werribee's Curator strives to ensure that contemporary zoo species management philosophies are realised in actual programs. The Curator has been an active member and strong progressive voice in the Australasian zoo fraternity. Armed with an ardent appreciation for how organisational processes influence zoo conservation policy, his recent appointment as Director of Werribee Zoo is likely to continue in the same successful vein as his predecessor. Additionally, the recent appointment of permanent education staff from Melbourne Zoo's Education Service will provide an important avenue for disseminating environmental knowledge and values throughout the organisation and to the visiting public.

## **5.8 THE AUCKLAND ZOO**

The Auckland Zoo is located five minutes from downtown Auckland in the suburb of Western Springs. The Zoo is easily accessible by car or bus from the main freeway and central roads. While the Zoo receives substantial community support, it also faces numerous challenges. Opposition from a recently-formed New Zealand branch of the British anti-zoo organisation, Zoo Check, has pressured the Zoo to substantiate its supposed transformation into a modern, societally-relevant institution. Additionally, finite municipal budgets foster the perception that the Zoo must compete with other recreational destinations for the much needed tourist dollar. The Zoo receives close to an average of 350,000 visitors per year and depends heavily on admissions revenue to survive. Consequently, promotional materials position the Zoo as a community asset which offers visitors a unique opportunity to experience a variety of native and exotic animals exhibiting a multitude of behaviours in 'natural' habitats.

### 5.8.1 Animal Collection and Exhibit Designs

The dichotomy of the old and new at Auckland is manifest by a mixture of both traditional and modern animal collections and exhibitry styles. The Zoo has a European garden-like setting which covers nineteen hectares, featuring a mixture of exotic and native animal species which includes carnivores, hoofed animals, marsupials, primates, birds, reptiles, and other smaller mammals, and an aquarium. There are 38 species of mammals, 51 species of birds, 22 species of reptiles and 4 different amphibian species. A high proportion of charismatic fauna are represented in the Zoo's collection. A majority of the exhibits contain a single species. There are a substantial number of conventional cage-type exhibits for birds, primates and some large cats. The lion pit and polar bear pool are other remnant examples of traditional nineteenth and early twentieth century practices.

However, several examples of more progressive exhibitry designs and husbandry practices can also be found as the Zoo undergoes continual change. The Zoo's redevelopment plans embody a mixture of systematic, zoogeographic, habitat, behavioural and popular collection patterns. Future plans include creating several thematic zones that display predatory animals, communities of animals such as rainforest species, grazing herd animals, New Zealand communities of plants and animals and great apes. A walk-through native bird aviary was built in 1994 into the bush neighbouring the Zoo and its aim is to immerse visitors in a forest habitat where they can observe relatively unconstrained animals exhibiting natural behaviours. An interpretive area inside and adjacent to the aviary provides information about the endangered species housed there and about more general data on Auckland Zoo's conservation role and activities. The large, moated elephant enclosure was designed to provide a more suitable habitat for the animals and to reduce dysfunctional, stereotypic behaviours. The display is supplemented with ample interpretive material featuring information on worldwide distribution of wild elephants as well as the life of a captive elephant. The meerkat exhibit simulates the desert habitat in which these animal would live in the wild. A series of underground tunnels and viewing domes in the exhibit enables visitors to view the world through the eyes of these animals.

Plates 124 - 141 feature several examples of Auckland Zoo's surrounding environs, exhibit designs, and animal collection.



**Plates 124 & 125:** The Auckland Zoo's European influences are evinced by a heritage of garden walkways featuring exotic species of plants and colonial-style architecture.







**Plates 126 & 127:** While traditional rows of cages are still present in Auckland Zoo, numerous changes (in the form of new exhibits) are being made.



**Plate 128:** Chimpanzees exhibited in an antiquated enclosure are evidence of the difficulties many zoos have in changing outdated zoo practices.



**Plate 129:** Once a crowd pleaser, the boredom and poor condition of inappropriately displayed charismatic mega-fauna like the polar bear help to turn public opinion against the Auckland Zoo.





Plates 130 & 131: Concerned about rising opposition from animal liberation and welfare groups, the Auckland Zoo uses signs to explain the presence and condition of its polar bears. Given the bears' old age, they will live out the rest of their lives at the Zoo, but will not be replaced.

**AUCKLAND ZOO'S POLAR BEARS**

ALTHOUGH POLAR BEARS HAVE BEEN AT AUCKLAND ZOO SINCE ITS OPENING, ZOO POLICY IS **NOT** TO REPLACE THESE ANIMALS WHEN THEY DIE BECAUSE WITHOUT THE PROVISION OF A LARGE REFRIGERATED ENCLOSURE, AUCKLAND'S CLIMATE IS NOT SUITABLE FOR POLAR BEARS.

JOACHIM (BORN 1963) AND INGRID (BORN 1964) ARE NOW NEAR THE END OF A POLAR BEAR'S LIFE SPAN, WHICH IS 30 - 35 YEARS.

ZOO STAFF HAVE SET UP A PROGRAMME OF ACTIVITY FOR THE BEARS TO TRY AND REDUCE REPETITIVE BEHAVIOUR.


- THE BEARS HAVE TO HUNT FOR LIVE FISH AND EELS THAT ARE REGULARLY INTRODUCED TO THEIR POOL. (NOTICE THE ROCKS IN THE POOL FOR THIS "LIVE FOOD" TO SHELTER IN.)
- FOOD SUCH AS FISH OR FRUIT IS FROZEN INTO ICE BLOCKS FOR THE BEARS TO PLAY WITH.
- FEEDING IS AT DIFFERENT TIMES EACH DAY, TO GIVE VARIETY.
- NOVEL OBJECTS SUCH AS BARRELS AND BUCKETS ARE GIVEN TO THE BEARS FOR FURTHER STIMULATION.

THE PACING AND SWAYING HABIT HAS DEVELOPED OVER MANY YEARS AND IS DIFFICULT TO BREAK. BEARS IN THE WILD TRAVEL MANY MILES AND JOACHIM AND INGRID PROBABLY HAVE AN INBUILT NEED TO KEEP ON THE MOVE.

BOTH NOW SUFFER FROM ARTHRITIS WHICH IS BEING SUCCESSFULLY TREATED BY THE ZOO VET.

ANY IDEAS TO HELP CAN BE ADDRESSED TO...

THE SUPERVISOR OF CARNIVORES,  
AUCKLAND ZOO,  
MOTIONS ROAD,  
WESTERN SPRINGS.



A. ALTHOUGH A POLAR BEAR LOOKS WHITE, ITS SKIN IS BLACK & IT'S HAIR HAS NO COLOUR AT ALL, EACH HAIR IS REALLY A HOLLOW TUBE THAT YOU CAN SEE RIGHT THROUGH.

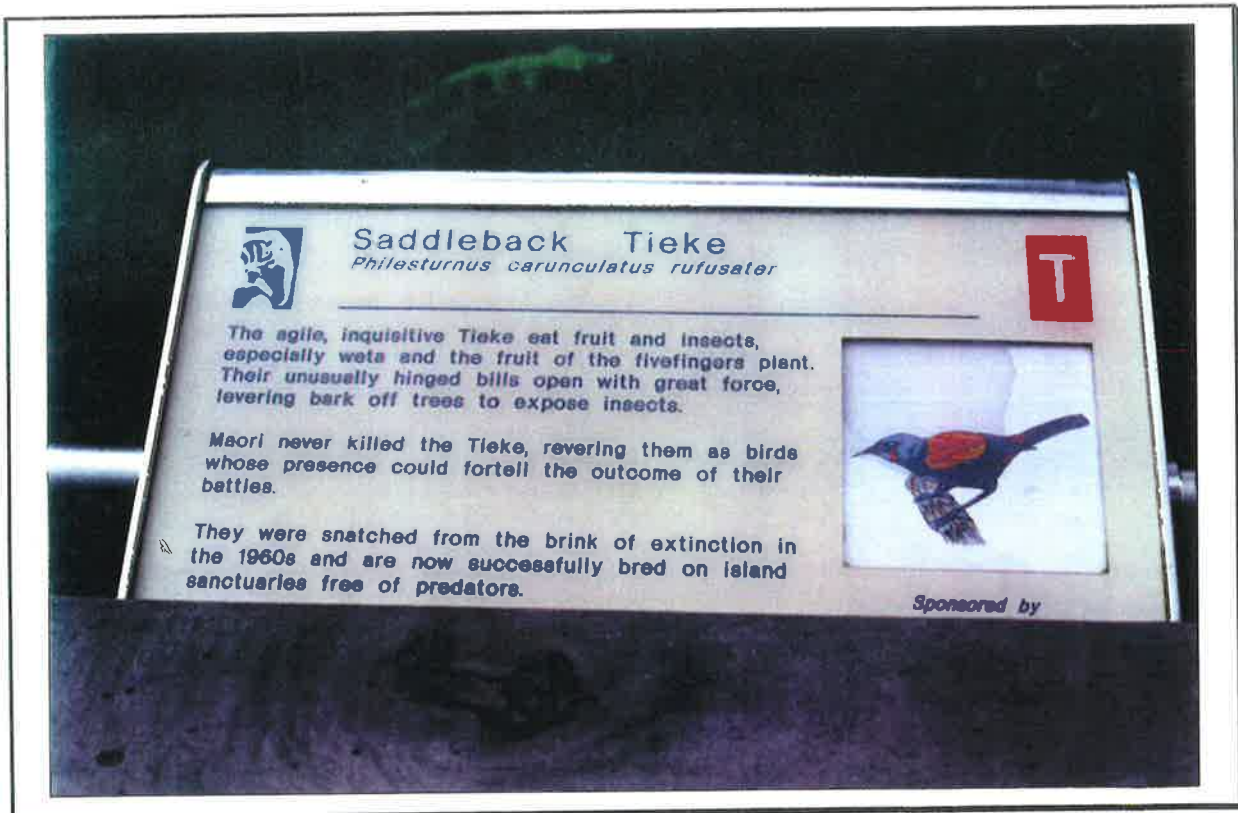
B. SOME OF THE SUNLIGHT BOUNCES OFF THE HAIR & THIS MAKES THE BEAR LOOK WHITE.

C. BUT MOST OF THE SUN'S RAYS PASS THROUGH THE HOLLOW HAIRS ARE TRAPPED BY THE BEAR'S BLACK SKIN.

NOTE: THE GREEN COLOURATION COMES FROM HARMLESS ALGAE LIVING IN THE HOLLOW HAIRS.

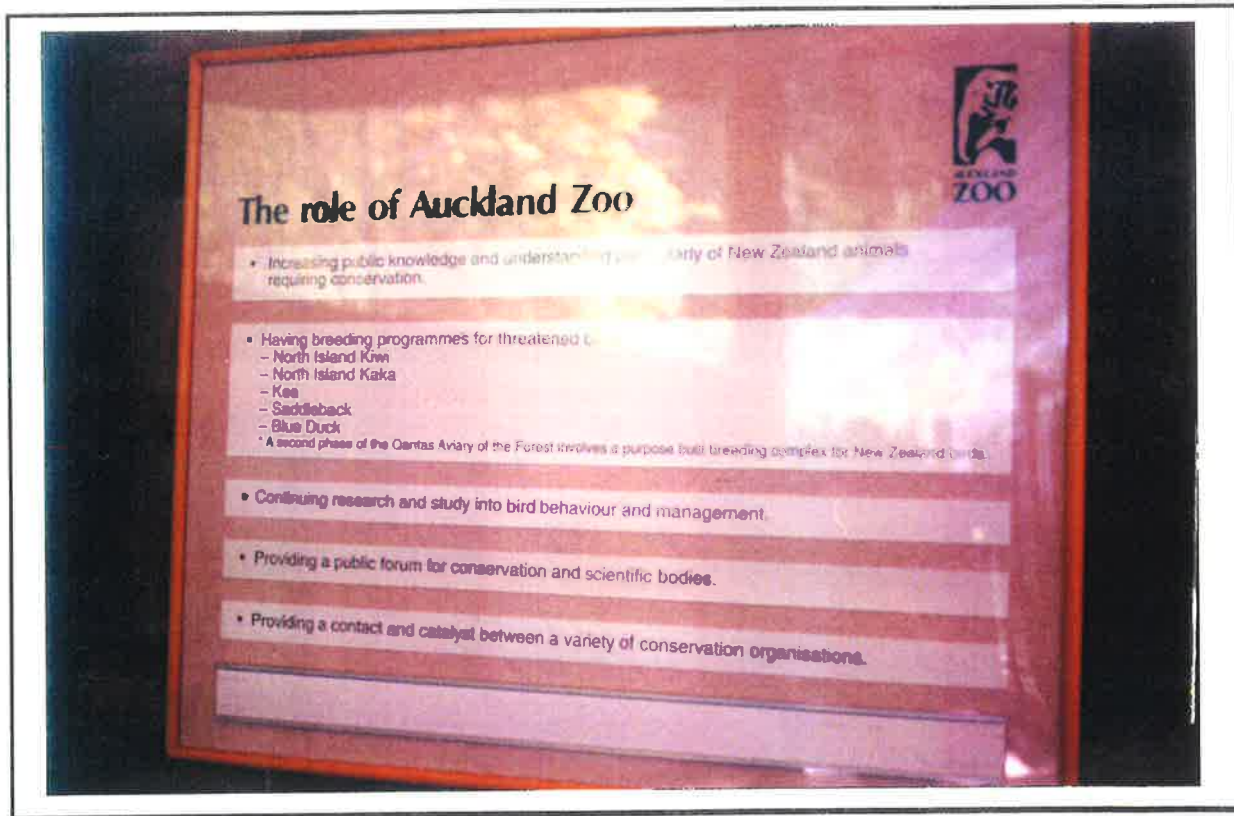


Plates 132 & 133: The evolution of zoo signage: old styles emphasise basic identification, while new designs reflect the more contemporary cultural and conservation interests.





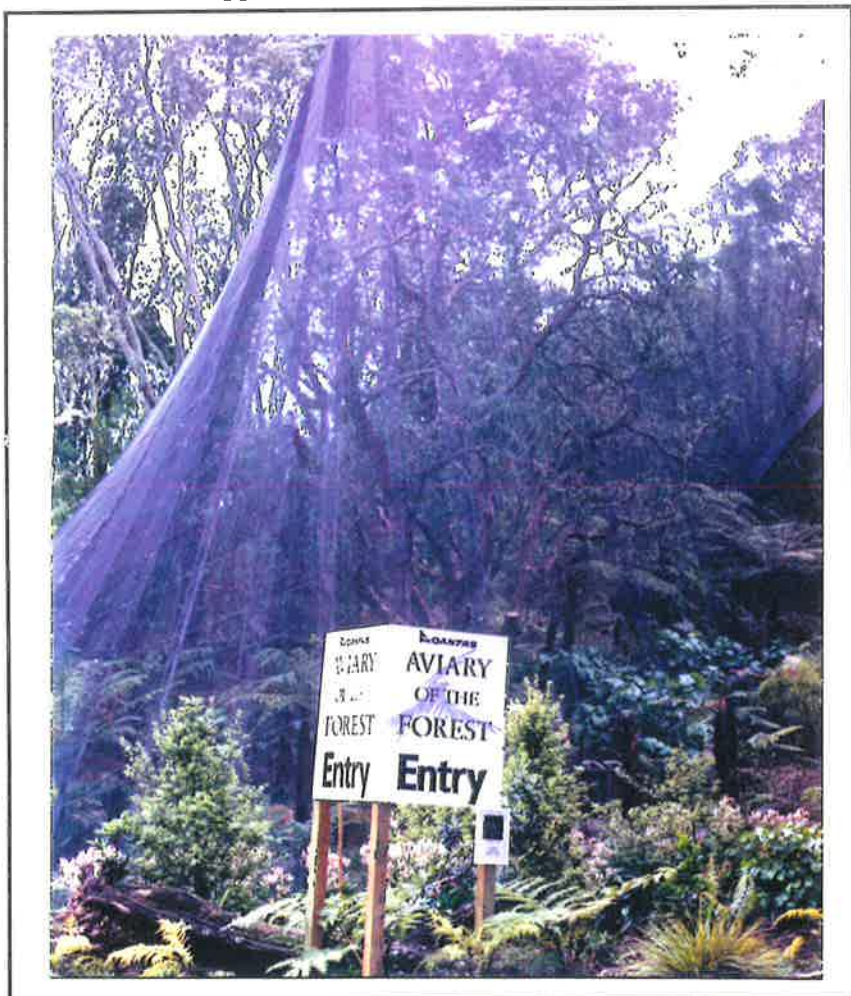
Plates 134 & 135: Modern signage complements new exhibit designs (in this case the Qantas Habitat Aviary) by featuring explanations of the causes and particulars of New Zealand wildlife conservation problems and the role Auckland Zoo takes in addressing such quandaries.



**Plate 136:** The Zoo's new forest aviary typifies immersion exhibit designs which aim to place the zoo visitor in the *animals'* environment.



**Plate 137:** The provision of expensive new exhibits such as this aviary, is often dependent upon funding from corporate sponsors. Sponsors often receive prominent signage in exchange for their financial support.



**Plate 138:** Interpretive aids such as this life-sized model, draw on the elephant's popular appeal as a zoo exhibit in order to educate visitors about animal physiology and anatomy.

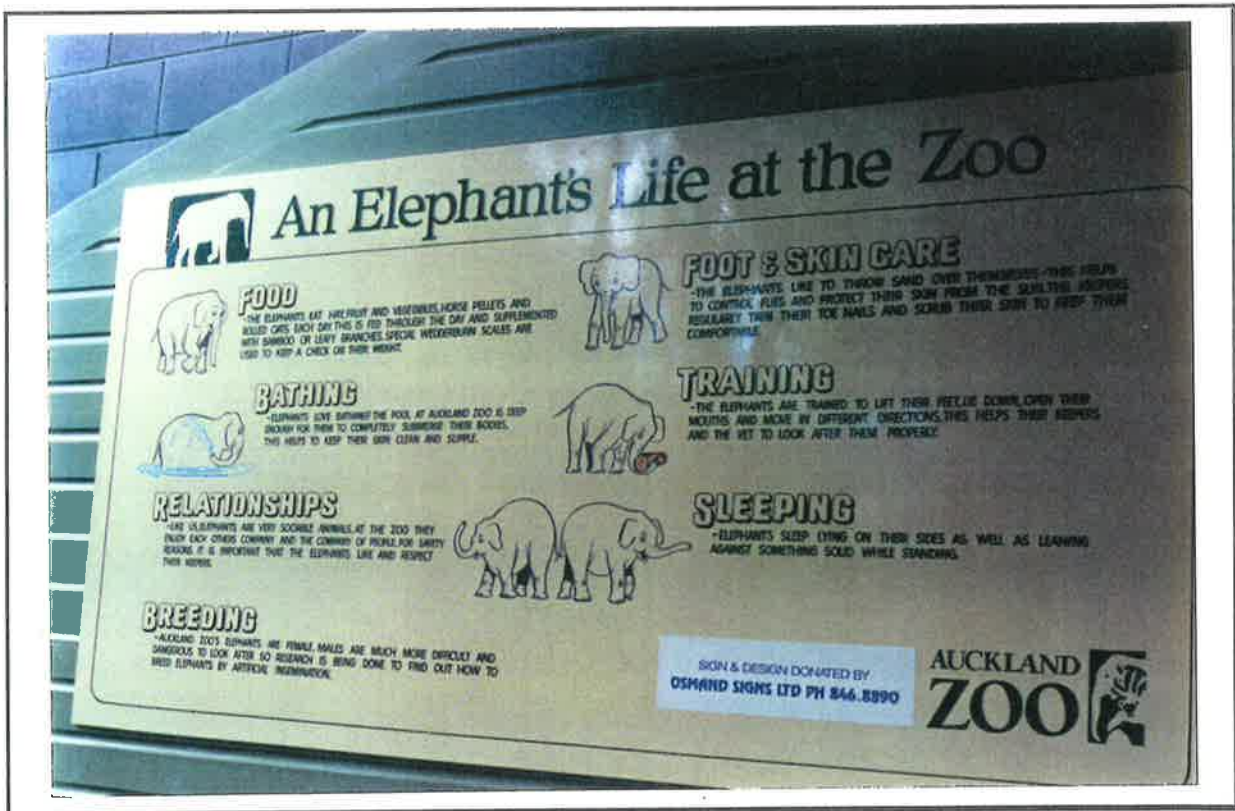


**Plate 139:** The appropriateness of keeping intelligent mega-vertebrates such as elephants in a zoo has been queried. Auckland Zoo addressed this issue by providing a larger, more open, naturalistic exhibit for its elephants.





Plates 140 & 141: Auckland Zoo is hopeful that if the public understands what life is like for zoo animals and can view how various forms of behavioural enrichment can improve captive conditions, more favourable perceptions of Auckland Zoo and zoos in general will result.





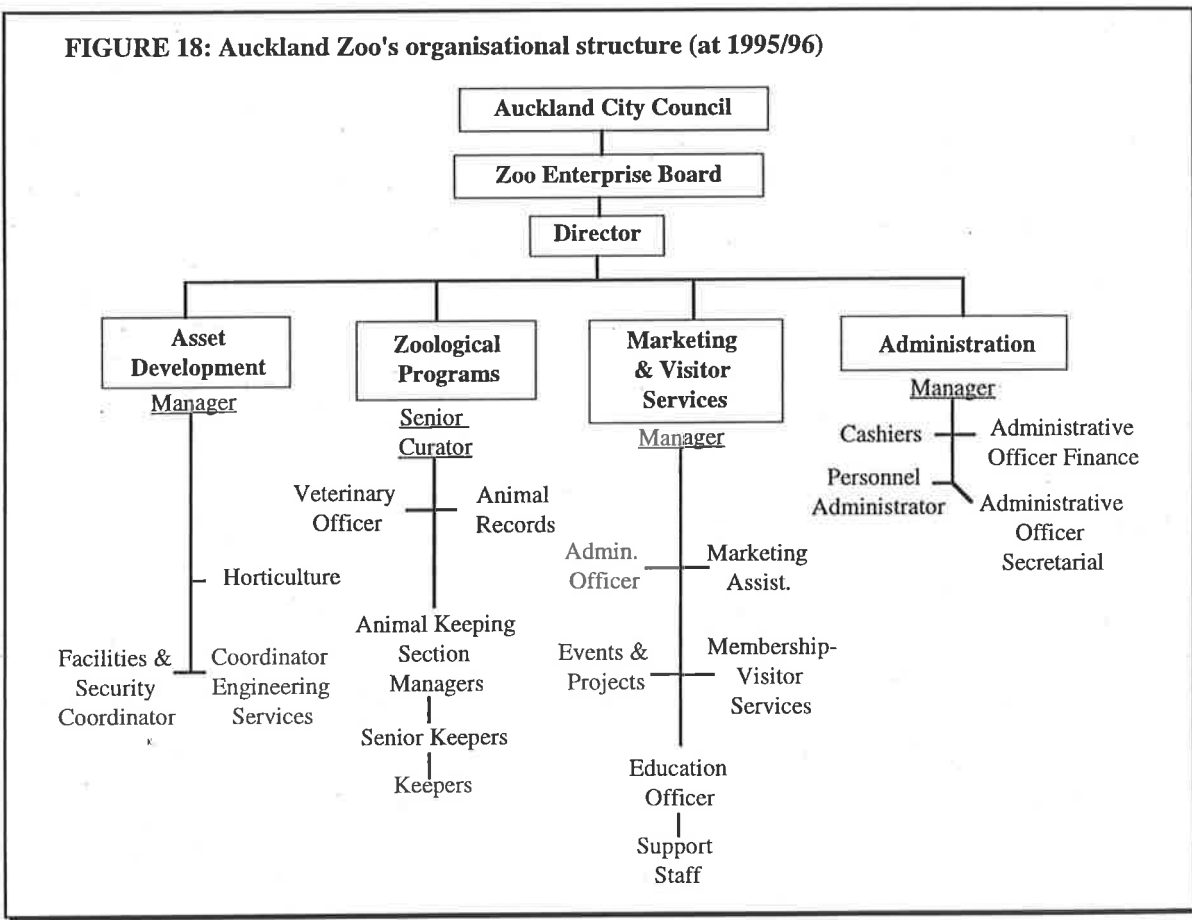
## 5.8.2 Organisational Arrangements

Unlike several Australian zoos that are the responsibility of State governments, the Auckland Zoo is governed by its City Council (Figure 18). The Zoo Enterprise Board reports to the City's executives and the Director reports both to the City's Executive Council and to the Zoo Enterprise Board. There are four main departments at the Zoo: Business Services, Community Programs, Zoological Programs and Works/Buildings/Grounds. Similar to the structures in Australian zoos, the heads of these sections constitute the Zoo's senior management structure. In Business Services, payroll, cashiering, accounts, financial reports, and secretarial operations are conducted. This department is also responsible for marketing the Zoo. Conservation and research pursuits, animal management, exhibit planning and veterinary care are carried out under the auspices of the Senior Curator for Zoological Programs. Section heads in this department supervise animal Keepers grouped in three main sections; primates/carnivores, birds/reptiles/native fauna, and ungulates. The Works, Buildings and Grounds division attends to the Zoo's grounds, paths and horticultural collection, maintains other Zoo facilities and the car fleet and provides security services. Community Programs is managed by a Curator who facilitates an array of operations such as interpretation, recreational activities, holiday programs, school visits, volunteers, public relations and customer service. The Volunteer program is a vital part of the Zoo, providing important support for numerous educational and recreational activities hosted by the Zoo.

### *i. Zoo Personnel & Conservation Practices*

Auckland Zoo's Director has been particularly effective in bringing his zoo practices up-to-date in accordance with contemporary conservation ideals promoted within the international zoo community. These efforts include intensive lobbying aimed at educating City Council members about the need for conservation-oriented practices in their Zoo. The Senior Curator (who this year transferred to the Zoo's veterinary department) has been a very active and vocal member of the Australasian zoo community. Serving on the region's board for species management, he has consistently promoted better inter-zoo species management of endangered and non-threatened species and pushed for a regional accreditation scheme that would keep zoo critics at bay. The Director of Community Education, who left the Zoo in 1994, brought substantive environmental knowledge to bear in zoo interpretive and schools programs. The Zoo's previous Records Officer (she left the Zoo in 1995) was brought to the Zoo in 1993 to update animal accounts and introduce new conservation computer data bases to the Zoo's information systems. Having worked for some time at Jersey Zoo, she brought with her significant knowledge about managing endangered species for eventual reintroduction to the wild. Additionally, one of the Zoo's senior keepers, previously employed by New Zealand's Department of Conservation, has gained valuable insights about zoo-wildlife agency relationships in planning for species recovery. This individual is also responsible for convening a taxonomic collection plan for New Zealand fauna and coordinates a regional species collection plan.

**FIGURE 18: Auckland Zoo's organisational structure (at 1995/96)**



## 5.9 CONCLUSION

The role of zoos in conservation is realised at international and regional levels. Australasia provides the regional context for my inquiry. This chapter constructed a cursory profile of the ten zoos involved in the research. In so doing, the prevalence of significant common 'industry' trends in animal collection and exhibit design and organisational arrangements emerged. While there are important distinctions that can be made among the ten institutions with regards to geographical differences and varied audiences, the similarities are impressive. There is a high degree of conformity of thought in the zoo community which is reflected in, for example, design preferences and organisational arrangements.

Most zoo structures rationalise work tasks in a comparable manner. Organisational and animal maintenance issues are largely separate endeavours. Conservation goals are actualised by a variety of zoo departments and personnel. However, most initiative has originated at middle and lower levels of zoos, and most activity occurs in the education and collection divisions. The presence of taxonomic and commercial influences in collection and exhibit planning persist, but there are imperatives to try to incorporate more ecological themes into planning. Those zoos that have been established fairly recently have been able to incorporate modern ideas into planning more readily. The older institutions undertake work of this nature within highly-ordered and traditional organisational and planning environments. For example, rainforest exhibits have become a popular exhibit in several Australasian zoos. For zoo professionals wishing to present some semblance of an ecosystem, this preference allows for the display of charismatic species that are often already part of zoo animal collections (gorillas, tigers, otters), but are now represented in the context of a 'natural' habitat.

The next chapter will continue contextualising zoo conservation policy by discussing specific programs. While this examination is primarily specific to Australasia, it is also set in the context of international industry trends which influence animal collection plans, captive breeding, education and research programs.

## **CHAPTER 6: ZOO CONSERVATION PROGRAMS**

*The mix of functions that zoos may employ to assist conservation will vary according to circumstances. The next great challenge for our zoos is to find and employ the means to inspire action and to monitor and evaluate the effectiveness of all our conservation functions. This will enable us to continue to improve in our rôle as conservation resource/impact centres. (We call this the cycle of relevance) (Task Group Deliberations, ARAZPA/ASZK Conference 1996)*

### **6.1 INTRODUCTION**

As we have seen, zoo communities have been attempting to come to terms with the sustainability and appropriateness of maintaining 'wild' animals in captivity since the early 1960s. An ongoing refinement of collection ideologies and practices demonstrates this rationalisation. So too does designing education programs to be consistent with a conservation ethic. Ex-situ conservation and education are the two major means by which the conservation role of zoos is fulfilled. In this chapter, I examine in greater detail the species management programs which facilitate the ex-situ conservation function of zoos in the Australasian region; consider the in-situ component of such programs, previously a domain beyond the realm of zoos; and comment on the conservation role as expressed through Australasian zoo-education programs.

### **6.2 SPECIES MANAGEMENT**

The World Zoo Conservation Strategy was released in 1993 by two influential zoo organisations: the IUDZG and the CBSG of the IUCN's SSC. It calls upon zoos to:

contribute to conservation by shifting the use of available animal space from more common species towards more space for endangered species in coordinated, managed programs (CBSG & IUDZG 1993: 30).

The IUCN, a professional body, enlists sovereign states, government agencies, research institutions and non-government organisations to conserve the world's natural heritage, to develop a general conservation policy and to manage international conservation projects (IUCN Bulletin 1988). The IUCN's SSC provides technical and scientific advice and resources for international biodiversity conservation projects through the mechanism of its 100 different specialist groups. These specialist groups (representing different plant, animal or disciplinary groups) comprise volunteer-member scientists, field researchers, government officials and conservation leaders (Kennedy 1992). The SSC prepares Action Plans which review the conservation status and needs of the species under the auspices of the taxon-based Specialist Groups. These plans recommend conservation actions, establish a system of priorities, and define the most relevant projects for addressing such priorities. The Specialist Groups then promote the implementation of their own recommendations by lobbying government and conservation organisations (Groombridge 1992; McNeeley et al 1990).

The CBSG, one of the largest of the SSC specialist groups, acts as global adviser and facilitator for regional ex-situ conservation projects and provides technical support to zoos for their captive breeding programs (CBSG and IUDZG 1992; Kennedy 1992). Figure 19 depicts the CBSG's relationships with zoo organisations in the Australasian region. The CBSG aims to "provide an international forum for the development of collaborative plans for captive propagation programs designed for species survival" (Seal 1986: 178). These goals are embodied in the World Zoo Conservation Strategy introduced in Chapter Three. The Strategy presents an expansive

definition (and endorsement) of zoo conservation roles and provides guidelines for implementing conservation-based zoo policies. Many zoo professionals envisage that adherence to these guidelines will enhance the collective potential of the global zoo community to protect endangered wildlife (DeJose 1993; Hamilton 1995; Williamson 1995; CBSG & IUDZG 1993)

Interested zoos across the globe endeavour to optimise their collective powers and organise themselves into regional zoological associations: Canada, United States, Latin America, Europe, Africa, Asia. As discussed in Chapter Three, ARAZPA is the formal mechanism that joins zoos in Australia, New Zealand and Papua New Guinea<sup>1</sup> together under the common conservation banner. Established in 1990, ARAZPA aims to develop the region's zoos and aquaria as conservation resources (Mumaw 1992). ARAZPA also endeavours to provide a forum for involvement for all Australasian zoo and aquarium professionals. There are currently 40 Institutional Members of the Association.

ARAZPA administers the ASMP which endeavours to coordinate zoo collection plans within Australasia. It attempts to do so by providing administrative and professional support to the region's zoos for managing species and for integrating the region's programs with the global endangered species conservation programs of the CBSG (ASMP 1992) (Figure 19). The Australasian region is considerably more advanced in the development of its regional management schemes than other regions. Until late 1995, fourteen zoos were participating in the program<sup>2</sup> on a voluntary basis, and these make annual financial contributions towards administrative costs of the program<sup>3</sup> (Jakob-Hoff 1992). Currently, all full institutional members of ARAZPA are included in ASMP and sign a declaration agreeing to follow ASMP policies as closely as possible.

An ASMP Board of Directors, appointed by the ARAZPA executive<sup>4</sup> oversees the operations of the Program (ASMP 1994) (Figure 19). The ASMP Board appoints a Conservation Coordinator to provide policy and planning advice, to oversee the daily activities of the program, to coordinate and facilitate the work of ASMP staff and to monitor and report on the Program's progress (ASMP 1994)<sup>5</sup>.

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<sup>1</sup>The ARAZPA has recently secured the involvement of two zoos based in Papua New Guinea.

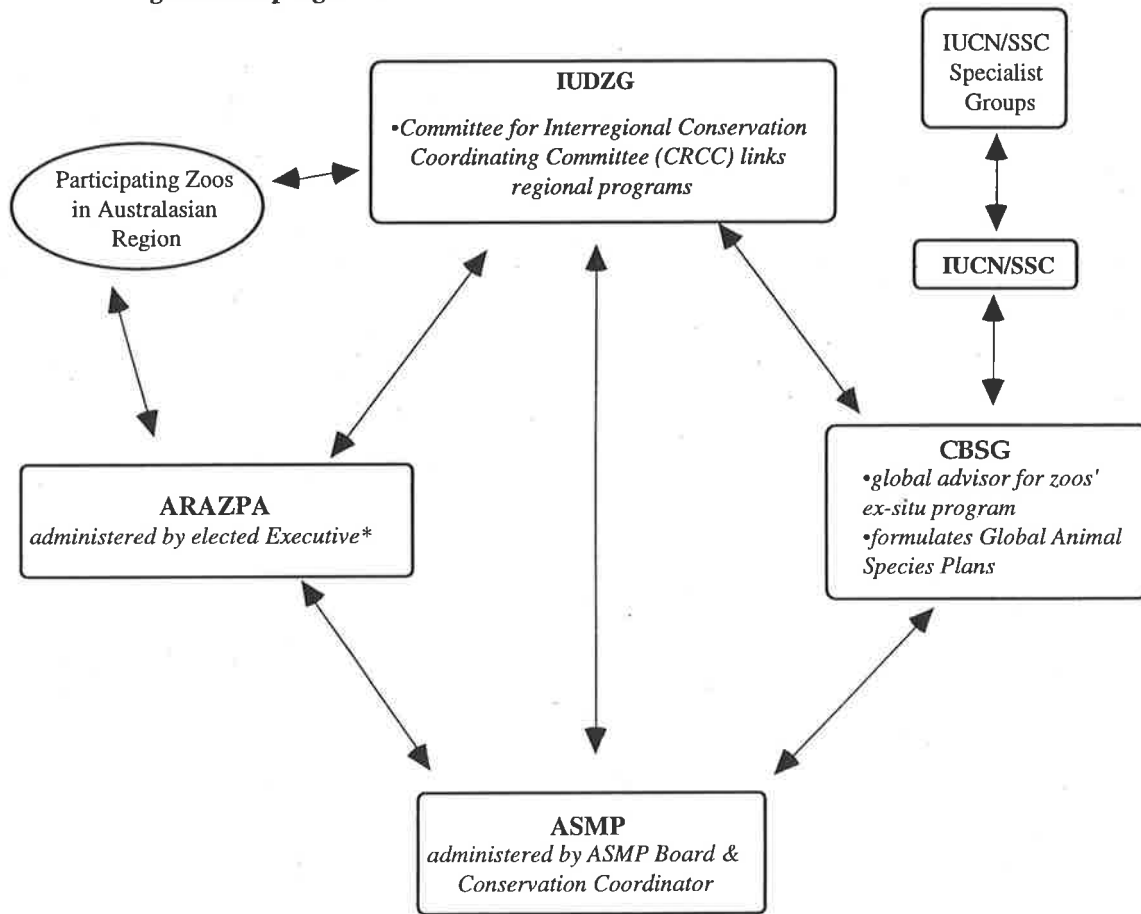
<sup>2</sup>Auckland Zoo, Orana Park Wildlife Trust and Wellington Zoo in New Zealand; Taronga Zoo, Western Plains Zoo, Perth Zoo, Currumbin Sanctuary, Melbourne Zoo, Healesville Sanctuary, Werribee Zoo, Adelaide Zoo, Monarto Zoo, Territory Wildlife Park and Tipperary Sanctuary in Australia.

<sup>3</sup>The funding formula is based on two principles. Firstly, the benefits received by participating institutions represent a commitment of work and resource allocation for the ASMP. 'Work' is constituted by the total number of species currently held by an institution. Secondly, the work incurred by the ASMP is partially offset by the 'value' an institution's collection confers on the other ASMP participants. The 'value' of each institution's collection to the ASMP is calculated by assigning a figure to each species in its current collection. This figure reflects the number of other institutions indicating an interest in this species by including it in their collection plan; the more institutions that include a particular species in their collection plans, the higher that species is valued. Annual contributions will equal one tenth of the value index subtracted from the total number of species in an institution's current collection (ASMP 1993:24). As of early 1996, this formula is being reviewed and a new scheme is being developed (Hopkins & Wilkens 1996: pers comm).

<sup>4</sup>The ARAZPA executive is elected, or re-elected by ARAZPA members at the region's annual conference. ARAZPA membership, limited to zoological-type institutions, exists at an institutional or individual level.

<sup>5</sup>Late in 1995 the relationship between ARAZPA and ASMP was altered when the ARAZPA secretariat was formed. ASMP staff are now considered to be ARAZPA employees, the ASMP Conservation Coordinator is now the Executive Officer of ARAZPA, and the ASMP is managed as a sub-program of ARAZPA.

**FIGURE 19: Lines of communication integrating Australasian zoo programs with global zoo programs**



\* Late in 1995, the ARAZPA formed a secretariat. The Association now has an Executive Officer who, in addition to overseeing the ASMP, acts as an advocate for the zoo industry; leads the development of an accreditation program; and conducts the general affairs of ARAZPA

In addition to the ASMP secretariat, volunteers carry out a considerable amount of the work of the ASMP and ARAZPA. Besides the ASMP secretariat, staff members from participating institutions conduct a great deal of the work on a voluntary basis. In addition to their daily responsibilities, they endeavour to implement the objectives of the programs. Senior managers (directors, assistant directors, or principal curators) occupy the ARAZPA and ASMP Board positions, making policy decisions and recommendations. Animal management staff (curators, section heads, animal keepers and animal records officers) fill the more operational positions and components of the ASMP.

Species management and collection planning recommendations serve to prioritise species according to their relative need for regional management. They exist on several levels involving some or all of the following: the global zoo network; regional zoos; overseas organisations; Australian government agencies (federal and state), universities and NGOs. Table 10 lists the formalised management categories utilised in the rationalisations of zoo collections as set out by the ASMP. A number of characteristics form the bases of a scoring system, including: the degree of endangerment<sup>1</sup>; existing regional coordination; the existence of formal conservation programs for particular species (ASMP 1994); the extent to which those species can promote conservation-related education, an increase of knowledge (conservation-related research), or a combination of the two (CBSG & IUDZG 1993). Species are weighted according to the extent to which they embody those criteria and are then assigned into Categories (Table 10).

The ASMP assigns a high priority to Category One species. Many species included in this classification will afford zoos various opportunities to work with highly endangered species and conservation agencies outside the zoo community. Table 11 lists a partial selection of these programs. Further examples are listed in Appendix 6. Although a large number of the species listed qualify as Category One species, not all the species that are the focus of joint programs will be classified as such. There are several reasons that will account for this: a species may not yet be held by an ARAZPA-member zoo; a captive population may play an 'advocacy' role, rather than directly supporting management in the wild; or a program may still be under development (Hopkins & Wilkens 1996: pers comm).

Although government-directed wildlife conservation efforts and zoo community programs do overlap on occasion, they are not fully integrated. While much of the emphasis of the ASMP is based on regional, inter-zoo species management, most often the government wildlife agency

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<sup>1</sup>Endangerment has been traditionally categorised according to the IUCN Red List of Threatened Species whereby animals are considered either 'extinct in the wild', 'endangered', 'threatened', 'vulnerable', 'rare', 'indeterminate', or 'insufficiently known'. Also utilised is the Mace/Lande Categories of Threat where specimens are either 'critical', 'endangered', 'vulnerable', or 'safe' (not threatened). More recently, the ASMP program is incorporating the new IUCN categories of threat (IUCN 1994; Mace & Lande 1991) ('threatened', 'extinct and probably extinct', 'entries for genera and other higher taxa', 'threatened and extinct subspecies', 'commercially threatened species') and Australia & New Zealand Environment and Conservation Council (ANZECC) listings for Australian and New Zealand species (Hopkins & Wilkens 1996: pers comm). These categories are absolute across all species and regions.

**TABLE 10: Management categories for zoo collections**  
 (Source: ASMP 1994:4; Jakob-Hoff 1992: 18)

ASMP Categories	Category specifics
<b>Category One</b> Cooperative Conservation Program Species	Species involved in active wildlife agency conservation programs involving zoos in on-site work for reintroduction into the wild; high level of regional management; includes threatened and 'flagship' species.
<b>Category Two</b> Coordinated Species	High-level regional management with species covered by a Species Management Plan (SMP), guided by an appointed species co-ordinator; includes threatened species, international studbook species and certain 'flagship' species.  <u>Sub-Category Two:</u> Species flagged for review following which their reclassification to Category 1 is likely.
<b>Category Three</b> Monitored Species	Medium-level regional management with species jointly monitored by zoos; covered by a studbook to which Participating Institutions may refer and/or by TAG recommendations; includes animals which are not common in the wild (in Australasia) and those which are difficult or expensive to acquire.  <u>Sub-Category Three:</u> Species flagged for review following which their reclassification to Category 2 is likely.
<b>Category Four</b> Censused Species	Low level regional management via census with species monitored by the TAGs. The production of studbooks may be assigned as developmental opportunities for staff of Participating Institutions. Includes animals which are common in the Australasian region (in the wild or in captivity) or which are so rare in captivity that joint management would not be productive.



**TABLE 11: Examples of Australasian inter-agency endangered species programs (ASMP 1995).**

**Multi-agency program where captive populations are managed in direct support of an *in-situ* species recovery effort**

**Category 1**

**Striped Legless Lizard**

ASMP Zoo Program Coordinator: Melbourne Zoo Representative

Coordinating Zoo (captive program): Melbourne Zoo

Current ARAZPA Participants: Melbourne Zoo

Other Participants: Dept. Conservation & Natural Resources (VIC), Victoria National Parks Assoc, Melbourne & Deakin Universities, ACT Parks & Conservation Service

Zoo Services: convene working group, maintain captive population, provide support for field work and rescues

**Black Rhinoceros**

ASMP Zoo Program Coordinator: Taronga Zoo Representative

Coordinating Zoo (captive program): Western Plains Zoo

Current ARAZPA Participants: Western Plains Zoo

Other Participants: International Rhino Foundation

Zoo Services: maintain and breed captive population

**Multi-agency programs where support of captive component for *in-situ* recovery effort is under development**

**Category 3(1)**

**Cassowary**

Contact Zoo: Currumbin Sanctuary

Other Participants: Dept of Environment & Heritage (QLD)

Zoo Services: maintain & breed captive population

**Category 4(1)**

**Black-eared Minah**

Contact Zoo: Healesville Sanctuary

Other Participants: Dept of Conservation & Natural Resources (VIC), Australian Nature Conservation Agency, Royal Australasian Ornithologists Union, Museum of Victoria

Zoo Services: establish captive population, assist field studies, undertake physiological & behavioural research

**Multi-agency programs where the captive component is not managed in *direct* support of an *in-situ* species recovery effort - managed for advocacy or to support research.**

**Category 3**

**Mountain Pygmy Possum**

Contact Zoo: Healesville Sanctuary

Other Participants: Dept of Conservation & Natural Resources (VIC)

Zoo Services: establish & maintain captive population, undertake physiological & behavioural research

**Category 4 (3)**

**~~Hooded Plover~~**

Contact Zoo: Adelaide Zoo

Other Participants: Dept of Environment & Natural Resources (S.A.)

Zoo Services: provide artificial incubation, establish captive breeding colony, record reproductive biology & determine physiological parameters; provide conservation advocacy

**Potential inter-agency programs, for which only preliminary discussion/work has been achieved, no species currently held by ARAZPA-member institutions.**

**Category 4 (1)**

**Eastern Bristlebird**

Contact Zoo: Currumbin Sanctuary

Zoo Services: program under development, no live specimens currently being held

**Kakapo**

Contact Zoo: Auckland Zoo

Other Participants: Dept. of Conservation, NZ

Zoo Services: provide veterinary assistance to in situ

whose mandate it is to care for species in that state solicits the assistance of individual zoos for particular species recovery efforts. That species must then be incorporated into the zoo community's system of classification. Furthermore, although the ASMP is fairly advanced compared to other regional management programs, it is still selecting and refining implementation procedures. Currently, if a species is being managed in a zoo as part of a Recovery Plan and the captive population is intended to impact on the wild population, that species is automatically assigned to Category One. As ASMP categories are only formally published once a year, there may be a delay in publication of that classification, but not in the application of a new category level (Hopkins & Wilkens 1996: pers comm).

Category Two species are also characterised by a high level of regional management, although most of these efforts are covered by the zoo community and do not include outside agencies. Category Two species often involve some of the higher profile exotic species frequently associated with the more public profile of zoos such as the cheetah, cotton-top tamarin, scimitar oryx, Rothschild's giraffe, and black rhinoceros. Table 12 lists several examples of these species held by the study zoos.

Table 12 also shows Category Three species which, at the time of listing, received less regional management amongst the zoos, being tracked and recorded with a view towards elevating their status to Category Two. Again, these species are often the more charismatic mega-fauna which characterise zoo collections (eg Sumatran tiger, orang-utans, Prezwalski's horse, golden lion tamarin). They are not, however, being 'managed' more intensively as there are often prohibitive costs and/or logistics attached to acquiring them, a process which then slows their transition to the next highest level of classification.

Category Four includes those species receiving the lowest level of regional management. Animals in this category are typically less threatened species that comprise more traditional portion of zoo collections (such as galah, Hamadryas baboon, lion), and are held by several zoos. This category can also include rarer species - which can be unique to a state region - and held only by one institution (eg yellow-footed rock wallaby, long-beaked Echidna).

Once species are classified into these management categories, Species Coordinators collect, collate, and analyse data on Category One, Two and Three species. This information forms the basis of recommendations reviewed by the Conservation Coordinator and the ASMP Board, and results in an SMP being formulated (Jakob-Hoff 1992) (Figure 20). Species Coordinator positions are usually filled by middle-level managers in the zoo community (curators, division heads) or, on occasion, by wildlife agency staff if the SMP is for an endangered native species.

Each SMP is based on one single species, and it targets zoos holding that particular species. The plans consider issues of limited space and the implications that low genetic variability of that species has for its viability for long term survival. The SMP accounts for the species

**TABLE 12: Examples of some Category 2 (or planned for) species coordinated by staff at the study zoos**

**Adelaide Zoo:** freckled duck, Matschie's tree-kangaroo, oriental small-clawed otter, yellow-footed rock wallaby, mandrill

**Currumbin Sanctuary:** double-wattled cassowary

**Perth Zoo:** ring-tailed lemur, silvery gibbon, western long-billed corella

**Taronga Zoo:** red panda, Fennec fox, Fijian banded iguana, De brazza's monkey, chimpanzee, sun bear, Persian leopard, ghost bat

**Western Plains Zoo:** Przewalski's horse, scimitar oryx, Asiatic Lion, onager

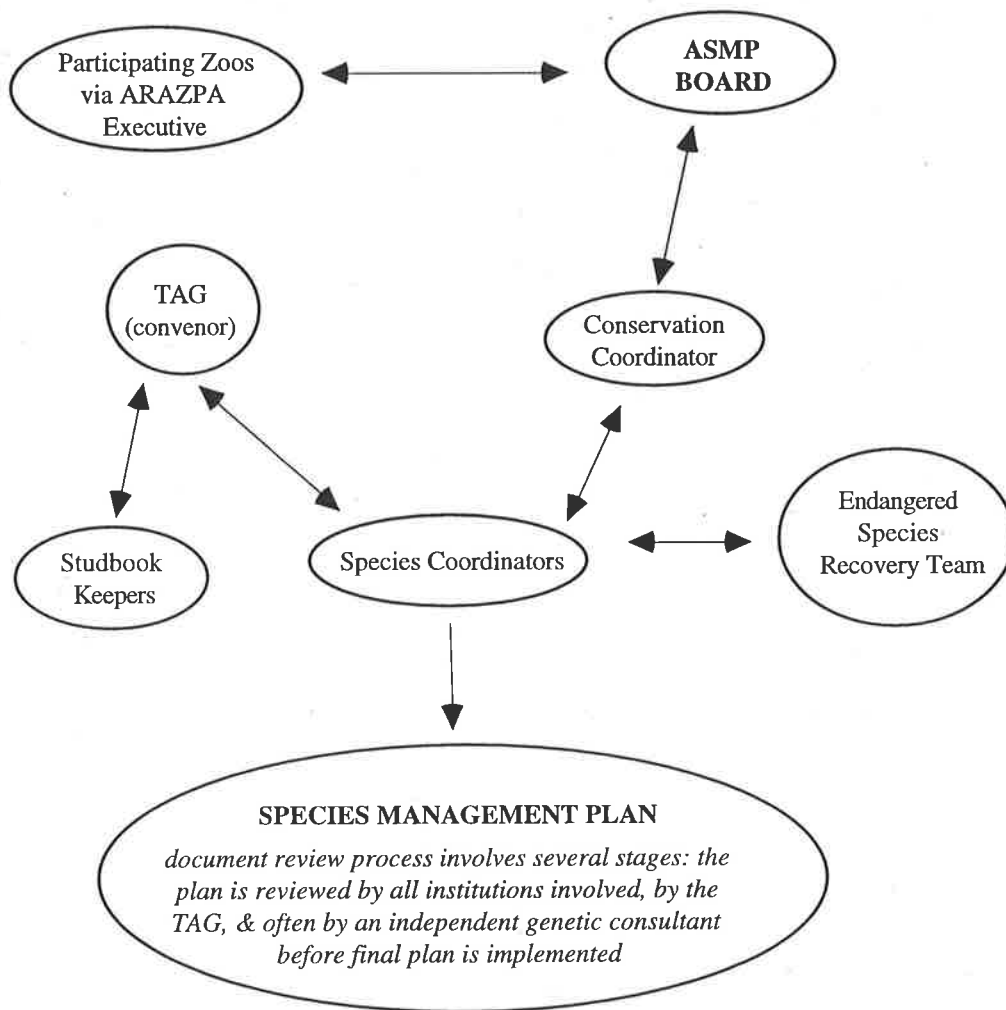
**Melbourne Zoo:** cotton-top tamarin, Aldabra giant tortoise, Galapagos tortoise, orang-utan, Asiatic golden cat, Goodfellow's tree-kangaroo, maned wolf, pygmy hippopotamus

**Healesville Sanctuary:** Tasmanian Devil, Long-footed Potoroo, Oriental Small-clawed Otter, Swift Parrot

**Werribee Zoo:** Rothchild's Giraffe, Addra Gazelle

**Auckland Zoo:** North Island Kaka

**FIGURE 20: Information flows in regional species management and production of SMPs**



conservation status as covered by other relevant programs assessing its predicament in the wild<sup>7</sup> and may overlap with such programs. Plan objectives are also drawn from previous and existing research in conservation measures and assessments, general biology, and the species' history in captivity. Captive populations will be reviewed on the basis of their demographic and genetic characteristics, provenance, and population parameters and projections. Plan objectives will specify program duration, an optimal level of genetic variability to be targeted and population parameters. Captive management strategies and recommendations are made to each institution carrying the species in question. Research priorities and plans are identified, as are schedules for implementation (MacDonald 1995: pers comm; Wilcken et al 1995).

Together with the Conservation Coordinator, Taxon Advisory Groups (TAGs) are groups that enjoin these species management and/or collection planning recommendations (SMPs) for specific groups of species, both native and exotic, usually based on an order or family (Figure 20). Currently there are TAGs for: reptiles, New Zealand birds, Australian non-passerines, Australian passerines, exotic birds, monotremes and marsupials, primates, carnivores, perissodactyls and proboscides, artiodactyls, and small placentals<sup>8</sup> (ASMP 1994). All those species currently held by ASMP-participating institutions<sup>9</sup> are covered by such schemes. TAGs consist of a convenor (usually middle managers: curators, division heads) and interested members of the zoo community. Where TAGs involve exotic species requiring particular import and export approval or native species under the jurisdiction of particular states, government wildlife agency personnel will also serve as representatives<sup>10</sup>. Table 13 lists the specific aims of the TAGs.

Collection and management plans rely on precise information management systems. International, regional and local zoological databases provide information on all specimens held by zoos such as their history in captivity, parentage, inter-zoo movement and the contribution (or drain) that individual animals can make to the long-term genetic viability of either the international or regional zoo population, or the wild population of the species in question. Records officers are the professional zoo staff responsible for maintaining records of the species and individuals held by their institutions. Studbook keepers are professional zoo staff who work in a voluntary capacity maintaining information on all individual animals of one species.

The success of the SMPs is contingent upon *voluntary* participation by zoos, hence it calls for an unprecedented level of national and international cooperation, communication and coordination among a number of organisations. Several zoos are usually involved in the management of one species which often entails an exchange of animals, encouraging or discouraging the breeding of certain genetic lines, or expanding or reducing a total population size (CBSG & IUDZG 1993).

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<sup>7</sup> Criteria are based on CITES listings, IUCN categorisations of endangerment, and national endangered lists and programs.

<sup>8</sup>At the time of writing there is no TAG for invertebrates, although some people in the zoo community feel it is something that should be developed.

<sup>9</sup>As of late 1995, all ARAZPA-member zoos are incorporated in these schemes.

<sup>10</sup>By late 1995, all TAGs include a federal wildlife agency representative.

**TABLE 13: Aims of TAGs (ASMP 1994: 11).**

1. Review the size and composition of captive populations being held in Australasian zoos; consider the number of spaces available for exhibition and breeding; coordinate the optimal use of such spaces by determining priorities for allocation of species, populations and individuals to these spaces.
2. Compile information on the conservation status of various taxa through communication with wildlife agencies, and with the CBSG.
3. Establish and encourage communication among all parties involved in the development and implementation of SMPs and between TAG members.
4. Cooperate with other regional captive breeding programs.
5. Promote and guide development of improved breeding within SMPs by facilitating research efforts.
6. Assist in definition of husbandry/captive breeding guidelines, and in obtaining animals required for implementation of SMPs.

Issues of logistics aside, local political environments and species management issues particular to individual member institutions are not minor considerations. Despite calls for regionalisation, individual institutions are likely to prioritise some species over others. The perceived drawing power of 'charismatic mega-fauna'- carnivores, rhinoceros, and the like - continue to influence collection management decisions. For example, the Reptile/Amphibian TAG Convenor reported in the 1995 Regional Census Report that the:

major area of concern ... continues to be the lack of holding facilities or *interest in the display or maintenance of the Class* ... this in turn restricts the opportunities for regionalisation of programs or inter-zoo cooperation (ASMP 1995: 14, emphasis added).

These same concerns appear in the 1996 Regional Census Report. In other instances, as in the case of the Perissodactyl and Proboscidean TAG,<sup>11</sup> species held by one institution can provide for a considerable level of public attention. Hence a situation can arise whereby:

one institution or body has invested heavily in the planning for individual species, it is important to acknowledge leadership ... nevertheless, a regional approach to any initiatives supporting the conservation of these species will be able to draw on a wider range of resources and expertise (ASMP 1994: 68).

It is not surprising that implementing of ASMP objectives requires wide consultation in order to ensure that political, financial and other resource constraints of each institution are considered when formulating recommendations (Jakob-Hoff 1992).

### **6.3 ZOOS AND THEIR INTER-AGENCY EFFORTS: EX SITU FOR IN SITU**

Many western zoos, and those in the Australasian region in particular, are increasingly orienting their species management and collection plans towards those species for which there is a high level of regional zoo management, multiple agency efforts and possibilities for reintroduction to the wild. Members of the zoo fraternity in the Australasian region are also aiming to increase conservation program focus on Australasian species. As mentioned earlier, this prioritisation can result in zoo involvement in inter-agency, government-directed conservation projects. All of the zoos studied in this research are (more or less) actively pursuing opportunities to work on such conservation projects. These endeavours, however, must be realised within a complex political system, constituted by multiple relationships among zoos, federal and state government agencies and non-government conservation organisations. Such details are discussed further in Chapter Seven.

Table 11 lists the joint programs in which the study-zoos participate. The preference for inter-agency projects is reflected by the overall trend in zoo activity towards more conservation-oriented activities. Chapter Three traced the development of these policy preferences. Operationally, the partiality for conservation programs can be demonstrated by each zoo's effort to actualise ASMP goals. Although the list appears extensive, the inclusion of Category One species in animal collections still represents a small proportion of Australasian zoos' overall activities. Ninety-five percent of the total species held in the region and in individual zoos are

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<sup>11</sup> These species represent odd-toed ungulates such as rhinoceros, horses, tapirs, & elephants.

Category Three & Four species (those receiving medium or low levels of regional zoo management). For example, the region's zoos hold 956 different species. Of that total, only 14 species are Category One species and 37 are classified as Category Two<sup>12</sup>, 17 are Category Three, and 888 are Category Four species (ASMP Regional Census Plan 1995: 92). These figures illustrate that a very small proportion of zoos' animal collections are directly linked to active inter-agency conservation programs. Notwithstanding myriad considerations involved in shifting the emphasis in zoos' collections away from uncoordinated, exotic species programs towards highly-coordinated endangered species programs, it remains that zoos' public statements on their current achievements disguise the discrepancy between their aims and actual practice. There is a need for zoo staff to address explicitly the causes for performance shortfalls and adjust public relations and marketing campaigns to reflect program realities more accurately.

Nationally-based Recovery Plans give a primary opportunity for zoos to offer their ex situ services to government and non-government agencies and assist with native wildlife conservation efforts. Not all such efforts are restricted to Category One species, as some species with lower ASMP classifications can be part of an inter-agency recovery effort. The partial integration and divergent aims of zoo and government wildlife agency schemes mentioned earlier account for this discrepancy. For example, the mountain pygmy possum held by Healesville Sanctuary is subject to a relatively low level of regional management (Table 11). Holding the species enables the Sanctuary to assist research efforts of the Department of Conservation and Natural Resources in Victoria on a species that serves as an analogue for more critically endangered species. Such a species may not necessarily require a high level of regional management by the other zoos. Hence joint programs with the government wildlife agency in a zoo's home state will not always be appropriate or available for zoos from other states to participate in.

Recovery Programs are an initiative of the Federal Government's Endangered Species Program of the ESU and State wildlife agencies. Developed and implemented by State government wildlife departments, the Plans are written with the aim of improving the survival of threatened species in the wild (ANCA 1994). Once funding has been approved by the ESU in Canberra a particular Recovery Plan may proceed. Where a Recovery Plan cites the need to utilise captive breeding as part of the strategy to recover a particular threatened species, zoos may be included in these plans. As Recovery Plan authors determine necessary steps for particular species' restoration efforts, his or her perception(s) of zoos will have an effect on whether such a choice is made. These opinions will be explored further in Chapter Nine.

New Zealand Recovery Plan processes are similar to those in Australia. However, they are more streamlined and coordinated. The Department of Conservation (DOC), a national agency

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<sup>12</sup>These figures include those species that are not currently recognised as Category Two species, but will eventually be classified as such.



with regional offices, assesses the status of all native species *and* prepares Recovery Plans<sup>13</sup>. Where a Plan author recommends captive management as a necessary action, DOC will consult with the Captive Management Advisory Group (CMAG). The CMAG was formed by zoos and wildlife parks in New Zealand "to coordinate use of New Zealand's captive resources and expertise to assist DOC" (Bell 1996: 28). CMAG will nominate an appropriate institution that is willing to serve as captive coordinator for DOC's Recovery Plan. Chapter Seven will discuss further how some structural dynamics underlying Australian and New Zealand wildlife agency-zoo relations influence conservation policies.

As shown in Table 11, most of these inter-agency efforts use zoos' specialised technical knowledge in animal husbandry, veterinary care and captive breeding technology. They often involve a variety of partners: state and federal government environment departments; non-government conservation organisations; and community groups. The state agency, however, will always convene the recovery effort. Zoos' participation often entails: maintaining a captive population of the species in question; supplying individual animals from the breeding colony for release-to-the-wild phases of the program; recording reproductive biology and behaviour; monitoring genetic viability of the captive colony; providing assistance in field studies; and conducting public education and awareness campaigns.

Importantly, there is an increasing awareness and appreciation among the zoos of how organisational structures and policies can inhibit their participation in these highly desirable projects. For example the Marsupial and Monotreme TAG reported:

our regional ability to meet the increasing space and financial resource requirements of an endangered species program is uncertain. An increasing number of requests to provide information on the potential for institutional support for Species Recovery Programs have been received by the TAG ... It has become evident, however, that institutional collection plans will need to place a greater emphasis on assisting potential Species Recovery Programs ... a preparedness to respond rapidly to changing species priorities as Recovery Plans are actioned by funding ... (ASMP 1995: 46)

By 1996 these concerns remain and highlight how shortages in zoo facilities and cooperation among zoos have been deterrents to wildlife agencies use of zoo services for ex-situ programs.

The zoos studied are undertaking a variety of means to address these difficulties, some of which are expanded upon in the next chapter. Space for breeding facilities is often at a premium, particularly for metropolitan-based zoos trying to squeeze every metre of useable space out of their properties. Moreover, many of the endangered species are sensitive to disturbances, and require extensive monitoring and highly-skilled personnel to look after them. Public viewing of these animals can conflict with recovery effort goals, hence the zoos must be able to provide appropriate facilities both for their visitors and the animals in their collections. Several zoos have secured additional land and are building off-site breeding facilities in order to accommodate

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<sup>13</sup> As with Australian wildlife agencies, DOC criteria for assessing threatened species includes: wild status and degree of vulnerability to change; type of threat; taxonomic distinctiveness and cultural importance. Recovery Plans are developed for those species accorded the highest priority on the basis of DOC's evaluation (Bell 1996).

the special needs of the species in these Recovery Plans. The Western Plains Zoo (Australian Native Flora & Fauna Sanctuary), Perth Zoo (Endangered Species Centre), Healesville Sanctuary, Adelaide Zoo (Monarto Zoological Park), and Currumbin Sanctuary have taken steps in this direction and are at varying stages in their development of such facilities, as seen in earlier chapters. Recruitment practices, training programs and adjustments to keeping staff work schedules are aimed at improving the specialised husbandry techniques zoo staff must be able to provide.

#### **6.4 CONSERVATION OUTREACH**

Several of the zoos studied are involved in what Rabb (1994) designates as *conservation outreach*. These efforts include training advanced students and providing direct assistance to national parks and to zoos in 'developing' countries, and they usually involve multiple agencies. There are also nationally-based efforts that utilise the specialised knowledge of both the zoo and other participating agencies. Moreover, zoo staffs' professional and personal affiliations and individual interests in an area often act as a catalyst for many of these programs.

The Melbourne Zoo is involved in several breeding programs involving exotic endangered species and institutions in South-East Asia (Appendix 6). The Zoo is breeding some species in captivity and lending its expertise in areas of zoo management and planning. In conjunction with the Department of Environment and Tourism in Sarawak, zoo staff are advising the Matang Wildlife Centre about strategic planning and exhibit design and stocking (Banks 1995; pers comm). Both the Zoo and the CBSG are assisting the Saigon Zoo in the development of its Master Plan.

There are numerous other examples of conservation outreach. The ZBV, the Chicago Zoological Society, the South Australian Department of Environment and Natural Resources, and the ANCA are collaborating in the development of the Bookmark Biosphere Reserve - a wetlands area that has been recognised as deserving of protection by the Ramsar Convention (ZBV 1993/4). The Calperum Pastoral Lease was purchased by the Australian Commonwealth and the private sector in 1993 in order to implement elements of UNESCO's Biosphere Reserve program involving community based land management for conservation and ESD (Parker 1994: pers comm). The Murraylands Conservation Trust, a community group made up of farmers, scientists, local residents, academics and wildlife agency personnel, manage the site. This project has partly resulted from a long time association between the Zoological Societies of Chicago and Victoria.

Additionally, Melbourne Zoo's Education Service is working in conjunction with the ESU at the ANCA to develop an interactive guide on Australia's threatened species which will be available through the Internet. This project was facilitated by the signing of a memorandum of agreement between the ZBV and ANCA (Jelinek 1995; pers comm).

In relation to these various projects, Dedee Woodside, previous Director of Research at Taronga Zoo and current Director of The Australian Conservation Training Initiative (ACTI), and John Kelly, chief executive officer of the ZPB of NSW, perceive a need for professional training in conservation management in the southern hemisphere. They believe the ZPB could play an integral part in filling that gap. ACTI was subsequently designed to further the integration of ex-situ and in-situ conservation techniques, and to assist in cross-sectoral and cross-governmental input into environmental training needs for the region. The ZPB works with the New South Wales branch of the National Parks and Wildlife Service (NPWS) and the Australian International Development and Assistance Bureau in delivering the program. In addition to providing training courses in ex-situ and in-situ conservation management for Australians and nationals from South-East Asia, the South Pacific, Indochina and Africa, ACTI now offers an Ecotourism Planning and Management Training Program.

The ZPB of NSW is also working in conjunction with the Institute of Reproduction and Development at Monash University to develop the Animal Gene Resource Centre of Australia, which is to be based at Taronga Zoo's Conservation Research Centre. The Resource Centre was brought about largely through the efforts of Jack Giles, Director of Scientific Policy & Research for the ZPB of NSW, and Alan Trounson, Director of Monash University's Institute of Reproduction & Development. The two share an interest in artificial reproduction and liaised with a group of physiologists, geneticists and biochemists from several universities and the Director of the ZPB of NSW to formulate the original project proposal. The Centre will endeavour to continue to develop 'assisted reproduction techniques' such as artificial insemination and the long-term storage of sperm, ova and embryos. Centre staff hope to be able to apply these methods to assist wildlife conservation for such species as the black rhino, mala, greater bilby, numbat, bridle-nail tail wallaby, malleefowl, and others (Giles 1995: pers. comm.). These species also constitute part of the ZPB of NSW's animal collection.

The Royal Zoological Society of South Australia has been assisting the Institute of Ecological and Biological Research in Hanoi and the Department of Forestry-Vietnam with planning for research projects on the distribution and status of various endemic Vietnamese primates. These organisations aim to identify captive breeding requirements for some species and to eventually establish recovery centres for those primates in Vietnam (Campbell 1995: pers comm). The Zoo's principal curator played a key role in establishing and maintaining the project.

The Adelaide Zoo uses its captive breeding colony of golden lion tamarins as a basis for the 'Golden Coin for a Golden Animal' fundraising campaign. Since 1992, the Zoo has consistently raised \$3,000 per year for the Lion Tamarins of Brazil Fund. This Fund supports Brazilian field assistants studying lion tamarins in the wild (Mallinson 1994).

The Perth Zoo, Queensland Dept of Primary Industries, Macquarie and Newcastle Universities and Manaaki Whenua Landcare Research Institute (New Zealand) have been jointly awarded \$12 million by the Australian Commonwealth government (Perth Zoo Annual Report 1995). The

funds, which will be paid out over the next seven years, will be used to develop a Conservation Research Centre at Perth Zoo's Byford facility for research on marsupial genetics and reproduction. John Roger, an academic based at the University of Newcastle, initiated the project and recruited the assistance of Macquarie University. In order to fulfil government funding requirements for a cooperative research centre, the research needed to have an applied component, hence the involvement of the other participants (Williamson 1995: pers comm). The primary aim of the project is to use the specialties of the institutions in the areas of genetics and reproduction to address issues of 'overpopulation' of some species of marsupials in areas of Queensland and New Zealand and threatened marsupials requiring some conservation assistance such as fertility enhancement (Hall et al 1995). Byford will also provide extra facilities away from the Zoo for breeding endangered species, housing numerous community and education programs, and producing browse and live food for the Zoo's animals<sup>14</sup>.

In an effort to position itself as a conservation resource for the community, the Perth Zoo established Enviro-Link, a free service made available to zoo visitors which disseminates information on a wide array of environmental organisations (Molloy 1993: 192). Perth Zoo also assists the Western Australian division of the Australian Trust for Conservation Volunteers (ATCV), by providing office facilities and other infrastructure support without cost to ATCV. Currumbin Sanctuary has a similar arrangement with the Gold Coast and Hinterland Conservation Council. The Sanctuary provides rent-free office space to the Council. While the Royal Zoological Society of South Australia does not offer such services to its State council, the Society is a full participating institutional member of the Conservation Council of South Australia.

These examples illustrate how several Australian zoos are implementing conservation outreach programs. At present, these efforts still represent a small proportion of each zoos' total activities. There are also questions that need to be raised concerning whether some programs (such as the Conservation Research Centre at Perth Zoo and Adelaide Zoo's support of the golden-lion tamarin project) place too much emphasis on management-intensive ex-situ conservation. Yet, other programs (such as Perth Zoo's Enviro-Link services) offer promise for modernising conventional zoo projects and increasing long-term conservation benefits .

## **6.5 EDUCATION**

Many modern zoos aim to 'educate' people about conservation by encouraging awareness of the "irreplaceable value of the entire biological system of our planet and all of its constituent components" (CBSG & IUDZG 1993: 17). It is envisaged that by focusing people's attention on these dynamics one increases the likelihood that a change in behaviour will follow, hence people will act in a manner that is more considerate of the environment. Blakely (cited in Kelsey 1991: 552) argues that:

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<sup>14</sup> In 1995 Zoo staff harvested \$25,800 worth of browse and live food from Byford's Permaculture garden and poultry-rearing facilities (Perth Zoo Annual Report 1995).

... the proper function of a zoo or aquarium is to interpret animals in relation to their ethological activities or ecological niches and to foster a conservation ethic that will lead to public action to save the environment.

The fundamental stimulus for this 'education' process is meant to be the live animals that zoos possess. As part of the exhibit, the animal functions as the primary educational component (Churchman 1987). The World Zoo Conservation Strategy states that:

...living animals form the basis for education in zoos ... the zoo visitor's susceptibility to educational information exists because of the attraction to the living animal, and animal collections are therefore the foundation of the enormous potential educational value of zoos (CBSG & IUDZG 1993: 18).

Both the presumed appeal of live animals and the collective reach of the world's zoos constitute their purported impact on the public 'consciousness'. Robinson (1993: 53) suggests that even the proliferation of increasingly sophisticated natural history documentaries does not threaten people's enthusiasm for zoos, because television's two-dimensional images will never truly satisfy people's fascination for 'real' living plants and animals<sup>15</sup>. Zoos certainly remain popular institutions and are frequented collectively by millions of people each year. Hence, the widespread appeal of zoos affords zoo educators the powerful opportunity to influence the views of many people in one place and in a short time.

Although different zoos have different ideas about what 'education' means, it nonetheless remains an important part of their rhetoric of purpose. Gaye Hamilton (1993), past ARAZPA President and previous Director of Werribee Zoo, states that it matters not whether zoos focus on schools education or public education - so long as they educate. The intended priority of education as an active component of zoo programs is reflected both in zoos' formal documents and policies, and the beliefs of individuals working inside and outside the zoo community. Indeed, due to the limited capacity of captive breeding to make a large-scale contribution to wildlife conservation as discussed in Chapter Four, many in the zoo community believe that, as a function of conservation, education should predominate. These perceptions will be explored further in Chapter Nine. Indeed, the World Zoo Conservation Strategy states that zoos should be:

Promoting an increase of public and political awareness of the necessity for conservation, natural resource sustainability, and the creation of a new equilibrium between people and nature (IUDZG 1994: 10).

These goals are subsequently explicitly and implicitly reflected in the mission statements of the study-zoos. Zoo staff would like to see their education programs labelled 'environmental education'.

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<sup>15</sup> One could argue that, while it may be two-dimensional, the experience of seeing wild animals in genuine habitats exhibiting their full range of behaviours, far outshines that of being immersed in a simulated zoo environment watching animals that tend to be listless, or worse still, neurotic. Indeed, this preference may keep some people from visiting zoos.

### 6.5.1 Forms and Structures of Zoo Education Programs

Education in zoos can be broadly categorised by formal programs and by informal experiences of zoo visitors (Figure 21). Formal programs include school programs, community programs and research efforts. Informal education consists of zoo-visitor experience and the 'interpretive environment' of the zoo. Knowledge is also imparted from tacit messages found in the overall public profile of the zoo.

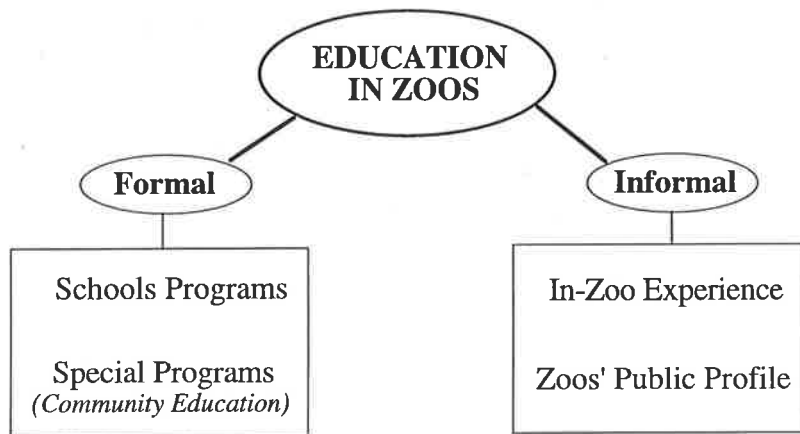
Generally speaking, those zoos with considerable financial resources are able to offer more fully developed education programs (Mullan & Marvin 1987). This finding also applies to Australasian zoos, although funding education is not simply a matter of available resources. Budgeting is often a political process involving subjective decisions about the value of particular programs. There is a divergence in the financial and policy commitments made by zoos towards education amongst the ten zoos studied: programs were found to vary in size, content and the degree to which they are integrated into the organisational structure of the zoos as shown in Table 14. These variations are a result of traditional policies, as well as professional priorities and personal initiatives. The degree to which education programs are integrated into the zoo structure is also influenced by the beliefs of staff members about the importance of the education function of zoos. These perceptions are detailed in Chapter Nine. Finally, incorporating education into zoos will be influenced by how much influence education staff wield within their organisations.

Chapters Three, Four and Five have shown that education in zoos has traditionally been the responsibility of zoos' education services, and has been restricted to school programs. Adelaide Zoo, Perth Zoo, the Territory Wildlife Park, Taronga Zoo, the Western Plains Zoo, Melbourne Zoo, Werribee Zoo and Auckland Zoo conduct these services in cooperation with, and through the assistance of State and Catholic Education Departments' extension services. These divisions provide ancillary services by seconding trained education professionals to institutions such as zoos, museums and art galleries. Cooperative arrangements between zoos and State Education Departments will often entail the provision of infrastructure support from zoos along with other cost-sharing mechanisms (Table 14). For example, at the Western Plains Zoo facilities for the Education Service are provided by the Zoo, as is 52 percent of the administrative costs. The NSW Education Department picks up the remaining 48 percent.

The management of education services in zoos by two or more institutions can influence the effectiveness of education programs. The predominance of seconded teachers in zoos can result in a 'two bosses' syndrome where teachers must try and service the sometimes conflicting priorities of the zoo and the Education Departments (Williamson 1994). While many teacher salaries are paid by the State education departments, their obligations may become oriented to their employer first, their host second. An almost exclusive emphasis on school visitors may result. In the zoo industry, there is an awareness that zoo education services may need to incorporate a vision of education that is broader than a focus on school programs. In trying to realise these aspirations, however, education officers' priorities may be tested. Individuals may

<b>TABLE 14: Australasian Zoos' Education Programs</b>				
<b>Zoo</b>	<b>Participating Agencies</b>	<b>Zoo Infrastructure support</b>	<b>Staffing</b>	<b>Organisational Integration</b>
<b>Adelaide Zoo</b>	Independent Schools Board, S.A. Dept for Education and Children's Services, Catholic Education	<ul style="list-style-type: none"> <li>provide salary of one education officer</li> </ul>	2 education officers 1 administrative staff	<ul style="list-style-type: none"> <li>report to Zoo Director</li> <li>liaise with keeping, maintenance &amp; horticultural staff</li> </ul>
<b>Currumbin Sanctuary</b>	zoo administered	<ul style="list-style-type: none"> <li>totally funded by Sanctuary</li> </ul>	3 full-time teachers 1 part-time teacher 6 wildlife presenters	<ul style="list-style-type: none"> <li>middle management representation</li> <li>oversees wildlife presentations</li> </ul>
<b>Perth Zoo</b>	zoo administered	<ul style="list-style-type: none"> <li>totally funded by Zoo</li> </ul>	7.1 teachers 3 administrative staff	<ul style="list-style-type: none"> <li>senior management representation</li> <li>provide training for keepers</li> </ul>
<b>Territory Wildlife Park</b>	NT Dept of Education	<ul style="list-style-type: none"> <li>classroom &amp; office facilities, printed materials</li> </ul>	1 full-time teacher	<ul style="list-style-type: none"> <li>report to general manager</li> <li>liaise with Curator &amp; keepers</li> </ul>
<b>Taronga Zoo</b>	NSW Dept of School Education, Catholic Education Service	<ul style="list-style-type: none"> <li>classroom &amp; office facilities</li> <li>administrative support</li> </ul>	5 full-time teachers 1 librarian 1 administrative staff several keepers	<ul style="list-style-type: none"> <li>report to a senior manager</li> <li>assisted by keepers</li> </ul>
<b>Western Plains Zoo</b>	NSW Dept of School Education	<ul style="list-style-type: none"> <li>classroom &amp; office facilities</li> <li>administrative support</li> </ul>	2 teachers 1 administrative staff	<ul style="list-style-type: none"> <li>report to Director</li> </ul>
<b>Melbourne Zoo</b>	Victorian Education Department, Catholic Education Office	<ul style="list-style-type: none"> <li>classroom &amp; office facilities</li> <li>clerical support</li> </ul>	1 manager & 1 principal 14 teachers 3 keepers 5 administrative staff	<ul style="list-style-type: none"> <li>report to CEO &amp; Director</li> <li>assisted by keepers</li> </ul>
<b>Healesville Sanctuary</b>	as per Melbourne	<ul style="list-style-type: none"> <li>as per Melbourne</li> </ul>	4 full-time teachers	<ul style="list-style-type: none"> <li>report to Director &amp; Principal of ZBV Education Service</li> <li>liaise with keepers</li> </ul>
<b>Werribee Zoo</b>	as per Melbourne	<ul style="list-style-type: none"> <li>as per Melbourne</li> </ul>	2 half-time teachers	<ul style="list-style-type: none"> <li>report to Director &amp; Principal of ZBV Education Service</li> <li>liaise with keepers</li> </ul>
<b>Auckland Zoo</b>	Ministry of Education, Auckland City Council	<ul style="list-style-type: none"> <li>classroom &amp; office facilities</li> <li>clerical support</li> </ul>	1.5 teachers 0.5 clerical staff	<ul style="list-style-type: none"> <li>report to senior manager</li> </ul>

**FIGURE 21: Zoo education comprises formal and informal programs**





find that they are having to exercise some caution about the time they devote to activities or programs that fall outside their duties as defined by State education departments. Furthermore, as the average length of secondments to zoos is three years, a high turnover of staff predominates in zoo education services (Williamson 1994). This constant change can have an adverse affect on the stability of these departments. At Taronga Zoo, for example, there is little formal integration of the education service with other zoo programs and divisions, and teachers are restricted to offering a largely curriculum-based schools service. It is worth noting, however, that some zoo teachers at Taronga exercise a high level of personal initiative in attempting to further integrate the service into other zoo programs, and in lobbying for policy changes<sup>16</sup>. While the motivation of a few individuals can make significant positive impacts on the success of a project, a particular zoo's 'real' commitment to education will be revealed by whether zoo professionals have devised formal policies and institutional structures that foster the development of fully integrated education programs.

The ZBV and Perth Zoo have highly developed education services in terms of the influence that education professionals have in developing organisational priorities and in the scope of programs they are able to offer. Both zoos exemplify a trend towards zoo education services having representatives on zoo management teams. Chapter Five demonstrated how the Director of Education at Melbourne Zoo serves as a senior manager overseeing the education services of the three ZBV properties (Melbourne Zoo, Healesville Sanctuary, Werribee Zoo). This tactic aims to ensure that the needs and concerns of the Education Department are represented in key decision-making forums. The ZBV has developed a Zoo Education Strategy for:

... developing an understanding and acceptance by *all* zoo staff on the zoo's mission statement and overall objectives; is one that provides high quality school education programs to meet the needs of a wide range of students and levels of schooling; is one that realises the need to develop an understanding in a range of VIP's of our role and function; and is one that caters to the interests of its visitors through the provision of high quality public education programs. It is an approach that embraces the whole zoo community and its visitors through the provision of high quality public education programs. It is an approach that embraces the whole zoo community and its visitors (Royal Melbourne Zoo 1995: 1).

The traditional organisational and conceptual isolation of the education function in zoos has come under close scrutiny of late. Opponents accuse zoos of paying lip service to their education role. There are also plenty of zoo professionals who are eager to close the gap between education rhetoric and actual practice. The range and delivery of services is increasingly being considered to be the responsibility of the entire zoo. Consequently, the focus of the ZBV's strategy is to integrate the education function and department more fully into the policies and functions of the Zoo. This 'whole-zoo approach' (Wilson 1996) may foster clearer understandings and a better appreciation among all zoo professionals - from animal keepers to marketing managers - of education's importance for zoos' conservation role. While the

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<sup>16</sup> Some education officers feel there are certain advantages to being unencumbered by zoo policy whereby they are better able to service visiting teachers' needs and their time is not taken away from other schools activities (Schinmann & Horton 1995: pers comm)

Strategy's success has yet to be determined, it is unlikely that zoos' education role is likely to receive the attention it needs if measures like these are *not* taken.

Perth Zoo provides an example of how education programs can be incorporated directly into zoo organisational structures. The Education Service is operated entirely by the Zoo with the Education Manager functioning at a senior management level. These arrangements have helped ensure that education issues are heard in decision-making forums, and can facilitate a greater degree of operational flexibility. Education staff have been relatively free to vary programs offered to include, in addition to the schools program, community education programs, a library service and others. In response to a decrease in government funds and an increase in the number of school students attending programs, the Service adopted an entrepreneurial approach to revenue raising. It secures a substantial amount of funding for its operations from outside the Zoo, earning in excess of \$200,000 over an 18-month period in special purpose grants from the public and private sectors (Williamson 1993).

Currumbin Sanctuary also finances its own Education Service, which is highly integrated with other functions of the Sanctuary. Education Service staff oversee the schools programs and wildlife presentations program. The Service trains personnel for public presentations and has control over the form and content of programs offered. These wildlife presentations constitute a significant component of the Sanctuary's interpretive experience for many visitors.

### 6.5.2 Schools Programs

Clearly though, the principal focus of zoo education services has traditionally been their schools programs. All ten study zoos offer a range of educational services to their region's visiting schools which include: developing and providing written materials; conducting formal classes; developing curriculum; providing in-service programs for teachers; and conducting an array of special programs. The emphases of each Education Service, however, may vary slightly given the availability of resources and particular professional and organisational interests. Table 15 lists some of the topics and special programs offered by the zoos.

Currently, several programs reflect zoo education professionals' interest in environmental education. Some teachers in zoo education services are affiliated with the AAEE<sup>17</sup>, as was already mentioned in Chapter Five. Greg Hunt (1993: 75), Assistant Director of Education at Melbourne Zoo, states that zoo education programs should foster the development of:

- **knowledge** (of ecology, adaptations to environments, animal behaviour)
- **skills** (of observation, research, expression)
- **values** (appreciation, care, concern, empathy with other species, appreciation of effects of consumerism)
- **action** (participating in habitat and species conservation, models of appropriate behaviour in daily lives)

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<sup>17</sup> The AAEE is a non-profit organisation for education professionals. AAEE seeks to promote environmental education which it defines as: developing an understanding of interrelationships between the elements of the total environment, developing positive attitudes towards it and developing skills which will enable people to actively engage in promoting its well-being.

**TABLE 15: Education services in select Australasian zoos.**

<b>Zoo</b>	<b>Topics covered and special programs</b>
<b>Adelaide Zoo</b>	<p><u>Programs:</u> one day visits, Zoo School, Students with High Intellectual Potential program, Workshops for Careers in Conservation, Special Programs, School Staff In-service</p> <p><u>Topics:</u> threatened species, rainforests, reptiles, schools curriculum subjects</p>
<b>Currumbin Sanctuary</b>	<p><u>Topics:</u> Australian animals, endangered species, food webs &amp; interrelationships, classification, behaviour, adaptations, reproduction, Landcare, permaculture, conservation, tourism &amp; business studies</p>
<b>Perth Zoo</b>	<p><u>Topics &amp; Programs:</u> Theatre in the Zoo (endangered animals &amp; how to help, the struggle of Australian native animals, African drumming &amp; dancing, recycling, the marine environment); Workshops in the Zoo (such as making easter gifts with natural themes, Christmas gifts with environmental themes, and arts &amp; crafts focusing on endangered species)</p>
<b>Territory Wildlife Park</b>	<p><u>Topics:</u> Fauna &amp; flora of the Wildlife Park, Birds of Prey, rainforests, feral animals</p>
<b>Taronga Zoo</b>	<p><u>Programs:</u> Zoo Snooze, Talented Kids, Meet a Keeper, Work Experience, Book Writing Camp, Poster Competition;</p> <p><u>Topics:</u> Art, science, history, media, geography, senior biology, maths, environmental studies, english, endangered animals, drama</p>
<b>Western Plains Zoo</b>	<p><u>Topics:</u> Pre-school activities, language worksheets, primary worksheets, endangered animals at Western Plains Zoo, biology, creative writing, maths trail, African savanna, Australian environments, primates at Western Plains Zoo, animal conditioning &amp; learning, classification &amp; adaptations, zoo agriculture, paper making/recycling</p>
<b>Melbourne Zoo</b>	<p><u>Programs:</u> Student conferences, bookweek, careers days</p> <p><u>Topics:</u> Diversity (birds, mammals, reptiles); adaptations (Animal Ambles, Colour &amp; Pattern); Conservation (Endangered Species,); Interactions (Who's Eating Who); Habitat (Land-Water-Trees, Rainforests-Deserts-Grasslands), Curriculum topics (biology, geography, art, drama, chemistry, etc.)</p>
<b>Healesville Sanctuary</b>	<p><u>Topics:</u> diversity (Australian wildlife, animal coverings, observing &amp; drawing, ecology, classification), conservation (ecology, local wildlife, interaction, bushwalking, endangered species), habitat (endangered species, adaptations, skins, homes/shelters, survival, local), adaptations (structure, function, interactions, camouflage)</p>
<b>Werribee Zoo</b>	<p><u>Topics:</u> adaptations, habitats, animals in captivity, animal behaviour, conservation, diversity, biology</p>
<b>Auckland Zoo</b>	<p><u>Topics:</u> African animals; Animals in Water; Birds; Camouflage &amp; Coverings; Curious Critters; Intro to the Zoo; Mammals; Monkeys &amp; Apes; NZ Species; Reptiles; ZooKeeper; Adaptations; Monkeys &amp; Apes; Wildlife in Peril; Classification; Form &amp; Function; In the Balance; Nutrition &amp; Diet; Primate Social Behaviour; Primate Taxonomy</p>

Several of the program topics listed in Table 15 embody these interests. Overall, program formats do vary and cover a divergent range of topics. Most programs are oriented towards primary and secondary school levels. However, matriculation and preschool programs are available as well. Education Services often produce and distribute circulars to schools explaining what programs are on offer. Teachers from visiting schools can then select those activities which best suits their students' needs.

Teachers often organise class visits to the zoo to coincide with curriculum topics being covered in their own classrooms at that time. Such excursions provide an opportunity for teachers to encourage children to apply concepts learned in school to the animals observed in the zoo, and these trips can encourage children to have animal-related experiences not available elsewhere (Tunicliffe 1992). These learning opportunities can take place in a formal class taught by zoo education officers and/or through zoo tours conducted by school teachers. In the case of the latter, materials are often provided which orient teachers to the zoo and provide exercises for children to complete during their wanderings. A common tool developed in zoo education services is the 'Zoo Trail', where children are encouraged to search for themed-items throughout the zoo. One of the activities in Healesville Sanctuary's 'Planet Earth' student booklet asks students to "draw and label something you can see nearby and show how it depends on something else" (Healesville Sanctuary Education Service 1995).

### **6.5.3 The Zoo-Visitor Experience - a Question of Informal Learning**

Zoos are purported to educate through the visitors' sensory, cognitive and affective experiences of the zoo: "the informal (non structured and non-obligatory) learning" (Kellert & Dunlap 1989: 4). The overall atmosphere of the zoo, specific exhibit designs and any interactions a visitor may have with zoo personnel are offered to the general public as major components of the interpretive environment of a zoo visit (Figure 22). Casual visitors - as opposed to children participating in formal schools programs or other groups formally visiting the zoo - are the primary audience for zoos' interpretive programs. The capacity of a zoo to provide an attractive and educative interpretive experience depends on available funds, often in short supply due to myriad financial demands each institution must accommodate. There will be other contingencies, however, that influence the impact of zoo interpretive environments on visitor consciousness. These include who accompanies a particular zoo visitor on a given day, how zoo visitors feel about zoos in general, and numerous other matters that are beyond the control of zoo professionals.

The influence of the interpretive environment on zoo visitors has received considerable attention in the last ten years. Visitor studies is a growing professional field (particularly in North America), and one rife with debate over what influences peoples' educational experiences in leisure settings such as zoos, museums, art galleries and national parks. Environment-behaviour research is applied to zoos in the form of animal-environmental relationships and visitor-environment relationships. The latter considers who are zoo visitors, what motivates them to come, what typifies their movements inside the zoo, what constitutes a learning environment in the zoo, and how visitors respond to specific exhibit designs (Serrell 1988).

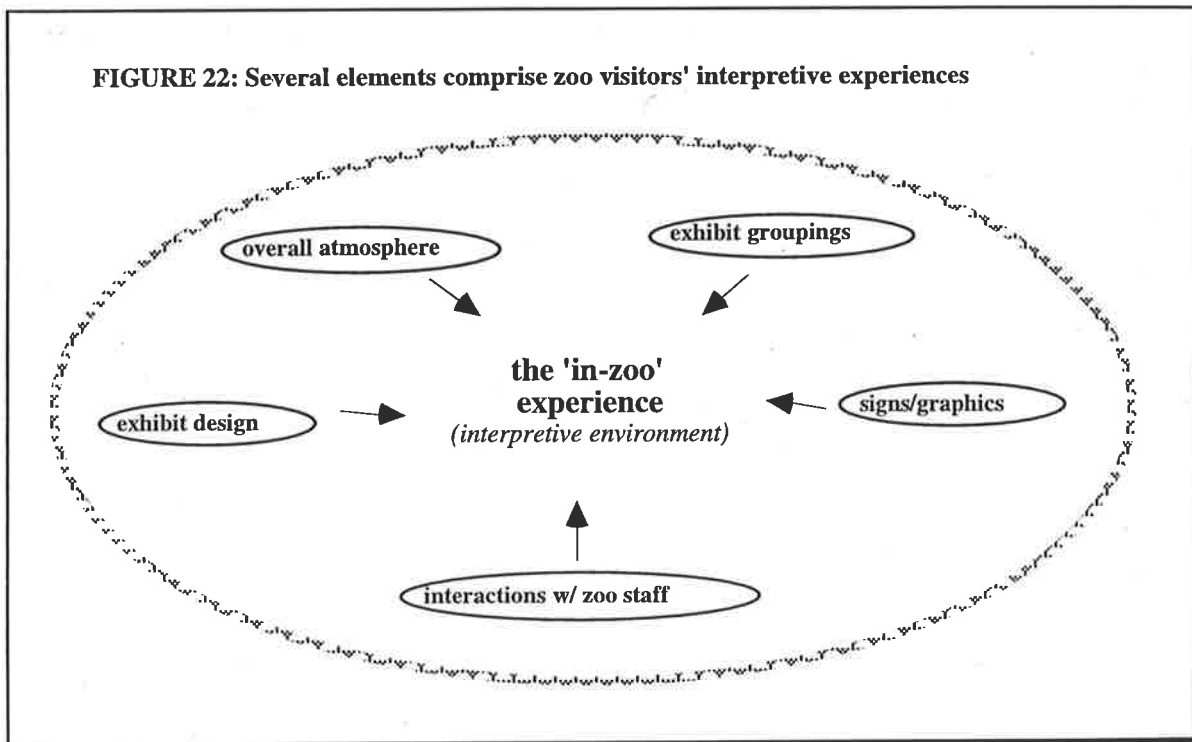
Kellert & Dunlap (1989) suggest that most data remain inconclusive due to methodological problems associated with many research efforts. In addition to these procedural quandaries, defining research priorities, and matching those to institutional interests and budgets, present challenges to understanding the elusive nature of informal learning processes that are just as formidable for researchers and zoo professionals.

Despite a lack of clarity concerning visitor studies data, the recreational appeal of zoo environments has long been its strength. Serrell (1988) suggests that zoos are similar to other leisure-based, informal settings, where factors of relaxation, escape from stress, and tranquillity are valuable experiences in a largely high-stress society. Zoos present 'nature' to people in what is, and has been, largely an urban recreational setting. Elements of a zoo visit target providing an escape from the city, and are meant to facilitate an enjoyable learning experience. Visitors may not necessarily realise they are being educated by their visit. Indeed, visitors may need to be persuaded into their education. Studies have found that most zoo visitors are primarily seeking out a safe, attractive and entertaining social experience (Kellert & Dunlap 1989, 1993; Mazur 1991; Markell 1993; Wolf & Tymitz 1979), rather than a more serious learning encounter. In response to this knowledge about zoo visitors' interests, many professionals in the zoo community purposefully present the zoo experience as recreational and enjoyable, in order to attract people. Hohn (1988: 233) describes the attractive exhibits and grounds in zoos as the "aesthetic carrot that lures them towards a unique learning experience".

This "non structured and non obligatory" learning experience is supposedly facilitated by the "beautiful surroundings, ecological integrity and natural behaviour from the animals' exhibited in the zoos" (Hohn 1988: 234). Naturalistic designs are a popular catalyst for creating such a stimulating atmosphere. Naturalistic habitats are supposed to replicate the aesthetic and/or functional experience of a species' wild habitat (Ogden & Lindburg 1991). Chapter Five presented several examples of how these exhibits have been constructed in several Australasian zoos.

Naturalistic designs have been inspired by zoo professionals' interest in animal welfare and environmental education. Today, most zoo professionals believe that the sight of caged animals is a self-defeating and inappropriate strategy for zoos, one that does little to engender respect for the institution or appreciation for the wildlife kept in it. Instead, contemporary exhibits are designed to provide better care for animals and to provide a stimulus for visitors to make the connection between the animals they see in simulated habitats and what exists 'out there.' The 'naturalness' of exhibits is supposed to meet the psychological and physiological needs of the animals, thereby increasing the incidence of behaviour one might see if viewing these animal 'in the wild'(Green 1987; Churchman 1987). Bitgood et al (1988) found that visitors were more attracted to exhibits where animals were active, and where there was a sense of realism to the exhibit. Hence, observing animals that are more active and engaged in natural patterns of behaviour in their naturalistic enclosures may facilitate a more enjoyable and educational

**FIGURE 22: Several elements comprise zoo visitors' interpretive experiences**



experience and stimulate the development of a greater respect for 'wild' animals (Rhoads & Goldsworthy 1979; Shettel-Neuber 1988; Coe 1985).

The educative values of naturalistic exhibits have not been demonstrated definitively. Chapter Three suggested that the potential educational impact of zoos may be seriously limited by the entertainment, family-oriented expectations of the average zoo visitor. Visitors seem to be more concerned with the characteristics, behaviour or welfare of individual animals rather than intellectualising on complex details involved in say, species conservation (Kellert & Dunlap 1989, 1993; Kellert 1979; Wolf & Tymitz 1981). Swensen (1980 cited in Kellert & Dunlap 1989: 8) found that even though visitors prefer exhibits that satisfy both themselves and the animal exhibited, their preference was informed more by an affection for animals, rather than their awareness of animal ecology. She also observed that visitors failed to gain a better understanding of wildlife, despite a higher incidence and degree of exhibit 'naturalness'. Ford's (1995) findings are similar. She compared students' perceptions of captive zebras in metropolitan zoos to perceptions of zebras in large, naturalistic exhibits at Werribee Zoo. Werribee's zebras were perceived as representing 'wild' animals more closely than their counterparts in city zoo settings. Ford concluded, however, that naturalistic exhibits alone are not sufficient stimuli for providing visitors with specific knowledge about conservation and animal behaviour. She stressed the importance of using interpretive aids (graphics, talks) as exhibit supplements in order to enhance visitor learning experiences.

Zoo visitors may need several different stimuli in order to have a rich informal learning experience. Coe (1985) suggests that most informal displays, observational areas, and animal exhibits fail to engage zoo visitors sufficiently. Instead, visitors' experiences tend to be overly-passive, reducing their potential for learning. Landscape immersion was developed to create a more interactive environment for zoo visitors. These designs take the experience of viewing animals in naturalistic habitats one step further by placing zoo visitors inside an animal exhibit. Surrounded by the same "natural landscape and attendant multi sensory environment clues as are the animals ... the visitor is expected to feel as if they left the zoo and entered the [animal's natural habitat]" (Coe 1985: 206). The visitor is encouraged to step into the animals' shoes, to be aware of their fear about leaving their own environment, and to develop a deeper understanding and appreciation of the animals they are viewing (Churchman 1987; Green 1987).

Notwithstanding the fact that people can only *imagine* (not directly experience) what an animal senses, a *simulated* zoo habitat (no matter how realistic it may be) is not the same as the 'wild'. A person will be projecting their experience of an animal's life in captivity (albeit in greatly improved conditions) onto that animal, not its life in the wild. Moreover, it seems likely that when people are encouraged to feel at all threatened by representations of the natural environment (dangerous animals) they may experience a sense of isolation and alienation from 'nature' - the very attitudes zoos profess to be discouraging. There are other problems associated with landscape immersion and naturalistic designs. Coe (1985) asserts that visitors, challenged by having to 'find' camouflaged animals, will have a richer experience. Bitgood

(1987), however, found that the greater the visibility with which an animal can be viewed, the more attention that animal will receive. Visitors have been known to become frustrated or disinterested if they must work too hard to find the animal on display. An integral component of a rainforest habitat, the dense vegetation in the Sumatran tiger exhibit at Melbourne Zoo often hides the tigers. Visitors can be observed moving on quickly to other exhibits if they cannot immediately locate the tigers.

Grouping several animal exhibits by themes is another method zoo professionals employ to convey environmental messages to zoo visitors. Chapter Five discussed five major exhibit arrangements (systematic, zoogeographic, habitat, popular, and behavioural) and provided examples of how those typologies are used in Australasian zoos. For example, Melbourne Zoo's Master Plan mixes the tenets of habitat and zoogeographic themes by designating several bio climatic habitat zones such as the Tropical Rainforest, Eucalypt Woodland or Savanna. Incorporated into each zone are geographic subdivisions; African, Asian, Australian and South American. The main thrust of the Plan:

... is about habitat recreation, to display animals in naturalistic exhibits, demonstrating the links between both plant and animal species existing within the one habitat... Clearly, there are attempts to break down the taxonomic groupings on which the Zoo was previously developed (Embury 1993: 91, 93).

Zoo staff hope these new ways of presenting animals to visitors promote important environmental values such as the uniqueness and interconnectedness of diverse forms of life. Educational benefits of these designs have yet to be proven.

Horticultural planning is also used by zoo staff to highlight interdependence between animals, ecosystems and people. Hohn (1988) states that through the selection, use and maintenance of appropriate plants, a zoo horticulture department can contrive provocative naturalistic landscapes that heighten visitor awareness of animal/habitat relationships. He envisages zoos as environment parks with a strong botanical orientation, seeking to integrate facets of botany and zoology in ways which simulate nature. Robinson believes that the zoo must surpass its botanic and zoological roles and become a 'biopark':

... combining the attractiveness of living plants and animals with exhibits that explain their structure, physiology, history and interconnectedness. It is composed of subject matter from existing institutions, such as museums of natural history, anthropology, art; botanical gardens and arboreta; and zoos and aquariums (1993: 54).

More explicit means of conveying the kinds of issues Robinson discusses are occasionally found in signs and graphics.

In addition to naturalistic habitats, signs and educational graphics constitute what zoo professionals hope is a significant component of zoo visitors' interpretive experiences. Graphics include signs with written text plus art (Serrell 1988). Similar to informal education techniques used in museums and national parks, there is considerable variance in the design, function and educational philosophies of zoo signs. Certainly, there has been a shift away from the traditional small 'name & distribution' signs providing the basic animal identification. These



changes are evident in Chapter Five's presentation of Australasian zoo exhibits. When zoo educators and interpretation professionals realised they could be telling visitors more, there was a noticeable shift towards the production of signs with newer graphics that utilise colourful illustrations with large print texts and signs with interactive components (touch, lift, spin). Signs and graphics are designed to attract and hold visitors' attention and engage their concentration long enough for visitors to read them and have positive reactions to the content (Serrell 1988). Attitudinal and behavioural changes towards the environment among visitors are considered the ideal outcome by many in the zoo community.

Although signs are the most obvious and, some would say, important communication devices available to zoos, it remains that they are not particularly well understood or evaluated (Churchman 1987). Several studies have raised doubts about the frequency and duration of sign reading. It is believed that only a minority of visitors read the signs and spend minimal time doing so (Serrell 1988; Kellert & Dunlap 1989). Yet, I found that when visitors had questions about the animals they were viewing they reported that they first looked to the signs at the front of exhibits for information (Mazur 1991). Similarly, I found during this research that a majority of visitors agreed they would be disappointed if an exhibit did not have an interpretive sign and that they enjoyed learning from that information.

#### *i. Zoo Staff-Visitor Interactions*

Depending on a particular zoo, there are opportunities for visitors to interact with professional staff or trained volunteers and guides during a zoo visit. This contact includes: keeper talks about the animals under their care, animal performances, narrated animal feedings, guided tours, and volunteer touch-tables. These are designed to provide factual information about the animals and, in more recent times, act as a vehicle for the delivery of environmental messages which will hopefully facilitate cognitive and affective changes in the audiences (Yerke & Burns 1991).

Melbourne Zoo's seal show uses the theme of marine pollution to send an environmental message to its visitors. The performing seals are directed by the keepers to retrieve pieces of plastic and other debris that were placed in their pool before the show starts. When the seal returns to the training platform, the keepers' narrative discusses how these animals are often badly injured or killed by these items. The objective of such an exercise is that visitors watching the show will leave thinking twice before throwing garbage in the open seaway or stormwater drains.

Many zoo education professionals believe that a human interpreter provides an important, and sometimes more effective, component to the overall learning potential of the zoo visit. It is increasingly being recognised by zoo professionals that visitors often desire more information about the animals they see and have a strong preference for interactions with animals keepers and guides (Mazur 1991; Wolf & Tymitz 1981). This recognition is reflected in emerging recruitment practices and industry standards in Australasian zoos. Prospective animal keeping staff are increasingly expected to have public speaking skills and to be willing to interact with the visiting public. At Healesville Sanctuary, virtually all the keeping staff take a 'public

presentation' shift throughout the course of a working day. For those already employed at zoos, there are an increasing number of training initiatives to help further develop these skills. The Education Service at Currumbin Sanctuary is responsible for its series of daily wildlife presentations. The Service supervises presentation staff and decides on the content of each of the talks. Perth Zoo's education personnel have developed a public speaking training course for interested keepers. Healesville Sanctuary has developed the Mentor Program for its animal collections staff. Keepers can obtain feedback on their public presentation skills by consulting with a designated teacher from the Sanctuary's education service.

#### **6.5.4 Community Education**

Public education or community education has emerged as a focus for some zoos with most programs based in education departments. Despite the recognition by parts of the zoo community that zoo education should encompass much more than schools programs, change remains dependent on political winds that favour such a shift in priorities. Zoo education staff who have the support of senior management and whose institutions are relatively resource-rich are able to implement community education components as part of their overall program. To some degree, several of the zoos studied have been able to overcome the constraints of limited budgets and restrictive policies, and have found creative and unique ways of promoting conservation and zoos. For example, "taking the Perth Zoo's mission to the wider Western Australian community" has been a recent feature of education programs there (Perth Zoo 1994: 9). 'A Zoo with Class' program offers special fee-paying classes on a variety of topics: animation, wildlife careers, wildlife photography, crafts, behind-the-scenes tours, creative movement and music. The Zoo is also involved in joint displays for environmentally-themed events and houses and assists in Museum in-service courses for teachers. The Education Service manages a public library. Education staff also created an information service called "Enviro-Link" which provides materials on environmental programs in the local community.

The Zoo Education Service at the ZBV utilises several strategies to translate their education mission to zoo visitors and the general community: zoo staff presentations, holiday programs, printed information, guide service, special interest groups. Its public education program is still in early the stages of clarification, although a Public Education Committee has been formed.

### **6.6 RESEARCH**

Chapter Four presented a discussion about research in zoos. This activity constitutes a primary goal of zoos. However, it remains somewhat underdeveloped and sporadic in nature. Zoos may be approached by academic researchers interested in undertaking projects which focus primarily on the captive animals and, to a lesser degree, zoo visitors. Additionally, in-house research is undertaken formally and informally. However, zoo staff must balance investigative projects with their everyday responsibilities. A more fully developed and articulated research profile for zoos is also hampered by perpetual resource shortages. There is a conspicuous shortage of fully-equipped laboratory facilities and many projects depend on irregular funding from the private sector and academic community. The zoo community continually strives to

redress these problems by generating more funding and improving infrastructure for its research programs.

Several of the Australasian zoos designate specific staff, and in some cases entire departments, undertake research projects. Earlier sections of this chapter described the facilities at Byford which, when fully developed, will carry out a large portion of Perth Zoo's conservation research activities. The organisational diagrams for Currumbin Sanctuary and ZBV of NSW in Chapter Five denote specialised research departments and divisions, respectively. A scientific adviser to the CEO of ZBV/Director of Melbourne Zoo promotes and coordinates disparate research activities carried out at the Board's three properties.

Additionally, zoo professionals seek to increase their institution's research profile by presenting papers at conferences, and producing articles for scientific journals and other publications relevant to zoo and conservation communities. These efforts are often documented in zoo annual reports which display lists of articles published by zoo staff in a given financial year. Table 16 displays a classification of articles produced by zoo staff.

From this list and from the discussions presented in Chapters Two and Four, it is apparent that there is a healthy representation of socially-oriented inquiries (such as education and policy) in some zoos. For example, in addition to examining schools education programs, some zoo-based social research is undertaken and focuses on visitors' attitudes and behaviour and evaluates education programs (Mazur 1991, 1996a; Ford 1995). Works such as these are often used to assess whether zoo programs stimulate attitudinal and behavioural changes towards non-human nature, and to discover and validate functional relationships between characteristics of exhibits and visitor reactions. Nonetheless, these areas remain a lower priority than the studies in biological areas. The zoo research tradition remains dominated by positivist examinations of species planning, biological issues (such as animal physiology, population dynamics and conservation genetics), animal husbandry and behavioural management.

There are few examples of cultural or critical research inquiries in the Australasian zoo community. This void exists despite zoo professionals' concern for improving the effectiveness of zoo-based conservation programs. Most evaluative research is primarily quantitative and must be undertaken by zoo professionals as part of their daily responsibilities. The zoo community's preference for positivist inquiries (biological or otherwise) will hamper its ability to gain innovative conservation knowledge.

## **6.7 THE PUBLIC PROFILE OF ZOOS**

A conservation role for zoos is constituted in part by the various images that construct it. These representations function, in varying degrees, to validate and undermine zoos' ambitions and efforts. Inter-agency projects, such as those mentioned earlier, also influence the efficacy of zoos' conservation efforts. Joint programs, be they wildlife recovery or education projects, bring together staff and conservation agency employees. The zoos' conservation image may be

**TABLE 16: Typology of research articles & conference papers listed in zoo annual reports.**

Zoo	Articles (%)				
	Conservation or Zoo policy	Education & Interpretation	Animal husbandry/ behaviour & Species management	Biological studies	Exhibit design & Horticulture
<b>ZPB of NSW</b>					
• 1993/94	17	14	20	25	3
• 1994/95	17	19	24	33	3
<b>ZBV</b>					
• 1993/94	14	19	37	15	13
• 1994/95	25	20	21	17	9
<b>*Adelaide Zoo</b>					
• 1993/94	17	8	42	17	8
<b>*Perth Zoo</b>					
• 1993/94	19	44	19	19	0

\* Data for subsequent years unobtainable at time of research.

improved or diminished depending upon the nature of professional and personal discourses and how particular projects proceed.

The media are a particularly important source of image-creation and are used quite extensively by most zoos to encourage the public to view them in as favourable a light as possible. Successful endangered breeding efforts, exhibit openings and various other 'good news' stories are regularly fed to the media by zoos' public relations staff. It is very likely that the international zoo community's combined efforts to publicise its role change to conservation have contributed directly to an increased public awareness of that shift in purpose. These efforts, however, have been known to produce unwanted side-effects such as scepticism from parts of the community who are wise to zoos' predilection for overstating their accomplishments. These misgivings were uncovered in Chapter Four and will be visited again in Chapter Nine. Moreover, the media cannot be relied upon *not* to bite the hand that feeds it. Despite the fact that public relations staff in zoos spend considerable time and effort cultivating relationships with various media, events are not always within their control. 'Bad news' is often considered to be *better* news by press and television journalists who are not averse to preying on zoos' misfortune when something goes awry or when certain groups wish to direct the public eye towards zoos' more unpalatable practices. Animal welfare lobbyists' could not have advanced their causes against zoos without calling upon the assistance of the media.

## 6.8 CONCLUSION

This chapter has provided a description of the programs which, collectively, largely constitute the role of zoos in conservation. The species management systems that provide the foundation for zoo's ex-situ conservation activities were examined. Species management program designs are predicated upon the collective capacity of the world's zoos. This management imperative has been instigated and facilitated by international and regional bodies, with a lower tier of coordination and implementation activities being undertaken by individual zoos. Contemporary programs create a system of collection planning that prioritises species that are endangered and/or serve educational and research needs. In-situ conservation is a more recent priority and species management now places a special emphasis on zoos holding regionally and locally threatened species that are the focus of multi-agency reintroduction programs.

Education plays a fundamentally important function in zoos' overall conservation profile. These programs have grown in importance, and with the advent of environmental concern have taken on a green tinge. A recent emphasis in zoo education is fostering an appreciation of and caring for biodiversity. Zoo animals are meant to be the primary stimuli and interpretive medium for engendering this ethic of care. Formal and informal methods are used to convey conservation messages, with schools programs being the primary vehicle for delivery. While this trend sometimes limits zoo education professionals to a State curriculum agenda, several Australasian zoos have creatively woven environmental themes throughout their activities. Additionally, conservation training and assistance programs for developing nations are being designed and implemented by Western zoo professionals.

The programs discussed in this chapter represent significant achievements by the international and Australasian zoo communities. Despite these accomplishments, there remains considerable scope for increasing the ecological relevance of these programs. Improving the impact of zoo activities may be hindered by systemic structural obstacles. The following chapter will examine what implications particular legislative and organisational arrangements inside and outside zoo environments have for zoo conservation programs.

## **CHAPTER SEVEN: INSTITUTIONAL AND REGULATORY FACTORS INFLUENCING ZOO POLICY**

*Many traditional decision-making processes fail at mobilising the understanding, trust, capabilities needed for effective action. Conventional administrative processes often fail to produce a thorough understanding of the full range of issues, concerns, and values to prescribe an effective solution ... Legislative processes involve limited technical understanding and are oriented toward compromises that are often ineffective on the ground ... (Wondolleck et al 1994: 306).*

### **7.1 INTRODUCTION**

The type of structure in which decision-making occurs will determine both goals and the means by which to pursue them. Zoos' conservation policies are constituted in large part by an array of governmental, legislative, administrative and organisational arrangements, and these structures dictate particular features for zoo practices and programs. The following section will examine if fragmented government and zoo structures alike obstruct the zoo community's attempts to formulate conservation programs which embody progressive ecological axioms. Discovering systemic weaknesses in zoo arrangements for policy and administration may provide a starting point for improving the zoo community's conservation efficacy.

### **7.2 FEDERALISM AND ZOO POLICY: GOVERNMENT STRATEGIES, POLICIES AND RELEVANT LEGISLATION**

Zoo conservation policies cannot be considered in isolation from the political systems in which they take place. The nature of policy is profoundly affected by the structures in which it is designed. It is therefore necessary to consider the ramifications of Australasian zoos designing and implementing a conservation role within the context of Australia's federal system of government, and to a lesser degree, New Zealand's unitary government. These structures are particularly relevant given the tendency of most environmental issues - especially endangered species - to defy 'artificial' containment within the boundaries of any one polity having jurisdiction over it (Doyle & Kellow 1995). Government systems create particular kinds of wildlife policy which directly bear on zoo policies, particularly in light of zoo attempts to regionalise animal collections and increase participation in ex-situ and in-situ conservation programs.

Federalism is characterised by two separate levels of government whereby each level possesses distinctive powers and responsibilities. Australia has the Commonwealth government at one level and six states and two territory governments at the other. A third level of government, local government is created within each State and Territory (Bates 1995; Doyle & Kellow 1995; Galligan 1989). The Federal Constitution in principle determines the formal balance of power among other governments. However, the variable political, social and economic capacities of the States and Commonwealth ensure that, in reality, the balance is in a constant state of flux (Sawer 1985; Woodward et al 1985).

This federalist system of government results in a complex network of relations between and among the different levels of government (Smith 1993). These inter-governmental relations are extremely dynamic, and the multiple tiers and sovereignty arising from them produce conflict

and division, borne out of continual power struggles and ideological differences. Competition threatens to overtake cooperative aspirations, as regional jealousies and contests for electoral and partisan advantage surface. Increasing levels of informal inter-governmental arrangements also erode accountability to the public, while overlap and duplication of responsibilities and functions facilitate a waste of resources (Dixon 1994; Galligan 1989; Jaensch 1992).

Woven throughout this mosaic of interactions is the zoo network, replete with its own set of relational dynamics, and trying to implement its own coordinated and consistent approaches to conservation. The structure of the zoo community and its conservation policies provide an interesting parallel to Australia's federal system and environmental policies therein. The Australasian zoo community exists at local, national, regional and international levels<sup>1</sup>. Yet, at any given time, its members are attempting to operate as a single community. International documents such as the World Zoo Conservation Strategy stress uniformity in zoo policy:

No matter how well organised, how well led and how well trained zoo personnel are, a major contribution to conservation can only be achieved if zoos work together and exchange information. No zoo has all of the necessary knowledge and experience within the limits of its own confines. Each zoo is dependent on others for information in a variety of specialised areas. Zoos have made much progress in the sharing of knowledge and experience with others: yet zoos should still strive for even more intensive cooperation (CBSG & IUDZG 1993: 74).

However, the Strategy is not legally binding and zoos can only be encouraged to participate on a *voluntary* basis. The zoo community culture still prizes institutional sovereignty. Zoo professionals strive to promote the unique features of their organisations and how local communities can benefit from their resident zoos.

### 7.3 SHARING ENVIRONMENTAL RESPONSIBILITY

The various Commonwealth and State policies and legislation for wildlife protection to which zoos must adhere constitute a convoluted network of inter-governmental and inter-zoo relationships. Divisions of power in relation to environmental matters in Australia are quite complex (given the nature of the Australian Constitution) with the States, Commonwealth and, to a lesser degree, local government sharing responsibility for environmental matters. The States tend to exercise sizeable levels of authority in areas of land-use planning, natural resource utilisation and nature conservation (Bates 1995; Davis 1985; Gardner 1994). While the Commonwealth does not have direct legislative powers in relation to the environment<sup>2</sup>, it is able to call upon particular and often powerful Constitutional powers to promote environmental objectives; those relating to trade and commerce, external affairs (in particular in relation to treaties), corporations, finance and taxation, and "people of any race" (Bates 1995: 78; Fabricius 1994). Its role tends to be restricted to promoting the acquisition of national

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<sup>1</sup>The relative remoteness of Australasian zoos from most large overseas zoos means that they experience more difficulty integrating their populations of managed species with European and American collections. Prohibitive regulations and costs associated with importing and exporting animals inhibit the globalisation of Australasian captive breeding schemes (Giles & Kelley 1992).

<sup>2</sup>The Constitution does not specifically refer to the environment as it was not an issue (in such terms) at the time of its drafting (Bates 1995; Davis 1985). The Commonwealth government does have exclusive legislative jurisdiction over Australian External Territories and land it owns in the States (Bates 1995).



environmental standards, research assistance and providing funds for some resource conservation activities (Davis 1985).

The New Federalism of the Hawke and Keating governments emphasised the need for less confrontational, more agreeable relations among the different levels of government. The Inter-governmental Agreement on the Environment (IGAE), is a political accord reached among the Commonwealth, States, Territories and the Australian Local Government Association in 1992. Borne from this desire for more cooperative relations between the Commonwealth and States regarding environmental issues, the IGAE aspires to recognise both State sovereignty and the Commonwealth's responsibility for national environmental policy<sup>3</sup>. The Commonwealth agrees in principle to consult with the States and Territories before committing itself to international agreements and, where both the Commonwealth and States have an interest in an environmental issue, then each party may approve or accredit practices, procedures and processes of the other (Bates 1995; Dixon 1994).

In some ways, the IGAE has ensured the intricacy not only of inter-governmental interactions, but of zoo-government relations as well. The parties to the IGAE agree that all levels of government have a responsibility to protect flora and fauna in their respective jurisdictions, to use their best endeavours to ensure survival of species and ecological communities and to conserve areas critical to protection of such flora and fauna (Dixon 1994). The Commonwealth has been reluctant to legislate in relation to environmental issues, and is unlikely to override state environmental legislation (to the extent it has the Constitutional power to do so) regarding endangered species. Hence, a paucity of uniform and comprehensive policies for protecting endangered species remains (Dixon 1994), with the possible exception of the Wildlife Protection (Regulation of Exports and Imports) Act 1982, which grants considerable powers to the Commonwealth government for controlling the import and export of endangered species.

Zoos are faced with variable regulations and policies which will be an advantage for some institutions in particular states, possibly presenting a disadvantage to others, confounding their attempts to act as a unified conservation force. While most Commonwealth and State policies embody a preference for in-situ strategies over ex-situ strategies for conserving endangered species, wildlife professionals will occasionally call upon zoo services for assisting in various projects. Where a zoo has been recognised within the wildlife conservation policy network as having successfully managed endangered species or where relations between a zoo and the respective government agency have been favourable, this zoo is more likely to be asked to participate in a particular wildlife recovery effort.

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<sup>3</sup>The World Zoo Conservation Strategy is not unlike the IGAE. It calls for uniform practices among zoos, but the spirit of autonomy of institutions is emphasised.

## 7.4 ADMINISTRATIVE AND LEGISLATIVE MECHANISMS AND STRATEGIES

There are several administrative and legislative instruments used at both Commonwealth and State levels for protecting and conserving wildlife. Such instruments directly and indirectly influence zoo conservation roles through regulating zoo activities and determining the degree to which zoos will be involved in endangered species conservation. These mechanisms aim to protect both wildlife in general and those species immediately or potentially jeopardised by declines in their populations in particular. These species are afforded a special protective status which creates a mandate for their conservation, as well as restricting the ways in which they can be manipulated.

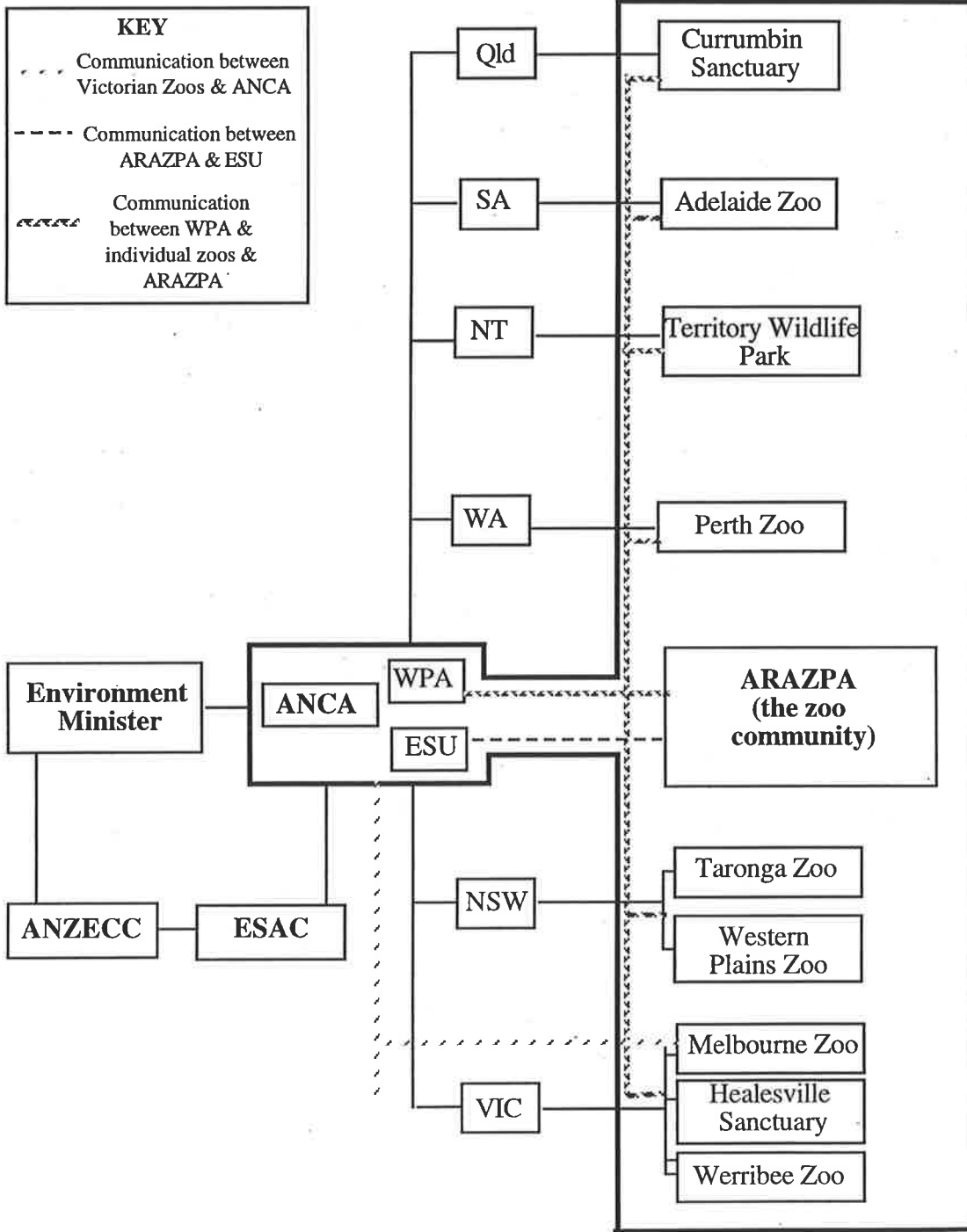
### 7.4.1 Administrative Structures

Figure 23 illustrates the intricate connections that zoos have, as a community and as individual institutions, with the Commonwealth and States. Most often, middle and senior management staff in zoos communicate with Federal and State environment departments and their respective wildlife units over regulatory matters and joint endangered species programs. They also have some involvement in conservation policy design. In addition, there are also administrative connections which constitute some zoo-State Government relationships. Chapter Five illustrates how in Western Australia, New South Wales and Victoria, through their zoo boards, zoos answer directly to the respective Environment Minister. The Territory Wildlife Park is overseen by senior managers in the Northern Territory Conservation Commission. While the Royal Zoological Society of South Australia operates autonomously, government grants are issued directly from the Treasury through the Department of Environment and Land Management to the zoo. Currumbin Sanctuary is managed by the National Trust of Queensland which is a statutory body that was established in 1963.

The ANCA operates at a policy-coordinating level, liaising with State wildlife authorities to establish and develop policy objectives, as well as providing funding for some programs (Bates 1995). It also has direct contact with the zoo community and individual zoos through the Wildlife Protection Authority (WPA) regulating imports and exports of endangered species (Figure 23). ANCA's ESU also has direct contact with the zoo community; however, this contact is considerably less than that with State agencies and is limited to zoo proposals for joint programs and some lobbying conducted by ARAZPA or ASMP personnel.

The consultative process among Commonwealth and State agencies promoted by New Federalism is actualised in ANCA through the use of ministerial councils, standing committees of senior officials, and special and ad-hoc committees of various kinds (Bates 1995). The ESAC may indirectly influence zoos' conservation role by shaping endangered species recovery policies (Figure 23). ESAC advises the Commonwealth Environment Minister about priorities for the preparation of recovery and threat abatement plans, and on the content of such plans. The Committee also provides advice on measures which the Commonwealth should take to meet its obligations under the Endangered Species Act 1992 (Commonwealth) (ANCA 1994a). The creator of *The Australian National Strategy for the Conservation of Australian*

**FIGURE 23: The Australasian zoo community's inter-agency relationships.**



*Species and Communities Threatened With Extinction*, ESAC comprises representatives from ANCA, ANZECC, state wildlife agency representatives, members of the scientific and rural community, and non-government conservation group members. When setting policy concerning the role of ex situ conservation in endangered species recovery efforts, the views of individual ESAC representatives towards zoos' roles is important. While one of those people serves on the ZPB of NSW, it is unclear as to what his position regarding zoos is. Two other Committee members, one from a non-government organisation and the other from a state wildlife agency, were interviewed. Both had fairly sceptical attitudes towards zoo involvement in endangered species conservation.

Some of the major Australasian zoos have had some involvement in ex-situ components of government-run endangered species recovery programs. Nonetheless, most zoo professionals endeavour to develop more fully their expertise in the reintroduction process and the wider realm of in-situ conservation. Successful endangered species programs can yield substantial credibility for participating zoos and have achieved an elite status within the zoo community. There is a general feeling throughout the zoo community that zoos must elevate their conservation profile by *increasing* their involvement in government wildlife programs. One manifestation of that desire is the attempt made by individual zoos and the zoo community to develop closer links with the Commonwealth Government (Figure 23). The ZBV signed a Memorandum of Agreement with the ANCA in 1994 in order to clarify the Zoo Board's policies and facilitate joint conservation programs between itself and ANCA<sup>4</sup> (Figure 23). Under the auspices of ARAZPA, ASMP representatives have lobbied the ESU and WPA of ANCA in the hopes of establishing closer working relationships and debunking some of the more commonly held myths about the zoo community (Figure 23). These efforts have resulted in the WPA and ESU staff attending zoo conferences and seminars in order to familiarise themselves with some of the issues with which the zoo community must grapple while implementing a conservation role. Similarly, several zoo industry representatives were invited by the ESU to attend the Endangered Species Recovery Process Conference held in December, 1995. ARAZPA's Education Specialist Group has lobbied ESU for the development of joint educational programs which could take advantage of zoos' extensive access to the public. To date there has been one program utilising several zoos as a venue for a theatrical program designed by ESU. Melbourne Zoo successfully applied for ESU funding to develop an interactive computer program on endangered species.

#### **7.4.2 Endangered Species Legislation and Strategies**

Zoos must adhere to specific legislation that to some degree dictates zoo involvement in endangered species recovery efforts, the kind of species zoos may hold, the conditions in which they exhibit them, and the movement of those animals between institutions. Since the ability to implement conservation policies in zoos is closely tied to their species management

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<sup>4</sup> Signatories to the agreement agree to pursue "cooperative endeavours in nature conservation, ecologically sustainable development, and the conservation and management of biological diversity both in Australia and overseas".

and collection plans as laid out in Chapter Six, these mechanisms are particularly important to consider when viewing the potential role for zoos in conservation.

The Commonwealth Endangered Species Protection Act 1993<sup>5</sup> (Table 17) is important to zoos because, in addition to providing an overall context for endangered species protection at a federal level, the Act provides a vehicle for zoo involvement in ex-situ and in-situ conservation: the preparation and implementation of endangered species recovery plans such as those discussed in Chapter Six.

While it is encouraging that a federal initiative specifically addressing endangered species now exists and incorporates a wide definition of 'species', the Act has been criticised for its limited capacity to conserve biodiversity and the jurisdictional complications it imposes (see Dixon 1994; Bates 1995). In addition to a narrow species approach to conservation, the Act is confined by the extent to which it establishes a comprehensive and uniform approach to species protection on a national level. Because the Act is limited to Commonwealth jurisdiction, its power to provide for coordinated management is severely constrained. It generally does not account for endangered species and communities existing across jurisdictional boundaries, except in the case of some recovery or threat abatement plans (Dixon 1994). If the listed native species does occur outside Commonwealth areas, the Commonwealth must seek the cooperation of the States in which the species or community occurs with a view to joint preparation and implementation of a recovery plan for the species or community throughout Commonwealth areas and those States (ANCA 1994a). The responsibilities of the Commonwealth agency do not, however, preclude the States from preparing their own plans, although they are likely to be somewhat tied to the Commonwealth by the need to seek funding to support their efforts<sup>6</sup>.

Such fragmentation guarantees disparate endangered species policy domains between the Commonwealth and the States. While recognising the responsibilities (and power) of federal wildlife agencies, the zoo community also increasingly appreciates the pivotal role State agencies' have in developing and administering wildlife conservation policies. Weaving their way through this maze of inter-governmental relations is no easy task. Australasian zoo professionals, representing both a unified industry and separate institutions, interact with various state government officials (Figure 23) who have their own divergent political philosophies and commitments concerning environmental issues and, more specifically, matters relating to endangered species.

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<sup>5</sup> The Act was established in order to fulfil the requirements of the IGAE, the Convention on the Conservation of Migratory Species of Wild Animals, and the Convention on Biological Diversity (Bates 1995).

<sup>6</sup> Section 96 of the Constitution allows the Commonwealth to make loans or specific grants to the States. These powers are enacted through the States Grants (Nature Conservation) Act 1974 which provides for the Commonwealth to make grants to the States for purposes connected with nature conservation (Bates 1995; Fabricius 1994). In this sense it affords the Commonwealth opportunities to influence States' policies insofar as its providing funds is likely to have conditions attached to it (Fabricius 1994).

**TABLE 17: Objects of the Endangered Species Protection Act 1993 (Commonwealth)**

- to promote the recovery of species and ecological communities that are endangered or vulnerable;
- to prevent other species or ecological communities from becoming endangered and to encourage public involvement in conservation and cooperative management;
- lists nationally endangered or vulnerable species, endangered ecological communities and key threats that affect endangered species;
- provides for the preparation and implementation of recovery plans for listed species and ecological communities, and threat abatement plans for listed key threats;
- includes provision for conservation agreements relating to listed species and the use of conservation orders for areas under Commonwealth jurisdiction;
- conservation orders can also be applied to matters being assessed under the Environment Protection (Impact of Proposals) Act 1974.

State governments have varied in their approaches for protecting species, with some States leading the way with more innovative and effective endangered species legislation (Dixon 1994: 8; Bates 1995)<sup>7</sup>. Confounding these policy variances are fluctuating individual attitudes towards zoos' participation in endangered species conservation. Not all recovery plans will involve ex-situ measures and, where they do, this still does not guarantee zoo participation. Authors of recovery plans, be they from Commonwealth or State agencies, determine the need for ex-situ conservation, and are likely to select what organisation will provide that service. The Recovery Plan and Funding Proposal Guidelines specify that Recovery Teams "*may* include ... representation from captive breeding institutions *if appropriate*" (ANCA 1994b: 7, emphasis added). At this juncture in decision-making, individual perceptions and the existence and nature of previous relationships are critical determinants of zoo participation.

Some zoos have better relationships with their respective State wildlife agencies than others. Relationships between Victoria's Department of Conservation and Natural Resources and Healesville Sanctuary go back quite a few years and are largely favourable. Conversely, the identification of Western Australia's Conservation and Land Management (CALM) as both a threat and a competitor to the Perth Zoo in its Draft Business Strategy reflects generally persistent negative attitudes towards zoos and what have historically been poor relations between senior managers in the two organisations. Prior to 1976 in Queensland, Currumbin Sanctuary had never been registered by the Queensland NPWS's supervision. While the Sanctuary's historic commercial popularity has facilitated NPWS's turning an official blind eye, relationships between the two organisations are supposedly improving due in part to the Sanctuary's affiliation with the National Trust (Romer 1994: pers comm).

Where recovery plans are being written for threatened species which exist in more than one State or Territory, problems concerning issues of sovereignty, logistics<sup>8</sup>, and duplication of efforts are likely to occur among Commonwealth and state agencies, as well as among the zoos. Recovery plans tend to prescribe necessary actions throughout a species *range*, rather than in the single State or Territory in which that species occurs. In these cases, a high level of cooperation and coordination is required among the different levels of government, the various state agencies, and the zoos.

Where a recovery plan author deems it appropriate for a zoo to be involved in a recovery effort, their selection of a particular institution will be based more on available expertise than whether a

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<sup>7</sup>Queensland's Nature Conservation Act 1992 and Victoria's Flora and Fauna Guarantee Act 1988 endeavour to embrace habitat and ecosystem approaches in addressing the protection of biodiversity and utilise somewhat more progressive and forceful mechanisms than other States to execute their objectives (Dixon 1994, Bates 1995). Recher (1994), however, critiques the Victorian Act on the basis that its attempt to guarantee the evolutionary potential of all species is naive and unenforceable. The proposed Endangered and Other Threatened Species Conservation Bill 1992 (NSW) was found to be particularly ineffectual due to its focus only a finite number of species and neglecting action for other species and habitat. The Bill proposed to preserve *only* those species in NSW that were *not* plentiful in other States (Impact 1993).

<sup>8</sup> Recovery programs may involve translocating species across state and territory borders. State and territory laws make it necessary to acquire licenses before such movements can take place and most State wildlife legislation makes it an offence to release native animals in areas outside their current range without a licence (ESAC, date unknown).

zoo is located in the same State as the wildlife agency conducting the program. There are several instances where Recovery Plans based in one State involve interstate zoos. Melbourne Zoo is assisting Western Australia's CALM in a breeding plan for pale-bellied frogs. The Conservation Commission of the Northern Territory's recovery effort for the eastern-barred bandicoot involves Healesville Sanctuary in Victoria and the Western Plains Zoo in New South Wales. Hence, in addition to Commonwealth levels of government, zoos may be conducting relationships with several State wildlife agencies. Furthermore, zoos may often be confronted by frequent and on-going restructuring of State environmental agencies (Bates 1995) which confuses what is often scant knowledge of who they are working with and requires them to constantly familiarise incoming wildlife agency staff with zoo policy needs. ARAZPA is attempting to redress this problem by appointing an Executive Director whose responsibilities include acting as an industry representative at endangered wildlife conferences and workshops and facilitating better communications between government agencies and zoos.

This appointment may also help to address problems associated with a lack of cohesion among the region's zoos. The use of zoo services by government wildlife agencies and zoo's collective capacity to assist endangered species conservation are constrained by inter and intra-zoo fragmentation. In the ASMP Regional Census and Plan, Slater (1996: 50) notes that:

The reticence by Wildlife Agencies in adopting a multi-zoo approach to their species recovery objectives is understandable. The region has been slow in working together in order to develop viable collective approaches that wildlife agencies can consider. In order to ensure that the valuable resources of zoos are working effectively for priority programs, the collective approach to conservation programs will need to gain currency at executive management levels within our zoos, and to be promoted and supported by executive management within internal management strata of zoos.

Irrespective of some zoo professional's calls for higher levels of cohesion within the zoo community, zoos' participation in government conservation efforts tends more towards the exception than the rule. Formal international and government policies tend to relegate ex-situ measures to a supplementary role. Article 9 of the International Convention on Biodiversity refers specifically to the role of ex-situ conservation in preserving diversity. Priority is to be given to in-situ conservation, but it is acknowledged that ex-situ conservation measures are needed. Ex-situ techniques, such as those employed by zoos, botanic gardens and seed banks, should be utilised only if they do not jeopardise the integrity of an ecosystem or natural population of an endangered species.

As a signatory to the Convention on Biological Diversity, Australia responded to its obligations to implement national strategies, plans and programs for encouraging the conservation of biological diversity by producing the *National Strategy for the Conservation of Biodiversity*. This Strategy mirrors the specifications of Article 9 of the Convention. *The Australian National Strategy for the Conservation of Australian Species and Communities Threatened With Extinction* states: "Whilst the primary aim is to conserve species in nature (in-situ), ex-situ management has provided valuable assistance in many cases" (ESAC 1992: 22). *The National Strategy for the Conservation of Biological Diversity* refers to ex-situ conservation as a



measure of 'insurance' against unpredictable events, effective when there is a total loss or alteration of habitat (Biological Diversity Advisory Committee 1992). These statements render captive breeding subordinate to efforts of conserving species in their natural habitats. This assessment has direct implications for the zoo community which positions its captive breeding program as among its principal conservation activities.

*The Australian National Strategy for the Conservation of Australian Species and Communities Threatened With Extinction* states that preparation and implementation of recovery plans for endangered species is the primary responsibility of State Government conservation agencies and the Endangered Species Unit of ANCA. In this context, both Federal and State Governments have the responsibility for coordinating the efforts of zoos, botanic gardens, gene banks and other related institutions (Endangered Species Advisory Committee 1992). Both State and Federal governments can be seen to define the direction of zoo policy, insofar as their strategic emphasis favours in-situ conservation measures<sup>9</sup>.

There are several State conservation strategies that specify a role for zoos by citing the functions of ex-situ conservation. *The Conservation Strategy for the Northern Territory* lists zoos, botanic gardens and research organisations as part of a network of protected areas and management programs that will help to protect the biodiversity of the Northern Territory. Wildlife parks in general, and the Territory Wildlife Park in particular, are listed as effective vehicles for disseminating 'species and habitat information' to the public and promoting environmental awareness.

An example of how zoos' role in captive breeding can be sanctioned by formal government policy is provided by *The Natural Heritage Conservation Strategy* (Draft 1992) for New South Wales. The Strategy sites zoos under the subheading of Species Management Strategy. Part of that section calls for a higher level of coordination with agencies such as the ZPB of NSW regarding the role of ex-situ conservation and reintroduction processes, while acknowledging that ex-situ methods play a part in conserving biodiversity and threatened species in particular. This section is then tied in to those other areas considered to be relevant such as species management plans, recovery plans, restoring degraded ecosystems and habitats.

While New Zealand operates under a different system of government, the relationships between those zoos and wildlife parks capable of providing ex-situ services and the DOC provide an interesting comparison to the Australian example. Over the past few years there has been an increasing level of cooperation between DOC and several zoos. This cohesiveness may be due in part to the unitary system of government existing there. Scanlon (1995: 3) suggests that New Zealand leads the world in "undertaking major structural reform of its environmental laws in an attempt to legislate for sustainable development". It may be that New Zealand's extensive

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<sup>9</sup>Peter Bridgewater, CEO of ANCA, when addressing the zoo and conservation community at the Reintroduction Biology of Australian and New Zealand Fauna Conference, reiterated the government's policy position. He stated that ex-situ should act as a *complement* to in-situ conservation and should be carried out in the context of Recovery Plans - which are ultimately controlled by government conservation agencies (Bridgewater & Walton 1994).

powers to impose reforms over other spheres of government compared to limited application in Australia of Commonwealth powers has led to such clarified and uniform captive breeding policy.

New Zealand's Department of Conservation prepared the *Draft Guidelines of Captive Management of Species Protected Under the Wildlife Act (1953)*. The Guidelines clearly pronounce the primacy of DOC's role as the coordinating body for what in the past has been disparate and often ineffective efforts of statutory zoos and private wildlife parks in the breeding of endangered species. While the Guidelines acknowledge the scale of programs made possible through the participation of outside agencies, they reiterate the necessity for ensuring that those efforts are 'properly' integrated with in-situ conservation objectives for each species<sup>10</sup>. In conjunction with this formal policy document, CMAG was established to assist DOC with selecting suitable zoos or wildlife parks for those recovery plans that required the use of captive management facilities. Chapter Six discussed how Recovery Plans are created by DOC. After deciding upon ex-situ as a necessary management tool for a particular species, DOC then consults with CMAG before selecting which organisation will provide the needed captive breeding services. New Zealand's approach to utilising zoo and wildlife park resources may indeed improve ex-situ program congruity and performance. What seems quite apparent, however, is DOC's increased control over the New Zealand zoo community's participation in endangered species conservation.

#### **7.4.3 Legislation for Regulating the Holding and Taking of Native Species**

Acquiring most species of native Australian fauna and flora is either prohibited or controlled under licence in the Commonwealth and every State and Territory (Table 18). Virtually all forms of native wildlife are protected by regulating the circumstances in which they may be taken, killed, possessed, sold, or otherwise disposed of. Rare, endangered and many other species must be completely protected (Bates 1995). These regulations will have more important ramifications for those institutions (like Healesville and Currumbin Sanctuaries and the Territory Wildlife Park) whose animal collections focus strictly on native species, or if a zoo is looking to develop its native species collections more fully and must obtain those specimens from the wild. Most zoo concerns focus primarily on the time-consuming and cumbersome application for and eventual issuing of permits. Some have pointed out, however, that a disturbing trend in much of the legislation is the increasing adoption of animal rights ideals by Australian legislators whereby collecting wild specimens is viewed as exploitative (Weigel 1992). The degree to which state policies vary in regards to the administration of these legislative mandates is not clear, but there are reports that Queensland's NPWS is more hesitant than its respective counterparts in issuing permits to zoos (Anonymous 1994: pers comm). This reticence may be due to persistent sceptical attitudes towards zoos and wildlife parks, as well as the high number of small and less reputable privately-run wildlife parks in that State.

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<sup>10</sup>Similar measures are being proposed in Europe and by the U.S. Fish and Wildlife Service's Captive Bred Wildlife Permits system which will require institutions and individuals which hold and/or breed endangered species to participate in cooperative, scientifically managed breeding programs such as the AAZPA's SSPs (Wiese et al 1993).

**TABLE 18: Protective legislation (Bates 1995)**

- National Parks and Wildlife Conservation Act 1975 (Commonwealth)
- Nature Conservation Act 1980 (ACT)
- National Parks and Wildlife Act 1974 (NSW)
- Territory Parks and Wildlife Conservation Act 1976 (NT)
- Nature Conservation Act 1992 (QLD)
- National Parks and Wildlife Act 1972 (SA)
- Wildlife Act 1975 (VIC), Flora & Fauna Guarantee Act 1988 (VIC)
- Wildlife Conservation Act 1950 (WA)

#### 7.4.4 Legislation for Animal Transfers

Conditions imposed on domestic and overseas exports and imports of animals are especially pertinent to zoos. Until the 1960s, zoos depended quite heavily on drawing individual animals from the wild to sustain their collections. Few animals lived long lives in zoos and few were able to reproduce under prevailing conditions of captivity. Poor survival rates were not perceived to be a problem, as those animals lost in collections could be replaced easily from the large populations in the wild, without causing detrimental effects to that population. It was not until after World War II that concern over the vulnerability of wildlife to extinction eventually led to ad-hoc efforts by some governments to control the export and import of wildlife and by some zoos to develop breeding programs. The CITES was the first coordinated attempt to control the wildlife trade. Signatories to the Convention act by "banning commercial trade in an agreed list of currently endangered species and by regulating and monitoring trade in others that might become endangered" (Wildlife Protection Authority 1991:1). The introduction of CITES in the early 1970s was received with trepidation by zoos across the globe. As Chapter Three suggests, the zoo community feared the Convention's implementation would severely curtail (and possibly eliminate) purchases of rare animals and exchanges of captive-bred specimens among zoos (Duplaix & Grady 1980).

The Wildlife Protection (Regulation of Exports and Imports) Act 1982 implements Australia's obligations under CITES and is enacted by the Commonwealth through its power over matters pertaining to trade and commerce, external affairs and implementation of international agreements<sup>11</sup> (Bates 1995; Ley 1992). The Act requires that export and import approvals be obtained for 'goods' leaving and entering Australia. Controls under the Act apply to transactions undertaken by museums, zoos and scientific institutions, commercial organisations, tourists, migrants and the general public (Ley 1992). The Federal Government is empowered to approve or deny applications based upon particular and relevant environmental factors (Bates 1995). The WPA of the ANCA administers the Act in consultation with numerous agencies: State and Territory conservation and environmental agencies; the ARAZPA; coordinating bodies of Australian museums; botanic gardens; and herbaria. An attempt is made to ensure that Commonwealth and state management programs and amendments to the Schedules are consistent with one another (Ley 1992).

The Act is extremely significant for zoos. It constitutes a major part of the regulatory context in which their conservation policies are implemented. While modern zoos have greatly restricted their need to take animals from the wild by developing captive breeding programs, their current emphasis on regional animal collection plans - and to a lesser extent on global collection plans - manifests a dependency on inter-zoo animal exchanges within and outside Australia. The ability to rotate breeding individuals among zoos participating in regional and international breeding programs in order to maintain as wide a genetic pool as possible is critical to the

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<sup>11</sup>The import and export of animals both interstate and overseas are also regulated through the Customs Act 1901 (Cth). The Wildlife Protection (Regulation of Exports and Imports) Act 1982 provides for more extensive protection (Bates 1995).

viability of zoo populations of endangered and other species. Hence, the ease with which imports of exotic animals and exports of native animals can be effected is often of great importance to the zoo community.

Currently,

Transfer of animals between publicly owned or administered Australian and overseas zoos is permitted provided the zoos can demonstrate that they provide a high standard of management, animal husbandry and accommodation and have the facilities and expertise properly to care for the animals being sought. In the case of Australian fauna being sent overseas, the animals must be surplus to the requirements of the Australian zoo and bred in captivity (Ley 1992: 108).

Significant constraints are imposed on zoos by the Act. Yet, in some ways this legislation also legitimises statutory zoos by specifying that only publicly-owned zoos or those managed by "learned zoological societies" be granted export and import approvals. By and large, the Australasian zoo community remains concerned that the Act's regulations for the movement of animals are not always in their best interests<sup>12</sup>. There are frequent complaints regarding cumbersome, time-consuming application procedures which frustrate species management and exhibit planning. The zoo community questions whether procedures for movement of wildlife between zoos should be simplified and whether restriction of the provisions of the Regulations concerning inter-zoological transfers, to institutions which are publicly owned, should be maintained (Ley 1992). Decisions by the WPA to deny applications on the basis of an animal's suitability for exhibition and the reputation of Australia as being the most difficult for both exporting and importing of wildlife has led parts of the zoo community to conclude that the WPA is acting outside the realm of its legislated authority. In an effort to combat these problems, there have been substantial efforts by the zoo community to lobby the WPA. The Australasian zoo community has invited both WPA and ESU staff to attend major animal collection planning forums and conferences in the hope of alleviating the agencies' concerns over what they may perceive to be dubious practices.

Interviews I conducted with WPA staff have shown that while the WPA is not unsympathetic to inefficient and cumbersome bureaucratic procedures and the problems that are created for zoos, it remains wary of relaxing standards to any great extent. For some time Australian policies have reflected a determination *not* to introduce yet another exotic pest into the country (Strahan 1974). Moreover, memories of old zoo practices remain, along with a high level of suspicion regarding the mouthing of conservation rhetoric alongside some of the more commercially-oriented practices. It is not surprising that the WPA's overall brief is one of caution and regulation. Taronga Zoo's application to export platypus to Japan for an undisclosed but allegedly high sum of money was recently turned down. While the official

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<sup>12</sup>Schmitt (1988), however, sees the introduction of protective legislation for wildlife as a major positive catalyst for the development of a conservation role for zoos, facilitating changes in the professional codes and goals of zoos which in turn accelerated changes in record-keeping, the ethics of cooperation and collaboration in species management among institutions, and recognising the necessity for coordinating wildlife management in zoos and reserves.

decision reflects formal requirements that could not be met<sup>13</sup>, it is very likely that the Zoo's highly commercial profile factored in the WPA's decision (Anonymous 1995: pers comm).

These sentiments and interpretations are reflected in recent amendments to the Act which have resulted in "more stringent control over native wildlife species that are, or are to be, exported as inter zoological gardens transfers" (Commonwealth of Australia 1995: 4). In the interest of preventing the commercial trade of live Australian fauna, the movement of animals remains limited to approved institutions. In order for transfers to be approved, species must be readily bred in captivity, and must be bred by the institution exporting that species. Similarly, *native* species can be exported if they are bred in captivity with sufficient ease and are going to be part of an approved breeding program; an internationally-recognised captive breeding program for endangered species such as those discussed in Chapter Six. The WPA and its amendments are designed to avoid the threat of extinction of a particular species as well as preventing their being traded for commercial purposes (Bates 1995; Ley 1992; Mullan & Marvin 1987). Zoos can still earn substantial revenues from selling 'surplus' stock to other zoos or wildlife parks<sup>14</sup>. Given the appeal of Australian native species for overseas zoos, the introduction of this amendment may lead to an increase in the number of formalised captive breeding plans in order to facilitate export approvals.

In addition to the Wildlife Protection Act, zoos must adhere to the specifications of the (Commonwealth) Quarantine Act 1908. The Quarantine Act is administered by the Australian Quarantine Inspection Service, a federal agency with branches in each state which deploy Quarantine Officers who have considerable powers in implementing the Regulations. Officers can specify treatment and conditions of exhibited animals and must approve all animal transfers coming in or out of the zoo. Additionally, zoos must make their facilities and records of animal sicknesses, deaths and transfers available to the Quarantine Officers for inspection at any given time.

Since Australia has historically been free of many exotic diseases (Baker & George 1988), the Quarantine Act seeks to prevent or contain the introduction or spread of diseases or pests affecting human beings, animals or plants (s.4). Under the Quarantine (Animals) Regulations (date?) all wild or undomesticated animals imported for exhibition purposes and all animals on zoo premises are subject to rules concerning their treatment and containment conditions<sup>15</sup>. Additionally, for direct entry, source countries are restricted to those which are themselves free

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<sup>13</sup> The legal export of platypus has not been allowed since 1946. In 1988 zoo and conservation professionals held a workshop to discuss this policy. It was decided unanimously that, given the high levels of mortality in captive platypus, the current policy should be upheld (Ley 1992).

<sup>14</sup> For example, in noting the restrictions imposed by Australian authorities on the sale of Australian wildlife, the Auckland Zoo's animal sales forecast was reported to be \$23,000 behind budget (Auckland Zoo 1994).

<sup>15</sup> Zoo animals can only be imported to zoos which have achieved an A-class quarantine status. A-class zoos must be public institutions which can provide appropriate quarantine facilities and be adjacent to a port approved for animal imports. A B-class zoo can be a public or private institution that is permitted to hold certain exotic animals under prescribed conditions after these have completed a 30-day quarantine period in an A-class zoo (Regulations s 52 (1); Strahan 1974). Since zoos registered as A-class are considered to be self-contained Quarantine stations, they are able to reduce some of the costs and time associated with meeting quarantine specifications.

of critical diseases. It is extremely difficult to import - and then place in quarantine - animals from sources other than zoos in approved countries. Most zoos are discouraged by the logistical obstacles and prohibitive costs involved and, where possible, tend to avoid pursuing this particular course of action (Baker & George 1988).

#### **7.4.5 Legislation Regulating Conditions for Captive Animals**

The protection (from cruelty relating to management or treatment) of domestic and native wildlife kept in captivity is dealt with by various mechanisms. Several States have prevention of cruelty to animals legislation: the Prevention of Cruelty to Animals Act 1920 (WA), 1979 (NSW), 1985 (SA), 1986 (VIC), and the Animals Protection Act 1920 (QLD). Controls on the use of animals for research purposes are legislated in NSW through the Animal Research Act 1985 (NSW). New South Wales and Victoria enforce standards for the keeping of animals for public exhibition through the Exhibited Animals Protection Act 1986 (NSW), the Zoological Parks Board (Exhibited Animals) Amendment Act 1986 (NSW), and the Wildlife Act (VIC).

The Exhibited Animals Protection Act 1986 (NSW) is administered by the NSW Department of Agriculture. The Act aims to ensure that displayed animals receive quality care at zoos, wildlife parks, aquariums, circuses and travelling displays. Most of the Acts of this nature are "measurement-based" (Garland 1993: 25) and specify detailed sizes for enclosures. Garland (1993) believes these quantitative regulations are inadequate, because they try to impose generic minimum standards on unique and varied institutions. Hence, the need for flexibility and change in zoos and wildlife park exhibit planning cannot be accommodated. The Wildlife Act (VIC), however, specifies that licences will only be granted for Wildlife Displayers if such parties can show that the animals are being kept in enclosures that are part of the display which has a clear conservation theme presenting information on the ecological role of that particular species. Licence holders must adhere to standards regarding the size of enclosures, transport requirements and certain husbandry guidelines.

In response to increasing pressure from both animal rights and welfare groups and growing intensity and rigidity of standards set by government controls and wildlife agencies, the zoo community has proposed the design and implementation of a zoo industry-based accreditation program (Garland 1993; Jakob-Hoff 1994). The proposed program would establish self-regulation through setting and maintaining minimum professional standards. Efforts to establish the program have been confounded by confusion and concerns in the zoo community over how such a program would be implemented: namely whether it would impose conformity and/or prohibitive costs upon individual zoos or wildlife parks (Garland 1993). Not surprisingly, the project was postponed indefinitely in part due to the ZPB of NSW's refusal to participate in a funding scheme which would have made the start of the program possible. A senior manager defended the ZPB of NSW's position by pointing to the additional costs that the Board would incur by having to participate in two accreditation schemes: the newly proposed ARAZPA scheme and regulations already imposed upon them by the NSW legislation.

#### **7.4.6 Legislative Mechanisms for Establishing and Restricting Zoos' Conservation Policies**

An organisation's ability to establish and inhabit a supportive niche for itself can be an important determinant of its long-term survival (Hall & Quinn 1983). Some organisations, like those that constitute the zoo community, make concerted efforts to create their niche by utilising legislative and regulatory decree. There is some legislation in Australia which, in addition to regulating zoo activities, functions to define, formalise and *legitimise* zoo policy, particularly with regards to a conservation role. With these mechanisms in place some zoo professionals may find it easier to justify a role for their institutions. John Kelley (1989:145), Director of ZPB of NSW, notes that "it is not often that governments are sufficiently enlightened to enshrine these [conservation] ideals in legislation". Kelley's congratulatory tone intimates his belief that zoo conservation policy can be assured success in part by being legislated for. Official legislative sanctions, however, do not necessarily ensure actualised conservation policies, nor do they say much about what *kind* of conservation will be implemented.

Table 19 lists several zoo-specific pieces of legislation. The Perth Zoo, ZPB of NSW, and the ZBV are established as statutory authorities by their respective Acts. In the case of New South Wales and Victoria, those Acts have been amended to specify a conservation function for the zoos. While the Victorian Act does not specifically define a 'zoological park', it does specify for what purposes the Board shall maintain one. The New South Wales Act both widens the definition of zoos to include conservation and specifies purposes similar to those set out in the Victorian legislation. The emphasis in both Acts is on conducting scientific research, conserving and managing wildlife and educating the public. While Currumbin Sanctuary has been legislated for, the Act refers primarily to the financial management of this 'commercial' institution by the National Trust of Queensland. New Zealand's Zoological Gardens Regulations Act 1977 establishes regulations for keeping animals in captivity and specifies a 'zoo' to be 'a place where live animals are kept for the purposes of public exhibition or entertainment'. There is no specific reference to conservation.

### **7.5 DISCUSSION**

Australian zoos are embedded in the federalist system of Australian politics. This necessarily imposes certain conditions and circumstances upon their capacity to conceive of and actualise conservation policies. Fragmented government and zoo structures alike will obstruct the formation of cohesive endangered species policies. The emphasis on States' rights and the ensuing autonomy of state wildlife agencies ensures the complexity of zoo-government relations as the number of players defining (or attempting to) the boundaries of zoos' conservation capacities increases.

The effects of these composite interactions are not limited merely to elevating the number of actors that zoos must consider when implementing conservation roles. Variances in formal and informal policies towards zoos will affect the zoo community's ability to create more uniform



**TABLE 19: Legislation establishing Australian zoos**

**Zoological Gardens Act 1972 (WA)**

- provides for a 'Board to manage and control the Zoological and Acclimatisation Gardens at South Perth ...'

**Currumbin Bird Sanctuary Act 1976 (QLD)**

- to provide with respect to the control and conduct of the Currumbin Bird Sanctuary by the National Trust of Queensland

**Zoological Parks and Gardens Act 1967 (VIC)**

- establishes a zoological board as a corporate body responsible for the administration and control of zoological parks.
- S 13 General powers of the Board ... the Board shall at all times maintain the zoological parks for:
  - a) the exhibition of zoological specimens to the public;
  - b) the scientific study of zoological specimens;
  - c) the instruction and entertainment of the public;
  - d) the protection, preservation, management, and care of wildlife; and
  - e) the protection or preservation of wildlife habitat including native plants and trees

**Zoological Parks Board Act 1973 (NSW)**

- 1992 Amendment Act widens the definition of 'zoological park' to read 'a zoological garden, aquarium or similar institution in which animals are kept or displayed for conservation, scientific, educational, cultural, or recreational purposes'.
- S15.1 - The Board may establish, maintain and control zoological parks for the following purposes:
  - a) carrying out research and breeding programs for the preservation of endangered species;
  - b) carrying out research programs for the conservation and management of other species;
  - c) conducting public education and awareness programs about species conservation and management;
  - d) displaying animals for educational, cultural and recreational purposes.

and coordinated conservation policies. While individual zoos may participate separately in isolated incidences of joint breeding or educationally-based programs with various government (and non-government) agencies, the legitimacy of claims that they contribute to large-scale conservation efforts is fundamentally hinged upon their capacity to act as a unified community. The priority placed on regionalising - even globalising - their animal collection plans was discussed in Chapter Six. These goals, however, can be confounded by senior zoo professionals who pursue priorities specific to their own organisations, rather than those laid out in regional plans. Additionally, the unique nature of each Australasian zoo's relationships with their respective government wildlife agency colleagues may foster an air of competitiveness in the zoo community, as some zoos will be able to secure for themselves more of the highly desirable, but limited, inter-agency project work available.

The overall picture, however, cannot be entirely captured by citing policy variations. For example, some degree of uniformity in government approaches to zoos can be found. The Commonwealth government's powers enable it to impose regulations upon *all* zoos. The Wildlife Protection (Regulation of Exports and Imports) Act 1982 significantly restricts the entire zoo community's capacity to transfer animals freely among institutions. Alternatively, the predominance of species-based approaches and under-funding of alternatives may ensure that zoos' ex-situ facilities will always be needed to some degree. While the conservation role of some zoos is sanctioned by particular legislation and strategies, the next section will examine whether the 'official' status of some these institutions may actually condemn them to conservative and commercial practices, reducing their 'real' capacity to support and implement conservation projects.

## **7.6 ADDRESSING COMPLEX TASKS WITHIN A RIGID STRUCTURE**

The Australasian zoos' ambition to implement a conservation role presents an enormously complex and challenging task. The demands that the pursuit of this role places on the organisations are considerable. Managing wild animals in captivity for exhibit purposes, conducting inter-organisational endangered species breeding schemes, formulating and implementing education and research each require significant resources and a high degree of flexibility. These requirements become even more pronounced as zoos look to regionalise their animal collection plans and endeavour to increase both their research profile and participation in the endangered species recovery plans. Both the task and contextual environments of the zoos offer an elaborate array of issues that influence their capacity to realise their goals.

### **7.6.1 Zoo Structures**

While I have ascribed zoos with a bureaucratic organisational structure, I acknowledge Morgan's (1986) point that assigning a typology to organisations can be difficult insofar as they are not always easily distinguished by discrete clusters of attributes. Rather, organisational characteristics are often distributed in a more continuous way where different forms can blend together to form an organisation with hybrid features. There is considerable variation in the use of the term bureaucracy and the manner and degree to which organisations (in this case zoos)

exhibit bureaucratic features. Nonetheless, bureaucratic means of organising are ingrained in Western society. Such traditional methods of administering are manifest in zoos and warrant discussion.

Bureaucratic organisations demonstrate a high degree of specialisation, display a pyramidal structure of authority and maintain a detached system of rules which reinforce the authority and non-discretionary components of administration (Blau & Meyer 1987). According to this interpretation, organisations will often have three main levels: the technical or operational level, the administrative/managerial system, and the third or institutional level (Parsons 1978). These three levels constitute the chain of command in zoos. In most zoos, the operational level would comprise the animal keeping and horticulture or grounds staff, education officers and clerical staff who provide ancillary services throughout the zoo. While senior and middle managers may be found in animal management, education or horticulture divisions, they are primarily characterised by their participation in controlling the flow of information and primary decision-making processes throughout the zoo and in their respective divisions. The managerial system in most organisations largely 'controls' the operations of the technical or operational system (Parsons 1978). In the larger zoos significant numbers of employees are supervised through a system of managers. I found the degree to which management is divided into senior and middle management staff is a function of the zoo's size: the larger the zoo, the further the delineation of management functions. While these type of arrangements may be more practical - they reduce the number of people which senior managers must deal with - they do dilute the concerns of operational staff by increasing the number of channels they must go through in order to communicate with the higher levels of the organisation. Consequently, the technical expertise required of people in the operational levels does not receive the primacy in decision-making that it sometimes deserves.

#### *i. The Second Organisational Level*

There is a readily discernible trend towards top-heavy organisations in the zoo community. The larger zoological institutions in Australasia, such as the ZBV of NSW and the ZBV show a significant emphasis on managerial positions. At the ZBV of NSW, there are seven executive managers who tend to meet on a weekly basis. In addition to these positions, there are thirty-three senior staff acting in a managerial capacity. Middle management consists of supervisors of various divisions who meet once a month to discuss coordination among sections, current projects, and future developments. While such a structure may suggest an atmosphere of efficiency and control, the reality that I experienced when studying this particular organisation was quite different. Autocratic leadership in senior management levels at ZBV of NSW over the last several years exaggerates the structural emphasis on managerial authority, resulting in sub-standard levels of both inter and intra-organisational communication and poor staff morale. The largest of the Australian zoos, the ZPB of NSW typifies concerns raised by Trist (1977: 166) in his discussion on problems associated with bureaucratic structures and philosophies:

The very success of the technocratic bureaucracy ... has led to dysfunctional effects. For these immense organisations go it alone without regard to what others are doing, while interdependencies ... are increasing ... Concentrated largely on their own short-term specific objectives, they have given only marginal attention to the longer-term, more general effects of their actions on wider systems. These effects have not been supposed to be their business. As a result, unintended consequences pile up ...

My interviews and observations revealed that the ZPB of NSW, has a reputation for opposing the efforts made by the rest of the Australasian zoo community to establish cohesive conservation policies. Such obstructive stances are in direct contravention to zoo community claims that zoos' collective power can deliver demonstrable benefits for endangered species conservation.

The ZBV and its three properties face similar problems associated with their organisational configuration and centralisation of power. Out of a total of 255 permanent employees, eleven percent are managerial positions: six executive managers/directors and twenty-two middle managers. In my opinion the leadership style I observed during the early and middle phases of my research had been considerably more democratic than that of Taronga. However, decision-making remains largely in the realm of senior managers. At the time of writing this thesis, however, senior management was contemplating even further centralisation of its administrative structure with a view to gaining tighter and more authoritative control over each of the three properties (Anonymous 1996: pers comm). Not surprisingly, concerns have been voiced by the lower operational components of the ZBV, particularly the animal keeping divisions, about how their views are not taken seriously enough by some of the more senior staff members. These perceptions are discussed more fully in Chapter Nine and in Appendix 7.

#### *ii. The Third Organisational Level*

Chapter Five illustrated how all the zoos in this study exhibit what Parson (1978) calls a third level of organisation; an intermediary between the managerial system and higher order community interests, which on some level it is supposed to serve. Table 20 lists the composition of these boards, their appointment details, and how often they meet. In Perth, New South Wales, Victoria, the Northern Territory and New Zealand, the third tier brings zoos' managerial components into a structure of a public authority. At this level the Board's relationship with the higher authority is usually administrative and/or regulatory. The Adelaide Zoo, owned and managed by the Royal Zoological Society of South Australia, is overseen by a Board; so too is the Currumbin Sanctuary which is managed by the National Trust of Queensland. Their Boards function in ways similar to fiduciary boards for private non-profit organisations or corporations and were interstitial between managerial and the more diffuse basis of public interest (Parson 1978).

Zoo boards can be important determinants of zoo policy. Mintzberg (1983) identifies two broad typologies of duties performed by boards of directors. Control-oriented activities comprise selecting a CEO, providing assistance in times of crisis and/or change, and reviewing senior management decisions. Service duties include coopting external influences, establishing contacts, raising funds, enhancing an organisation's reputation and giving advice. The way in which these functions are realised will be influenced by members' ideological orientations and perceptions of their responsibilities. Appointment processes and conditions will also effect decision-making processes, as members are often appointed for particular reasons.

**TABLE 20: Australasian zoos and their governing Boards of Directors.**

<b>Zoo</b>	<b>Board Traits</b>
<b>Perth Zoo</b>	<ul style="list-style-type: none"> <li>• Zoo Board answers to Environment Minister</li> <li>• Seven members are appointed for up to three year terms</li> <li>• Zoo Board meets once a month, or more often in response to specific needs</li> </ul>
<b>Melbourne Zoo/ Healesville Sanctuary/ Werribee Zoo</b> (Zoological Board of Victoria)	<ul style="list-style-type: none"> <li>• Zoo Board answers to Environment Minister</li> <li>• A chair and deputy chair are appointed with 14 members in total</li> <li>• 1 zoo staff, 2 city councillors, 2 Dept. of Conservation &amp; Natural Resources staff, and several academics from Victorian universities are represented</li> <li>• Associates advise the Board on scientific, business &amp; community matters</li> </ul> <p><i>Board composition: 6 business representatives (including chairperson), 2 academics (veterinary and medical sciences), 2 state government officials, 1 city council member, 1 representative from State Museum</i></p>
<b>Taronga Zoo/Western Plains Zoo</b> (Zoological Parks Board of New South Wales)	<ul style="list-style-type: none"> <li>• Zoo Board answers to Environment Minister</li> <li>• There are 13 members, 12 of which appointed by the Governor, on the nomination of the minister, one other member must be in a public service department administered by the Minister</li> <li>• The Board meets 11 times per year</li> <li>• The Board has finance, marketing, zoological, &amp; ethics committees</li> </ul> <p><i>Board composition: 2 Zoo Friends members, 1 veterinary surgeon, 3 local government representatives, 1 state government wildlife agency representative, 3 members of business community, 1 person representing animal welfare interests</i></p>
<b>Adelaide Zoo</b> (Royal Zoological Society of SA)  <b>Territory Wildlife Park</b>	<ul style="list-style-type: none"> <li>• Zoo Board members are elected</li> <li>• Board comprises the president, vice president, 3 elected members, 1 elected staff member, and 3 government-appointed members</li> <li>• The Board meets 11 times per year</li> <li>• The Park answers to Head of Wildlife Division, Conservation Commission of the Northern Territory which is overseen by a Commission Council</li> </ul>
<b>Currumbin Sanctuary</b> (National Trust of QLD)	<ul style="list-style-type: none"> <li>• The Sanctuary answers to the General Manager of the National Trust and the Executive Council of the National Trust Board</li> <li>• Governor entitled to appoint 2 representatives to advise or assist the National Trust with control/conduct of Sanctuary</li> </ul>
<b>Auckland Zoo</b> (Zoo Enterprise Board)	<ul style="list-style-type: none"> <li>• The Zoo Board is delegated authority by the Auckland City Council</li> <li>• Appointments are made on a 3 year basis</li> </ul> <p><i>Board composition: 5 city councillors, 1 University representative, 1 staff member from the Department of Conservation, and one lay person</i></p>

When deciding what is in the public's (and animals') best interests, the 'public' nature of zoos' activities deems that zoo boards will have to employ certain value judgements. They will not do so, however, without having to cope with certain external conditions which facilitate the implementation of certain values. Table 21 contains four distinct environmental contingencies that Dornstein (1988) believes pose different problems of control for boards of directors.

Zoo situations are not compartmentalised as readily as Dorstein's typology might imply. In fact, *all* these dynamics operate (to a greater or lesser extent) in the study zoos. Zoo boards and similar governing bodies strive to achieve conservation objectives, but do so in the context of concern for economic and commercial proficiencies and employing the symbolic power of the zoo as a means for attaining diverse political goals. Hence, board agendas are swayed towards ensuring commercial success and economic efficiency, achieving sufficient consumer services, and addressing how to achieve political goals while maintaining a cost-effective organisation. Politically-oriented goals are especially evident in the statutory zoos where a certain percentage of board members are ministerial appointees. For organisations employing a rhetoric that resonates primarily with concerns for nature, there seem to be disparities in the time devoted to such issues in zoos. Business values and concerns are primary.

### *iii. Decision-Making Structures and Tools*

Decision-making in most of the zoos is predominantly centralised. However, several zoos appear to work harder at invoking the participation of their employees. While there was no direct correlation with size, the smaller zoos such as Healesville Sanctuary, Werribee Zoo, and the Territory Wildlife Park did appear to have better overall intra-organisational communication than did larger institutions such as Taronga, Perth or Melbourne Zoos. This divergence may have also been a function of particular individuals in leadership positions and the ability of smaller organisations to sustain higher levels of interaction amongst all their employees.

Another feature of organisational form indicated by the existence of written rules, procedures, instructions and plans (Lammers & Hickson 1979; Hellreigel & Slocum 1976), that is, the level of formalisation, was found to be generally quite high. There is a prolific number of mission statements, procedural guides and manuals, safety regulations, strategies, reports and plans, particularly for the statutory zoos in Victoria, Western Australia, New South Wales, and the Auckland Zoo in New Zealand. This profusion of discourse, while it can function to affirm zoos' conservation role, also echoes of expediency and mere public relations rhetoric.

### *iv. A Mandate for Professional Proficiency*

The Australasian (and international) zoo community is eager to increase the level of professionalism in its industry. There is an increasing emphasis by the zoo community on technical competence using standards of individual skill and performance (Hellreigel & Slocum 1976). The prevalence of animal keeping staff with undergraduate and, in some cases, post-graduate degrees, has given rise to the requirements for these positions being elevated. Initiatives are now in place to establish a formal course in zoo keeping at a national level

**TABLE 21: Environmental settings influencing Board agendas (Dornstein 1988)**

Conditions	Types of Control Problems
<ul style="list-style-type: none"> <li>• a clear political preference for economic efficiency and for a commercial orientation of the enterprise</li> <li>• same conditions as above, but a monopolistic or quasi-monopolistic situation prevails</li> <li>• economic efficiency a central goal, in conjunction with a public service aim</li> <li>• a definite preference for using the public enterprise to serve a variety of political goals</li> </ul>	<ul style="list-style-type: none"> <li>• how to ensure commercial success</li> <li>• how to guarantee effective uses of organisational resources (or slack) by exploiting that environment</li> <li>• how to provide adequate levels of customer service</li> <li>• how to guarantee that goals are achieved, while still providing for a reasonable level of economic efficiency</li> </ul>

through the Technical and Further Education system and the Australian zoos. The scheme is being developed in response to a perceived need for "standards to be developed which genuinely reflect the skill level necessary to fit the requirements at the various structural levels within zoo keeping" (Rodger 1993: 149). The emphasis on professionalism is also evident in the trend towards recruiting executives from the business sector filling senior management positions in zoos. As we will see later, this is having significant impact on zoo policy.

#### *v. Divisions of Labour*

On another matter, zoos have been interpreted as "... an urban phenomenon in which items from disparate parts of the world are brought together in an attempt to give a representation of the natural world" (Mullan & Marvin 1987: 68). Despite holistic, ecological aspirations of contemporary zoo exhibit philosophies, zoos' organisational structures still mirror the rigid taxonomic groupings of traditional animal collection axioms. The highly ordered and rational functional division of labour and specialisation that are primary characteristics of bureaucratic organisations (Hellreigel & Slocum 1976; Lammers & Hickson 1979; Clark & Ackoff 1959) are readily apparent in zoos. There are several departments and sub-units whose staff are meant to perform specified and exclusive activities that are deemed necessary for efficient organisational functioning. Additionally, each department has its own hierarchical arrangements whereby a 'top down' chain of command is used to impose a system of mechanistic goals and objectives on the organisation.

The product form of organisation as described by Hellreigel and Slocum (1976) also applies to zoos. This framework is characterised by providing multiple products or services around which organisations group their activities in order to create outputs. Most zoos are managed and function as members of the service industry, whereby animals are the primary 'product' displayed as a service to a fee-paying public. While different departments have varied functions, ultimately these units must support zoos' commercial imperative. The effects such a mandate have on zoo conservation objectives will be discussed in greater detail in the next chapter. The issue in question here is how a functional division of labour creates particular cultural and logistical obstacles for zoo communities wishing to fulfil newly-fashioned conservation aims. Zoo professionals are endeavouring to implement change in a complex and rapidly changing environment, but are doing so, in most cases, under the constraints of rigid and ill-adapted organisational structures.

As I have shown in Chapter Five, the organisational structure of zoos comprises several departments such as animal management, education, horticulture and/or grounds and administration, each with its own hierarchical arrangements that utilise 'top-down' chains of command. Each of these departments has a manager whose responsibility it is to ensure that the specific functions of the section are carried out and support the primary goals of the zoo (most modern zoos assert that their main aim is conservation). Depending on its size, some zoos will further divide these departments into more specialised sections with middle managers or supervisors with varying spans of control. For example, in the larger institutions, the



marketing function is the responsibility of a whole department with sub-sections that administer public relations, media and sponsorship matters. Smaller zoos may incorporate marketing into administrative departments or visitor services. The direct care of zoo animals often constitutes a separate department with several sub-departments. Again, in the larger zoos these departments will have several other sections often consisting of veterinary services and animal management activities such as curatorial operations. Most zoos' animal management staff are assigned to sections which correspond to taxonomically-related species (primate, carnivore and ungulate sections). Keeping staff then develop highly specialised husbandry skills that are necessary for caring for those species within their sections. In some institutions, there are staff who remain in a particular section, other zoos encourage the rotation of staff into different sections.

It is valuable and necessary to differentiate work in organisations and have positions of authority to maintain some degree of consistency and control. Yet zoos' transformation into progressive conservation-based institutions is constrained by the afflictions of functional specialisation as listed by Morgan (1986). Organisational change is confounded by:

- poor interdepartmental communication;
- compartmentalised - rather than holistic and comprehensive - understandings among staff about the functioning of their organisation;
- different departments pursuing opposing goals;
- narrowly and rigidly-defined jobs which discourage staff initiative and flexibility;
- competition among and within departments for organisational resources and recognition for achieving organisational and/or departmental goals.

These dynamics serve to fragment zoo policy and alienate employees in different departments. The organisational structure of the zoos and the resulting specialisation of functions of the animal management and other departments, ensures particular cultural groupings or subcultures within and across the zoos. Staff frequently refer to themselves according to their respective divisions or subsections and socialise accordingly. These subcultures may also coincide with particular views about suitable conservation roles and practices for zoos. While zoo subcultures are not inherently problematic, in the context of rigid organisational structures and strict hierarchies of authority, they can contribute to inferior organisation-wide communication and dishearted morale. Many zoo personnel are worried about the effects bureaucratised structures are having on their organisations. There is evidence of poor information transfer between different departments (such as animal management and administrative divisions) and different organisational levels (such as management and operational staff) (Mazur 1991). These rigid organisational arrangements also promote the use of corporate management systems which endorse a business orientation as an all-encompassing ideology (Mazur & Clark In Press, In Review).

Higher incidences of this type of dissent between groups in zoos occurred where: organisation-wide communication was not actively encouraged or nurtured; leadership was characterised by

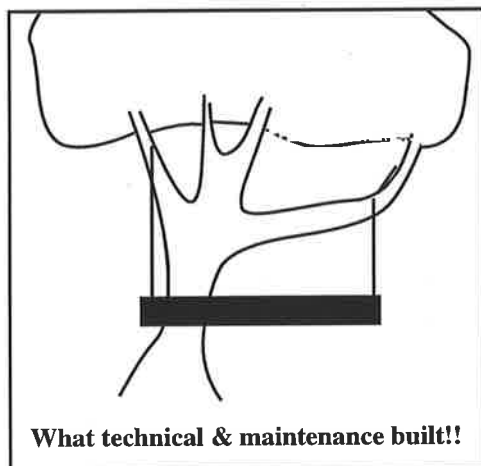
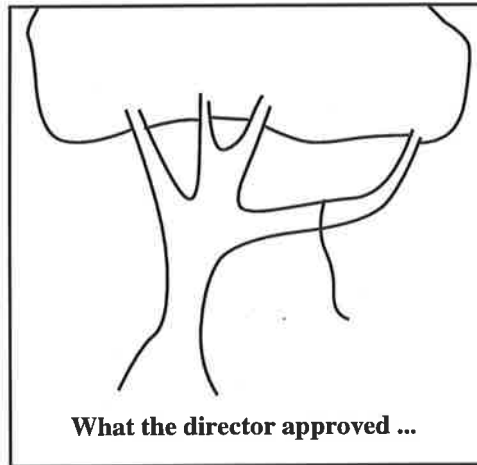
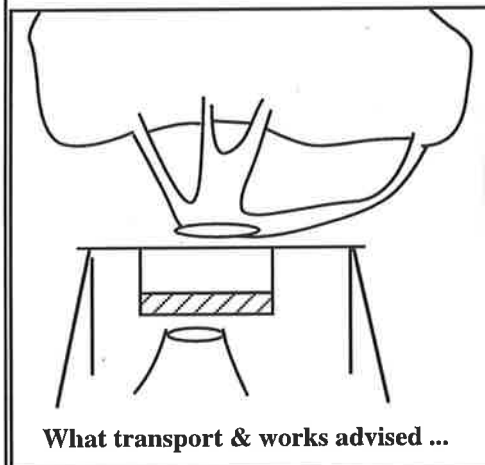
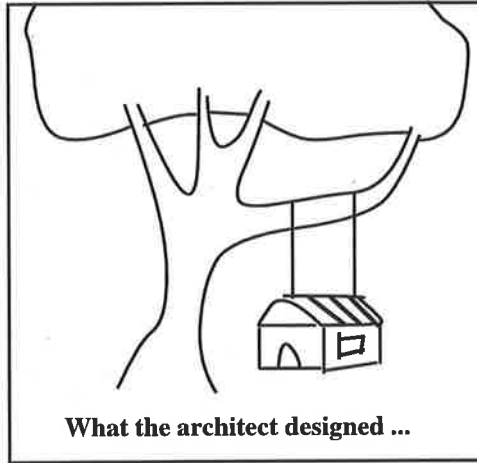
dominance; and the zoo was older and/or larger in size. In Chapter Nine we will see further evidence of how these rigid divisions of organisational tasks contribute to a wide incidence of an 'us and them' mentality. These divisions are part of an ideological tug-of-war in most of the zoos studied between the business-oriented concerns of senior management and animal/education-based concerns of operational staff, and has led to fairly widespread staff discontent (Mazur 1991; Sabag-Montefiore 1993). In nearly every zoo studied, I spoke to many animal management and education staff who felt the manner and the great degree to which marketing and/or administrative imperatives influenced zoo policy was inappropriate. Conversely, some marketing and administration managers believe that their colleagues are informed merely by over-emotive concerns for animals, not by broader, 'more relevant' business issues. These perspectives were particularly evident at Taronga, Melbourne and Perth Zoos and Currumbin Sanctuary.

Despite the high incidence of organisational dysfunction in zoos, many zoo professionals display considerable humour and optimism in the face of adversity. The cartoon displayed in Figure 24 was given to me by a zoo employee who believed it closely represents how things tend to happen in zoos. In addition to such whimsical outlooks, suggestions do exist for constructively addressing zoo problems. Some staff promote disbanding traditional divisions between zoo departments and fully integrating operations (Arnott & Dickerson 1995; Conners 1993; Gray 1994; Hunter 1993; La Rue 1992; Pullyblank 1996). I found (Mazur 1991) that, at an Adelaide Zoo staff workshop, participants called for trust, consultation and participatory processes between operational staff and management. Participants also believed in emphasising congenial and communicative relations among staff, in addition to developing needed resources. The implementation of the ASMP system outlined in Chapter Six also offers some promise for better inter and intra-organisational communications. The fundamentally integrative character both of its goals and of the means for their implementation represents a challenge to the zoos' rigidly bureaucratic structures and philosophies. Regionalising the animal collections of Australasian zoos provides a mandate for excellent intra and inter-organisational communication and a high degree of flexibility.

## **7.7 CONCLUSION**

This chapter has reviewed a host of institutional and regulatory factors that restrict zoo professionals' capacity for building a zoo profile that includes ecological ideals. Contemporary species management philosophies are predicated upon the zoo community's ability to act as a united force. Such an aggregate calls for an unprecedented level of coordination and cooperation within and outside the zoo community. However, Australasian zoos must contend with numerous government strategies, policies and legislative mechanisms that basically create a fragmented wildlife conservation network. Unfortunately, zoos' organisational environments were designed to reflect a highly ordered and rational world and are often no less compartmentalised or inflexible. The pliant, yielding and highly responsive settings required for redressing modern environmental dilemmas are left wanting and solutions often result from exceptional efforts of hard-working, creative individuals.

**FIGURE 24: The consequences of functional specialisation in zoos (Anonymous)**



What kinds of management systems accompany such restrictive arrangements? The next chapter will consider certain management philosophies currently being utilised in zoos and what ramifications those frameworks have for the style and execution of zoo conservation policies and programs.

## CHAPTER EIGHT: CORPORATISING AND COMMERCIALISING ZOOS

*It seems that there is one common, continuing, and unresolved factor which inhibits our ability to translate the dream of the new zoo into reality - it is called money ... why then, are so many governments around the nation and around the world reducing their traditional funding support to zoos, and demanding greater accountability from them? ... whatever the reasons, the truth is we must now urgently address the issues: more revenue, more security of revenue streams over time, new methods of attracting new revenues, and a new attitude to promoting our value to those with money and power (McAdam 1996: 135).*

*It is highly questionable whether the zoo should be out in the high-pressure entertainment market place touting for customers who otherwise would not be attracted by its traditional offerings - the zoo is and should remain a haven of education about and respect for animals, not a Disneyland or pinball arcade (West Australian Editorial 1994: 12)*

### **8.1 CORPORATE MANAGERIALISM**

The previous chapter illustrates how bureaucratic forms are highly relevant to both the design and implementation of zoo conservation roles. Structure influences means and ends. Modern applications of classical management theory (bureaucratic governance) suggest that organisations can or should be rational systems that operate as efficiently as possible. Unfortunately, principles of rational efficiency are not necessarily achievable, nor will they always be compatible with the complexities of people or unpredictable ecological systems that zoos wish to conserve. This chapter will explore if the recent influence of corporate management frameworks in public and private zoos imposes additional ideological and practical constraints on zoos' capacity to fulfil ecologically-based conservation aims.

Paehlke & Torgerson (1990) explain how rationality in bureaucratic administration functions as a tool for the control of knowledge. 'Experts' are called on to manage work in a detached and objective fashion, their ability to gauge the course of events predicated upon restraining the chaotic nature of human affairs through the enforcement of order. Technocratic forms of administration rely on a controlling group or decision-maker providing the ultimate source of direction, "a unified will privileged by superior knowledge" (Paehlke & Torgerson 1990: 9). This model of administration erroneously assumes that any problem or human behaviour can be readily calculated and managed accordingly.

A paradigm of technical and instrumental rationality informs the use of a corporate management framework. Chapter One explained that this model advocates administering public bureaucracies in a manner similar to private corporations, whereby a dominant paradigm of economic rationalism promotes strategies for restructuring and 'managing with less'. In an age of rapidly changing political and economic environments and complex problems, it would appear that managerialism's popularity lies in its ability to masquerade as a "vigorous and comprehensive methodology for minimising uncertainty" (Considine 1988: 5). Managerialism is a political fashion of the 1980s and 1990s which influences zoos and numerous other institutions. As suggested in Chapter Three, the corporatisation of zoo practices may represent zoos' most current evolutionary stage.

Corporate management culture and philosophy promotes organisational improvement by assessing performance according to measurable or quantifiable goals or outputs which are defined primarily in terms of economic efficiency (Sinclair 1989; Painter 1988; Considine 1988). These appraisals are fundamentally the domain of central and higher levels of the organisational hierarchy in which are controlled the processes of establishing corporate mission statements and goals. Broad aims are then refined down to smaller and more obtainable action plans, and managers are responsible for ensuring these lower level activities advance broader objectives.

Irrespective of the illusion of accuracy and reliability which corporatised management models may create, their capacity to provide equitable or holistic policies remains questionable. Wanna (1994) likens managerialism to a "discourse of the powerful" where financial and organisational-wide controls and performance monitoring empower the political managerial elite. Greater demands for reporting and planning, narrow definitions of performance, and greater pressures to standardise outputs - trademarks of corporate frameworks - restrict policy. Hence, the managerial system is predominantly concerned with 'markets' for disposal of the 'product' and for 'procurement' of the resources (Parsons 1978).

## **8.2 CORPORATISING ZOOS**

Corporate management frameworks are used in both the publicly-administered zoos (in New Zealand, Western Australia, New South Wales, Victoria and the Northern Territory) and in the 'private' zoos (in South Australia and Queensland), albeit to a lesser degree. While I found the influence of the corporate model in all the zoos I studied, the statutory zoos in Western Australia, New South Wales and Victoria displayed the greatest degree of corporatised practices. These organisations must answer directly to government mandates and policy prescriptions. Hence, they are particularly vulnerable to the increasing institutionalisation of managerialism in the public sector. The Auckland Zoo in New Zealand, under the governance of the Auckland City Council, is also strongly influenced by a corporate ethic.

The managerial values of private industry are actualised in zoos through an array of practices and techniques. For example, the senior management strata in several zoos have grown in recent years and positions are filled with professional bureaucrats rather than with wildlife experts. The directors at Currumbin and Healesville Sanctuaries, Melbourne Zoo and the Zoo Board of Victoria, Perth Zoo and Taronga Zoo have worked in business and at senior levels of the public service. Members of Zoo Boards are well represented by business and industry. Zoo organisational performance is linked to financial budgeting measures, translating notions of accountability into cost-answerability and economic efficiency rather than political responsibility. Furthermore, zoo managers are embracing private sector 'principles of excellence' by relying heavily upon marketing devices to stay in touch with customer trends and preferences. There is thus extensive use of program budgets, performance standards and reward systems in the zoos. The effectiveness of these tools for improving zoo (conservation)

performance has yet to be demonstrated. Instead, such tools may do more to legitimise managerialist frameworks than they do to improve zoo (conservation) performance.

These corporate mandates have important ramifications for all zoo policy. The definition and fulfilment of conservation objectives are recast in terms of economically-defined imperatives, objectives, and parameters. Moreover, such a discourse is typically sanctioned and controlled by senior managers in zoos. Chris Larcombe (1995: 122, emphasis added), Chief Executive Officer of the ZBV and Director of Melbourne Zoo, states:

We need to borrow [the] concept of *sustainable development* in order to come to terms with the *increasing financial pressures* on the operations of our properties. What we are talking about here is *a sustainable base of economic support* and leveraging of resources in order to continue to develop our properties in an increasingly complex environment ... But we will only be able to continue to deliver this [conservation] potential if we have organisations of sustainable *financial viability*.

There is little doubt that modern zoos are faced with the formidable challenge of maintaining some financial viability in a political and economic climate that threatens the integrity of all cultural, educational and recreational institutions. This precarious situation is acknowledged widely throughout the zoo community as troublesome. The full extent of the situation, however, is understood by zoo professionals in a variety of ways. Chapter Seven alluded to significant levels of frustration among certain staff who, while appreciating that certain economic imperatives which must be addressed, are dissatisfied with what they perceive to be overly bureaucratised and commercialised zoo policies. These sentiments (which will be explored further in the next chapter) intimate that management perspectives and imperatives tend to dominate policy prescriptions. A managerialist tone to zoo principles and activities was readily apparent to me during the time I spent visiting the study zoos, and appears to restrict zoo conservation potential and contribute to some staff morale problems.

It is important to acknowledge that senior managers have the unenviable task of coping with certain political and economic tasks that staff working in the lower levels of an organisation deal with directly. Technical staff (eg. animal keepers, horticulture staff, zoo educators), for the most part, are limited to working within the immediate internal organisational environment. Senior managers in zoos must often procure needed resources, mediate between the organisation and its customers and act in a leadership capacity (Parsons 1978). Caught between the mandates of their controlling boards of directors or government officials and the zoo staff they oversee, senior managers are ultimately answerable for their organisation's performance. There is real and increasing official pressure on public zoos, in particular, to justify their existence and the scope of their operations according to private sector principles. Under the guise of accountability, publicly-funded zoos in Australasia must regularly report back to their respective State governments about whether organisational goals have been reached. Plans and performance measures are used by zoo professionals to illustrate to themselves and their government masters how efficient and effective their organisations are. Zoo professionals must also account for the 'true' costs of their organisations by charging for

services of various departments, market rents, and lost opportunity costs to its user departments. There is some evidence that animal welfare and wildlife conservation imperatives are virtually subsumed by the mandate to 'manage' zoos in such a way that costs are minimised and revenues are maximised.

This increased concern with economic efficiencies is similar to the kind of reasoning that has infiltrated most environmental administration<sup>1</sup>. Like other agencies, zoos have been persuaded to rationalise their conservation activities according to cost-benefit analysis inherent in corporatised management frameworks. Cost-benefit analysis is a tool which decision-makers use to choose between alternative courses of action in deciding whether a project should proceed or not (Beder 1993). More specifically, the costs of proceeding are weighed against the benefits that would arise from doing so. For the sake of uniformity, these costs are expressed exclusively in monetary terms. Such approaches are not without their consequences for conservation. Evernden (1993:11) warns that:

The kind of evaluation permitted by our societal institutions is simply too narrow to accommodate the concerns of the environmentalist. Applying monetary value to nature is dangerous ... it distracts us from the fact that the values at issue are not economic in the first place ... that humans are the sole bearers and dispensers of value ... that one being's existence can be justified only by its utility to another.

The anthropocentric processes that confer economic and commercial value onto non-human nature or efforts to conserve it, give zoos' conservation role a particular character. Official pressures and budget constraints balance conservation against other demands. Hence, conservation values translate into activities - not that the zoo *must* do - but something the organisation must be able to *afford* to do.

### 8.3 MANAGEMENT TOOLS IN ZOOS

Zoo professionals' predilection for corporate imperatives are evident in the amount of time and resources devoted to such activities, and the means by which these corporate tools influence the construction of problems. Most of the study-zoos respond to their collective pressures by apportioning considerable time, effort and resources<sup>2</sup>, by formally clarifying their identity/direction and by attempting to set out clear and defined aims and objectives which, in some manner, are going to be attainable. An array of annual reports, mission statements and forward planning strategies are utilised to a greater or lesser degree by the zoos. Many zoos have developed quite distinctive corporate identities which are perceived by their creators to provide zoos with a readily-identified profile in the marketplace. These corporate exercises provide examples of how language, symbols, rituals and ceremonies are used to create meaning for many actions and events in organisations. The production of ideas in organisations is an

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<sup>1</sup> Eckersley (1993) offers an explanation of the consequences of imposing economic rationalism as a guiding principle for environmental policy and administration. In effect the increased use of bureaucratic streamlining, economic incentives, market-based instruments, tradeable permits and privatisation of environmental assets and wastes have seriously discriminated against the environment.

<sup>2</sup> Taronga Zoo's Master Plan was reported to have cost \$80,000 (Zoological Parks Board of NSW 1993). The Perth Zoo's strategic planning exercises were costed at \$67,000 and projected cost for a similar exercise in 1995 was \$88,000 (Perth Zoo 1994).



intensely political activity, used to defend the positions of power of some participants by vindicating and rationalising their decisions and actions and discrediting the motivation or information of opponents<sup>3</sup>. The use of many corporate tools legitimates and provides a supportive infrastructure for the business-oriented concerns and subsequent actions of management who are concerned with galvanising support for their zoos both inside and outside their immediate organisations (Pfeffer 1981).

Zoo mission statements, for example, affirm the goal of conservation, and their strategies further clarify aims and determine a course of action. Budgets also assist with zoo planning, and their inherently political allocation also makes them an effective means of control for senior management and governing boards (McLaren 1982). Zoo corporate identities distinguish zoos as a bona fide business entity. Annual reports provide an 'inside' (but partial) view of zoo practices. Zoo staff use these tools to demonstrate to themselves and the wider community that zoos are accountable, efficient and legitimate. This type of information, however, is not absolute, and can be manipulated in such a way that actual practices are always portrayed in a favourable light. Formal zoo policies and plans, however, do not always reflect actual routines.

### 8.3.1 Annual Reports and Mission Statements

The zoo community relies heavily on mission statements, a technique commonly employed in and borrowed from the private sector, to facilitate more long-term planning. The World Zoo Conservation Strategy (CBSG & IUDZG 1993: 74) advises that:

the development of a mission statement and master plan by the individual zoo, incorporating the principles laid down in the World Zoo Conservation Strategy, can step by step lead to a growing contribution in regard to these conservation objectives.

Creating statements involves taking systematic strategic directions in order to encourage all staff and clients to view their organisation in the context of its overall objectives (Emy & Hughes 1991). Many zoo professionals relying heavily upon mission statements to guide their organisations "in the *right* direction" (McDonough 1991: 362, emphasis added; Taylor 1991). They are used to clarify the role of the particular organisation and act as the basis for organisation-wide decision-making. For the zoos I studied, mission statements target animal collection additions and changes, operational facilities, visitor amenities, advertising campaign messages, recruiting and staffing, animal research and care, and internal policies and systems. Such statements of intent can also serve as a benchmark for evaluation, a means for comparing what the particular zoo is doing against what it claims to be doing. This technique is widely used throughout the Australasian and international zoo community to demonstrate to the general public and zoo employees an organisation's commitment to conservation.

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<sup>3</sup>The precarious financial position of the London Zoo and its proposed redevelopment provides an excellent example of how opposing factions inside the ZSL and the Zoo's management are struggling to arrive at an agreed upon strategy for action (see Coughlan 1994; Hamer 1991; Sabag-Montefiore 1993; Nature 1992; New Scientist 1991).

Morgan (1986) warns that organisations can become complacent once the mission statement - which often functions like a 'household god' - is placed in its shrine. The mission statements of the study zoos listed in Chapter One imply that zoos have and will continue to achieve their stated aims. What these proclamations do not clarify is what is meant by 'conservation.' In Chapter Four we have seen how there are serious questions concerning the suitability and effectiveness of captive breeding as a conservation methodology. Additionally, zoo education programs have not been demonstrated to be potent. Mission statements disguise program weaknesses and failures and cannot demonstrate zoos' conservation success stories. What zoos say they are doing by virtue of their conservation-laden mission statements belies the full reality of actual programs.

### **8.3.2 Master Plans**

Master plans in zoos usually provide general courses of action for the on-going development of physical infrastructure. The recent change in emphasis that favours conservation is evidenced by the fact that all the study-zoos are rethinking the applicability of both the conceptual and physical organisation of their respective properties. The Development Master Plans for Taronga Zoo and Western Plains Zoo address what is purported to be a lack of formal planning and spot developments. Attempting to make the most of a political and social climate that is favourable to conservation and environmental issues, future development aims to support the ultimate vision of what the Zoos should be: shifting from a focus on recreation to that of conservation and education.

Similarly, the Auckland Zoo Development Plan for 1991 lists directions and guidelines for the future physical growth and development of the Zoo. Noting that the last major period of change for the Zoo had been in the 1970s, the plan identifies the need for the Zoo to reaffirm its change in direction towards conservation and to realign development needs as such. The Adelaide Zoo Master Plan provides a strategy for physical redevelopment of the Zoo for a 20-year period in order to achieve the vision as set out in an earlier Corporate Plan. Adelaide Zoo's 1986 Corporate Plan established a new direction for the Zoo with an emphasis on its conservation, education and research roles (Wright 1994). The master plan study was commissioned by the Royal Zoological Society of South Australia in May, 1992 as earlier forward planning work on the Zoo did not include a component for long term physical redevelopment (Wright 1994). Perth Zoo's Master Plan of 1993 envisages totally redesigning the zoo along a theme of conservation. Incorporated into the Plan is a commitment to a holistic approach to total asset management and a review of current management practices. The Melbourne Zoo Master Plan, first proposed in 1987, sets objectives for future development of the Zoo into series of bio climatic habitat zones, embodying a notion of habitat recreation whereby animals are displayed in naturalistic exhibits demonstrating links between plant and animal species (Embury 1993). The Werribee Zoo redevelopment began in the early 1980s when it was decided that the array of different species on site needed to be thematically organised according to a safari-style experience. Subsequent plans in 1988 refined that idea into an African Wildlife Park & Rare Breeds Survival Centre plan. Gaye Hamilton (1994: 70),

Werribee's director, captures the spirit behind most zoo re-development efforts when she states that:

... critical to this process is a clear vision and understanding of the zoo, its aims and objectives and what is to be achieved in the "end product"... Werribee Zoo's challenge is to be a world class open range zoo, displaying species from the savanna habitats of Africa and Australia.

### **8.3.3 Business Strategies and Plans**

Zoos' use of strategies are consistent with Sackmann's (1991) study which shows how organisations use plans to provide blueprints for how a *business* is going to compete, and to prescribe goals and policies. Business strategies designate opportunities, threats and a distinctive 'product' market niche for the organisation. The business orientation of these plans necessarily imposes significant commercial values onto the whole organisation. Sackmann (1991) also notes that the mere existence of these documents does not necessitate visible changes, since it is necessary to have both the support of organisational members and appropriate structures and systems to implement those goals. Nevertheless, business strategies can have an important effect on zoo policy as they often represent the interests of powerful factions in the higher levels of zoo structures.

In 1990 the ZBV prepared a development plan articulating its mission statement. The Melbourne Zoo Strategic Plan includes forecast assumptions regarding income and expenses, financial position, animal collection, exhibition, conservation, research, species management and education. These matters are then tied back to the mission statement imperatives through the articulation of objectives and strategies for respective program areas. The Zoo thus positions itself as an organisation that is clear about where it is going, and one which has *achievable* goals.

Instructed by the Auckland City Council, the Auckland Zoo formulated a strategic implementation program which specifies the purpose and objectives of the Zoo, includes the City vision and mission, the mission of the Zoo, the Zoo's goals and performance measures, and an action plan. The document also addresses service delivery, financial performance and key indicators for the period 1992 - 1994 and provides forecasts for 1995. The strategic analysis identifies the Zoos' strengths, opportunities, weaknesses, opportunities and threats, and assesses its operating environment. Also highlighted are the contributions the Zoo makes for the Auckland City's 2020 Strategy, citing desired zoo outcomes, a three year plan for the Zoo and objectives, and a strategy for 1995/96.

The Strategy states that the Zoo's operating environment is primarily one of change. It is expected that there will be "greatly increased competition in the entertainment and recreation markets, increased expectations of service and value for money, increased questioning of the

relevance of zoos, decreasing government spending and increased costs<sup>4</sup> (1994:20). Another issue cited in the Strategy is developing an organisational culture that is more service-oriented and adapts readily to change, both of which are necessary for economic survival. The Zoo must:

develop an infrastructure and a mentality that is customer focused and adapts quickly to change, including the ability to respond quickly to revenue-generating opportunities ... it must provide experiences *every year* which are fresh, exciting, and attractive in the entertainment and recreation marketplace at a competitive price (Auckland Zoo 1994: 20, emphasis added)

The belief that zoos must constantly offer new attractions in order to entice visitors to its gates has not been proven. Moreover, this perspective actually locks an institution into a continual cycle of having to generate substantial revenues to pay for multi-million dollar exhibits.

In a similar fashion to Auckland Zoo, the Perth Zoo prepared a draft five year business plan and strategy for 1993 - 1998. The Plan lays out the costs of each of the Zoo's program areas (Corporate Services, Animal Collections, Education Program, Marketing Program, Park Facilities Program, and Byford Conservation Centre)<sup>5</sup>. The Plan notes the Zoo's mission statement and lists specific objectives for fulfilling those aims. The Master Plan is located in the context of the Strategy insofar as the physical development of the zoo has the principal objective of maximising zoo revenues. A business strategy is articulated, and critical success factors and key result objectives are identified which the management team will be responsible for implementing in their respective divisions. The Plan also contains a ten year milestone wish list, a stakeholder analysis which lists the degree of power and influence of those groups and 'what they want.' Incorporated into the Plan are an 'environmental scan' of the latest social, legal and political trends; a list of opportunities for and threats to the Zoo; a customer and competitor analysis; and the Zoo's competitive, financial, technical and human resource strengths and weaknesses.

The corporate and commercial imperatives of this document are readily apparent. The Plan does identify as a threat "too much preoccupation with planning and restructuring and too little action towards achieving the Zoo's objectives" as well as "too much paperwork arising from accountability requirements" (1993: 22). Additionally, "a greater focus on economic issues and less on conservation" was listed under *significant* threats (1993: 22). Yet, overall corporate and commercial imperatives dominate the Plan. Some of the Plan's 'Highest Priorities' are as follows:

- The Zoo **must** remain **high in public profile** and maintain a **favourable public image** and become **commercially oriented** in its Marketing and Public Relations;

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<sup>4</sup>This Strategy is slightly different from those of other zoos insofar as it distinguishes nature conservation, not as a marketable 'product', but as an 'outcome' of the range of different Zoo programs. The 'marketable' product is identified as 'an enjoyable, memorable, visitor experience'.

<sup>5</sup> Since the time this plan was prepared, the Zoo has been re-organised into different sections.

- The Zoo **must** become and remain **customer focused** and **assure customer satisfaction**;
- The Zoo **must** continue to **acquire sufficient resources (particularly financial resources)** to achieve the above and fulfil its mission;
- The Zoo **must** remain easily **accessible to its customers** in terms of location, entry points and hours of opening (Perth Zoo 1993: 7, emphasis added)

The need for such actions is portrayed as indisputable. The Strategy also identifies a significant lack of marketing resources and culture as needing attention, consistent with the view "that the Zoo, although it is a conservation organisation, is essentially in the *Recreation business*", and that by "... increasing commercialisation and privatisation ..." the Zoo will be able to gain "... access to both Government and private sector funding" (Perth Zoo 1993: 1, emphasis added). A stronger commercial orientation is clearly positioned in the Strategy as the remedy for the Zoo's ills.

By 1995 another Business Plan had been prepared by the new management regime at Perth Zoo for the period 1995 - 2000. The new plan reiterates the fundamental concerns of the previous plan and states that "whilst the zoo is a conservation institution, its main operations are essentially in the recreation business" (Perth Zoo Annual Report 1995: 29). Implementing the new Plan will supposedly:

... ensure the Zoo's long-term viability by becoming increasingly self-sufficient and independent of government funding, saving taxpayer's money, increasing the range and quality of services delivered to the community, whilst realising our conservation mission, fulfilling our community service obligations, and achieving our vision by implementing our Master Plan cost effectively (Perth Zoo Annual Report 1995: 20).

The ZPB of NSW's 5 year Marketing Plan (1992) was developed in response to a Business Plan Objective. Its aim is to have Taronga Zoo prominently placed as *the* Australian Wildlife Conservation Experience. The 'product' in this case is the Zoo positioned as "the leading zoological institution in the region both from a commercial and scientific perspective" (ZPB of NSW 1992: 4). A second aim is to progressively increase visitor numbers concomitant with providing a customer service level exceeding zoo visitors' expectations. The competitive, commercial overtones of this plan are similar to those of Perth Zoo.

#### **8.3.4 Product Formats and Performance Measures**

Corporate management frameworks often impose a 'product format' upon organisations which values 'outputs'. Essentially, the organisation's achievements are expressed as product-like entities, whereby all its activities are identified and segregated into separate program areas. Most of the zoos in the study designate program areas which are then managed as separate units and which - to varying degrees - are rationalised on the basis of their performances and operational costs. For example, the ZPB of NSW specifies its program areas (Life Sciences, Commercial and Visitor Services, Capital Development, Corporate Services, Conservation and Research, and Agency Support) lists the objectives for each of those areas, several performance measures, and forward planning for the following financial year.

The previous chapter discussed the fragmented policies which result from such compartmentalised planning. These separatist strategies set up competition between sections with different cultures and imperatives, making the task of managing several different 'businesses' under one roof rather daunting. Moreover, there is the danger that an overemphasis on outputs disregards the fact that some organisational values defy product structuring. Animal and conservation-related objectives are evaluated on terms equal to those of other departments by virtue of the quantitative economic measures imposed on the whole zoo. While he was referring to the use of such corporate tools in universities, Bessant's (1995) concerns are applicable to zoo situations. An emphasis on matching departmental or individual outputs to economic prescriptions excludes cultural, academic or conservation concerns. Moreover, power is conferred exclusively to senior managers who are able to target particular people and divisions in order to ascertain where profits and losses are occurring.

Despite the existence of substantive knowledge on weaknesses and inequities associated with this approach, the notion of improving and the means to illustrate performance have become prominent parts of zoo policy of late. A number of zoos have developed their own performance measures. The ZPB of NSW reported that it established a comprehensive mechanism for performance evaluation which includes:

- assessment of actual achievements against specific targets nominated in the Corporate Plan, Business Plan, Performance Agreements and Benchmarks;
- monitoring and analysis of corporate performance indicators in the management of program areas
- internal management reviews of capital development projects
- implementation of internal audit recommendations (Annual Report 1992-93: 12).

The Perth Zoo utilises indicators to assess the extent to which: the Zoo's wildlife conservation projects contribute to the overall conservation of those species; the Zoo helps to raise public awareness of conservation issues and stimulates behavioural changes; and the Zoo sustains adequate visitation numbers and levels of satisfaction. Indicators for effectiveness are categorised according to wildlife conservation, customer awareness of conservation, visitation numbers, and customer satisfaction. Efficiency indicators measure proportion of zoo income to government appropriation, expenditure per annum, income per admission, and yearly admission revenue levels. Wildlife conservation indicators are listed as:

- The *number of* species kept at the Zoo which are involved in conservation breeding programs nationally, internationally and for reintroduction to the wild;
- The *numbers of* viable offspring produced as a result of breeding programs for reintroduction;
- The *number of* endangered animals provided for release into the wild as part of collaborative conservation programs;
- The *number of* endangered species breeding management plans completed (Perth Zoo Annual Report 1995: 25, emphasis added).

These measurements indicate how zoo animals are being valued on the basis of their *quantifiable* contributions to breeding programs. Such instrumental ways of assessing the

worth of a program may go further to increase boards of directors' and senior managers' control over the organisation than to help deliver quality assurance.

The initiative to establish a benchmarking system for the Australasian zoos provides another example of a corporate management approach to problem-solving and raises the issue of whether such means are appropriate for achieving conservation aims. Modelled after Best Practice Programs in the manufacturing and agriculture industries, benchmarking systems are endorsed by industry leaders who perceive a need for widespread change in organisational cultures in order for Australasians to become export-oriented and achievers of best practice. The benchmarking process entails two or more institutions sharing information in order to compare the performance of a particular operation. The zoo version proposes utilising quantitative measures such as the number of visitors per employee per annum, the total annual operating cost of zoos divided by total specimens held, the number of specimens per zoo employee, percentage of collection on display. These items are noted in order to compare specific practices and determine which are 'best' and worthy of emulation.

This initiative captures both the spirit of the corporate mentality which seems to be flourishing in the zoos and the perception that zoos represent an 'industry' whose community should behave as such. Smith et al (1993: 16, 18) state:

Organisations operating in competitive industries such as mining, retail and manufacturing have long been searching for methods to improve performance and productivity. Zoos have also been striving to improve performance in a wide range of areas from species conservation to customer service and commercial viability. An important management tool used by competitive organisations is the measurement of performance aimed at achieving industry best practice on both a national and international level ... the process of benchmarking will help to crystallise standards of perfect performance (not merely current best practice, but moving beyond to the best possible level of practice) towards which an organisation can aim.

While sharing information is stressed by the benchmarking system, it is more likely to foster competitiveness - not cooperation - between institutions, because it assumes that "where an activity is carried out by two or more groups of people, it is normal that one group will achieve the task in a better fashion than others" (Bartos 1993:3). The chase to be the best "becomes the benchmark, but will be overtaken as others improve their operations" (Bartos 1993:3). Indeed, competitiveness is openly and uncritically embraced<sup>6</sup>. What is hardly clarified, however, is who decides what constitutes 'better', who it is supposedly 'better' for, and whether it is appropriate - or even possible - to measure all aspects of an organisation's performance on the basis of quantifiable indicators<sup>7</sup>.

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<sup>6</sup> Cox (1995: 21) warns that, overall, competition as an operating societal (or business) principal is harmful. She suggests that "civic virtues come from building on what we have in common rather than using our differences to create in-groups, outgroups and fear-driven competition".

<sup>7</sup> ZBV of NSW staff do recommend exercising caution when interpreting and comparing results between institutions, given the major variations that exist in the information supplied by each. The Board's suggestion for remedying this flaw of its benchmarking system is merely to solicit greater cooperation from zoos participating in the project. There seems to be little recognition of benchmarking's narrow conceptualisation of quality and the competitiveness it fosters.

### 8.3.5 Zoo Finance

The manner in which zoos support themselves is central to conservation policy. The financial pressures placed on municipal zoos in Australasia are real and threaten to distort the terms of zoos' conservation mission in a predominantly commercial light. Graham Mitchell (1994), previous Director of Melbourne Zoo, points out that a particular revenue mix is an important influence on the status and well-being of a zoo. He shares Griffen's (1993) concerns and believes that some institutions (including museums, zoos, libraries and universities) should not be expected to be entirely self-sufficient, nor have to rely too heavily upon commercial activities for their survival. While there is always room for improving operational efficiencies, the potential public benefits that zoo conservation and education programs provide make these institutions deserving of some governmental assistance. Ideally, the role of government includes providing the society it serves with a supportive infrastructure for cultural, educational and conservation institutions.

Government grants and subsidies, admissions receipts, trading enterprises and corporate and individual donations provide income for zoos. Table 22 lists varying percentages of total operating income that these categories comprise for the study zoos based on the particular year cited. The main source of income for the majority of the zoos is the revenue derived from visitor admission charges which are often used to cover an institution's operating costs. Consequently, considerable effort is spent attempting to maximise admissions by understanding the visitor 'marketplace', forecasting tourism trends and understanding patterns of visitation to alternative recreation destinations. Bozeman & Straussman (1983) point out that most public or private organisations will seek out stable growth, decision-making autonomy and control. The zoo community cannot avoid being concerned with maximising and stabilizing their revenues, but the extent to which these activities overshadow and shape conservation policy justifiably concerns many zoo professionals.

Government grants and subsidies are another critically important source of revenue used to cover capital costs primarily, and to a lesser degree general operating costs. Currumbin Sanctuary is an exception to this rule. This institution survives solely on the basis of revenues derived from admissions and trading, and has a strong commercial emphasis. Most of the zoos are closely tied to their respective governments by virtue of their receipt of government subsidies. The ZPB of NSW is a government trading enterprise classified as a semi-commercial business under Treasury guidelines. It receives a Public Good Subsidy to conduct community service obligations as required under the Zoological Parks Board Act 1973. Similarly, the ZBV is a statutory authority which receives support from the Victorian Government. Perth Zoo, another statutory body, relies most heavily upon its host government<sup>8</sup>. It is the recipient of a Consolidated Revenue Fund Appropriation. The Royal Zoological Society, while not a statutory body, does receive monies from the South

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<sup>8</sup> For the financial years 1992 - 4, the Zoo's government grant has constituted, on average, 62% of its total operating income.



**TABLE 22: Income distribution for Australasian zoos.**

Zoo	% of Total Operating Revenue			
	Admissions	Government grants/subsidies	Donations/Sponsorship	Trading
<b>Currumbin Sanctuary (1995)</b>	58	n/a	n/a	41
<b>ZBV (1994/95)</b>	42	27	9	16
<b>Perth Zoo (1995)</b>	28	60	4	4
<b>Auckland Zoo (1994)</b>	83	* 5	** 1	8
<b>ZPB of NSW (1994/95)</b>	38	29	3.2	15
<b>Adelaide Zoo (1994/95)</b>	47.5	37	2	9.2
<b>TWP</b>	n/a	n/a	n/a	n/a

\* *figure does not include municipal support for zoo expenditures*

\*\* *figure represents only Friends of Zoo assistance, corporate sponsorship figures not available*

Australian State Government, but perceives itself to be a 'private' zoo. In highlighting similarities between public and private organisations, Hall & Quinn (1983: 17) note that while some organisations may "cry freedom from government regulation", they are quite closely affiliated given that they "feed at the government table".

Chapter One discussed how Commonwealth and State governments are increasingly unenthusiastic about the wisdom of holding onto government-owned enterprises, and assert the need for similar management practices in the public and private sectors, except in respect of some community service obligations. Governments now tend to view museums, universities, libraries, and public zoological parks as institutions which must become more efficient and economically viable. The preferred way to attain such characteristics is for these organisations to become less dependent on government 'handouts', and instead develop more fully their commercial potential and/or to turn to the private sector for raising additional revenues. In a national climate of decreased government spending, particularly for educational, health and cultural institutions, zoos receiving government monies can increasingly expect to have to justify budget deficits or major expenditures. Williamson (1993) observes that the current trend in government funding for zoos is to reduce operational funds, while simultaneously providing funds for special purpose grants which fit specific government policies or priorities. This process is encouraging zoo professionals to look to the private sector for funds, both to top up shrinking government assistance and to act as an insurance policy for funding special projects.

Griffen (1993) notes that, in the face of funding gaps, museums are forced to seek revenue from admissions, increase the frequency of travelling exhibitions, undertake a collection management function on behalf of government for a fee, and take on consultancies with government and industry. He warns that the air of scholarship which characterises the purpose of museums (and other cultural institutions) has been marginalised by an increasing push for good accounting, performance assessment, accountability, and the need raise revenues from outside traditional areas.

Pursuing scholarship or conservation and developing entrepreneurial and efficiency skills need not be mutually exclusive. The degree to which an organisation pursues such economies, however, can displace its other purposes. The issue here is not just to avoid confusing means with ends, but also to question the appropriateness of the means for achieving the ends. There are similar ramifications for publicly-owned or managed zoos and private zoos (eg the Adelaide Zoo). While many zoos have established several classes of sponsorships schemes to suit companies, schools, social clubs, societies, individuals and families, corporate sponsors' influence on conservation policy is perhaps the most paradoxical.

### **8.3.6 Corporate Support in Zoos**

Corporate sponsorship is used by zoos to finance various conservation projects. It exists in two basic forms: goods and services, and cash. Companies assist with upgrading zoo facilities, promotions and special events, transport for animals and staff, accounting and auditing services,

special research projects, veterinary supplies, and building new exhibits. Oftentimes the money supplied by the private sector enables zoos to carry out projects they might not be able to undertake if they relied strictly on the income generated from their admission fees and from government grants and subsidies.

Increasingly, parts of the zoo community seek out and receive assistance from a wide range of corporations (Table 23). Both the earlier and more recent Business Strategies created at Perth Zoo cite the need for the Zoo vigorously to pursue and obtain funding support from the private sector to help fund both its capital growth and ongoing operational requirements. The ZPB of NSW also sees maximising sponsorship marketing and other fundraising initiatives as means for further increasing annual income. A benchmark of 76% was set for the proportion of income that should eventually be derived from *non-government* sources (ZPB of NSW Annual Report 1993/94). Similarly, Auckland Zoo's Strategic Implementation Plan identifies an increase of potential funding sources for 'green' projects in the corporate sector, but also recognizes that the total amount of funds is growing slowly due to intense competition for them.

Despite the potential for sponsorship to be philanthropic, it still involves a high degree of formal and informal exchange. Sponsorship is primarily a market-oriented approach, concerned mostly with enhancing corporate image, 'softening up the market', 'enlightened self-interest' and sometimes, in practice, concerned with boosting a specific product image in the guise of corporate image (Australia Council 1988; McDonald 1991). Through sponsorship, advertisers can master difficulties encountered in gaining attention and interest from members of the public who may have limited interest in the sponsor or in attempts to market its products (Crowley 1991). Sponsorship objectives will include obtaining some type of media coverage, communicating particular messages and increasing sales.

Corporate sponsorship for various conservation projects enables companies to publicly display their putative interest in environmental issues<sup>9</sup>. Given an increase in environmental concern and the identification of business as a significant cause of environmental degradation, many corporations -- now wary of further government regulation and/or consumer rejection -- are looking for ways to fend off interference and criticism and sustain their market presence (McEachern 1991; Tighe & Taplin 1990). Furthermore, corporate sponsors are faced with increasing levels of "clutter" in the sponsorship market and are seeking "new areas of social intrusion with which to associate themselves"<sup>10</sup> (Meenaghan 1991: 6). Consequently,

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<sup>9</sup>Billiton Gold/Zapopan NL Mining Company sponsor the Gouldian Finch Recovery Program. BHP and Alcoa are sponsors of the Landcare Australia program. Esso provides some backing for the Australian Trust for Conservation Volunteers. The World Wide Fund for Nature (Australia) receives support from a variety of companies for some of its research, special projects and campaigns: Alcoa, BP Australia, Cadbury-Schweppes, Dalgety Farmers Ltd, Esso, Pacific Power, Sydney Tower, Timberland, Telecom White Pages, Triple M Radio Network and Westpac (World Wide Fund for Nature 1992).

<sup>10</sup>Cause-related marketing that ties into wildlife and nature is another significant growth area. In the United States corporations spend \$254 million on cause-related marketing, \$50 million of which is spent on environmental causes (Zbar 1993:1).

**TABLE 23: A selection of Australasian Zoos' corporate supporters.**

Zoo	Corporate Sponsors
<b>Taronga &amp; Western Plains Zoos</b>	<p><u>over \$1 million:</u> Australian Women's Weekly, McDonald's Family Restaurants</p> <p><u>\$500,000 &amp; over:</u> Capital Television, SC Johnson &amp; Son Pty Ltd, Coca-Cola Bottlers</p> <p><u>\$100,000 &amp; over:</u> Qantas, Sydney Electricity, Pacific Power, Alcan Australia, K-Mart, BHP Community Trust, Hanimex Pty Ltd, ICI Australia, National Australia Bank, Uncle Ben's of Australia</p>
<b>Perth Zoo</b>	<p><u>Major sponsor:</u> Channel 10 Network</p> <p><u>\$50,000 - \$100,000:</u> McDonald's Family Restaurants</p> <p><u>\$20,000 - \$50,000:</u> Coca-Cola Bottlers</p> <p><u>\$5,000 - \$20,000:</u> Ready Mix, Hi Cone, Smiths Snack Venders, Alcoa of Australia, Konica Australia</p>
<p><b>Zoological Parks Board of Victoria</b></p> <p><b>Melbourne Zoo</b></p> <p><b>Healesville Sanctuary</b></p>	<p><u>The Director's Club:</u> BHP Petroleum, BHP Steel, Cadbury Schweppes Pty Ltd, Channel Seven Nightly News, Esso Australia, Herald Sun Newspaper, Boral Quarries, Western Mining Corp. Ltd, Peters Foods, Radio 3AW, Monsanto Australia</p> <p><u>\$2,500 - \$25,000:</u> Ansett Air Freight, Australia Post, Collex Waste Management, Kimberly Clark Australia Pty Ltd, Victorian Health Promotion Foundation, Telstra - Directory Recycling Unit, Pedigree PAL</p> <p><u>\$25,000 - \$100,000:</u> Western Mining Corp Ltd, Australian Eagle Life Ltd, BHP Community Trust, Cadbury Schweppes Pty Ltd, Australia Post</p> <p><u>\$2,500 - \$25,000:</u> BHP Petroleum, Esso Australia Ltd, Exxon Chemical Australia Pty Ltd, Australia Post</p>
<b>Adelaide Zoo*</b>	<p>McDonald's, Kodak, Uncle Ben's, Esso, Santos, Commonwealth Bank, The Advertiser, BP, Telecom, The Submarine Corporation, Kodak, Sola Optical, Ansett Air Freigh, Coca-Cola Bottlers, Streets Ice Cream, Electricity Trust of South Australia (ETSA)</p>
<b>Auckland Zoo*</b>	<p>Qantas, McDonald's, Telecom NZ, SC Johnson Wax, ANZ/Postbank Comalco, ASB Bank Ltd., Roof Doctors Ltd, Firth Industries, Pacific Steel, Mercury Energy Ltd., Glaxo Pharmaceuticals Ltd., Pilkington (NZ) Ltd.</p>
<p><i>* amounts of corporate sponsorship not made available due to reasons of confidentiality</i></p>	

environmental issues are the target of increasing attention from corporations, resulting in what Sternbach (1991: 17) adroitly calls "eco-public relations".

The corporate community's costly attempts to construct a socially-conscious image for itself have not been confined to environmental issues. Traditionally, sponsorship of the arts has been favoured by many businesses for achieving objectives relating to community relations and for reaching opinion leaders (Crowley 1991). Corporate sponsorship of the arts, however, generates a range of concerns within the arts community. Table 24 lists those concerns an Australia Council (1986) survey found that people had over the potential conflict that such a means of finance represents.

Likewise, the process of zoos selling a 'product' to the corporate community may be facilitating subtle cultural and policy shifts in emphases for zoos. The time, resources and personnel utilised by zoos to facilitate corporate sponsorship, relative to their other operations, will give some indication of how heavily prioritised securing this method of finance is. It is acknowledged in the museum community that a considerable effort is required to obtain sponsorship from the corporate community (Cogger 1994: pers comm). If zoos are going to step up their solicitation of private sector funds, more time and resources will have to be directed to developing further their already sophisticated sponsorship divisions. Taronga Zoo's Orang-utan Appeal raised \$110,000 for the construction of its new orang-utan rainforest exhibit, yet developing the fundraising sponsorship scheme is reported to have cost the Zoo \$47,726 in consultant's fees (ZPB of NSW 1992/93). Moreover, this figure does not reflect time taken by Zoo staff in planning such an exercise. Given the need for funding education and conservation programs, such spending seems inappropriate and exemplifies how commercial means become ends.

These economic policies are worrisome to parts of the zoo community<sup>11</sup>. Zoo staff have concerns about certain practical and ethical implications of exhibit development that is funded primarily by corporate sponsorship. Random development and faulty workmanship may be a consequence of planning exhibits around the acquisition of corporate sponsors; implementing inappropriate deadlines for completing construction; and depending on media fanfare to announce the opening of new exhibits. Chapter Four mentioned that zoo staff have alluded to the occasional mistreatment of animals not properly acclimatised to exhibits prior to their opening and to the inconvenience resulting from working with facilities that have not been properly planned. Generally, the atmosphere created by the presence of a high number of sponsors is thought by some zoo staff to create an overly commercial atmosphere, and some are disturbed about animals being 'sold' as products to potential sponsors. Seeing animals in terms of what images they can offer for the sponsor is a dangerous precedent.

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<sup>11</sup> These issues have caught the attention of a broader audience than simply the zoo community. Economic rationalism in zoos was satirised in the comedy movie "Fierce Creatures" released in Australia early in 1997. The plot focuses on how zoo keeping staff must struggle to defend the integrity of their organisation against the rampant commercialisation of a marketing director who envisages corporate sponsorship as the solution to the Zoo's financial woes.

**TABLE 24: Potential threats imposed on arts programs by corporate sponsorship (Australia Council 1986).**

- Possible loss of artistic control and freedom
- Possible ethical conflicts
- Possible conflict of values
- Possible detrimental effect on acceptance of responsibility by government & size of subsidy
- Long-term security of funds, especially if private support becomes a major proportion
- Pressure for popular or commercial success
- Strengthening of the view of art as 'commodity'

Animals are then objectified and become commodities, rather than existing in their own right, independent of human values.

In my assessment, commercial activities such as sponsorship may be partially dictating the zoo agenda. In an atmosphere of increasing competition for the private sector dollar, some parts of the zoo community perceive a need to be more 'desirable' to companies looking to spend their sponsorship dollars. The conservation programs of zoos may be unduly influenced by this means of support, because corporations will favour projects designed to deflect any negative images the public may have of them. Certainly, corporate support for high-profile species (or ecosystems such as rainforests) is easier for zoos to obtain. For corporations 'worthy' projects are highly visible, foster an image that is contradictory to any environmentally-damaging practices in which they may engage, and promote the notion of the sponsoring company as 'benefactor.' A company is more likely to get extensive 'good news mileage' out of backing the 'cute and furries', the charismatic mega-fauna or the more spectacular habitats such as rainforests, than more obscure reptiles, invertebrates, or small nocturnal species which may also face endangerment or extinction.

It is also worth critically considering whether (misleading) messages conveyed to the public when corporations become involved in conservation projects sacrifice the ecological integrity of zoos' conservation education endeavours, particularly in those instances where high profile sponsors are resource-extraction companies with controversial environmental reputations (such as Western Mining Company, BHP). Backing a zoo may help these companies develop instead a good samaritan profile. Consequently, zoos may be in danger of espousing (however indirectly or unknowingly) the values of the business community that are incompatible with or that contradict ecological principles.

In exchange for their support, sponsors of zoo exhibits always receive some kind of signage and/or brand identification. The degree of visibility (the size of sign, sponsor's name and number of signs), style, and wording of these signs will vary from one zoo to another. For example, BHP Steel supplied the steel for signs at the Melbourne Zoo. The corporate logo appears in relatively small print and is not included on all the steel signs in the zoo. The 'brand identification' is more subtle than others. Hence, in this instance, BHP's provision of materials is less like advertising and more closely resembles philanthropy.

The zoo sponsorships of McDonald's are readily discernible. The corporation's regional offices currently sponsor three rainforest exhibits in Australasian zoos: Adelaide Zoo has the McDonald's South-East Asian Rainforest; Taronga Zoo possesses the McDonald's Orang-utan Rainforest Home; and Auckland Zoo recently built the McDonald's Rainforest<sup>12</sup>. For each of these displays, the company's identification features prominently in signs, banners, and promotional materials. The Adelaide exhibit is promoted by encouraging would-be visitors to "see the first rainforest *bred in captivity*" (emphasis added). Leaflets encourage visitors to "walk

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<sup>12</sup> McDonald's also sponsors the numbat exhibit and breeding program at the Perth Zoo.

through and you'll soon discover an ever growing, ever changing environment that provides a *natural habitat* for many of South East Asia's endangered animals ..." Auckland Zoo aligns itself with McDonald's by asserting in its promotional brochure that the top priorities of both organisations "are children, families, fun, education, and *the environment*". The copy links several of the primate species on display to their wild, endangered counterparts.

Sponsorship decisions within McDonald's are made on a regional level and often result from zoos approaching McDonald's marketing staff in their respective regions - or states as is the case in Australia (Gough 1996: pers. comm). Nonetheless, the symbolism of the corporation's support embodies some rather striking paradoxes. McDonald's has not been without its public relations problems over a host of issues, particularly rainforests and other environmental matters. This prominent multi-national has long been under fire for its waste disposal practices (Hume 1991). In an effort to protect its reputation, for example, the company has been engaged in a long-standing legal battle in England with two individual Greenpeace supporters who were distributing leaflets about the negative effects of the company's operations on the environment, human health, farmed animals, developing countries and its own staff. Several court testimonies have linked the company's beef supplies to cattle grazed on pastures from clear-felled rainforests in South and Central America (US McLibel Support Campaign 1996; pers comm). Not surprisingly, the company is very sensitive about its environmental image. Not only do McDonald's-sponsored zoo exhibits provide valuable vehicles for public relations and advertising platform, but more insidiously the hidden message in these displays is that McDonald's is caring for the rainforest. There are inherent contradictions in the message given to the public viewing this exhibit: we do not have to really change any of our behaviours to save the environment - we can have all the commercial and industrial activity we want, all we need to do is reconstruct a habitat for rainforest species<sup>13</sup>.

Similarly, Western Mining Corporation receives a substantial amount of signage at Healesville Sanctuary in exchange for its contribution to the Sanctuary's revegetation program. One of the signs is featured in the entrance to the Sanctuary where visitors pay their admission fees. The copy in these displays, "a natural concern for Western Mining", suggests to the public that the company is environmentally-responsible and sensitive by virtue of its support for the Sanctuary. The alignment of this kind of image with the Sanctuary's progressive reputation in the zoo and wildlife conservation communities is likely to deflect negative images of Western Mining's more damaging practices.

In many ways corporate assistance in zoos is similar to Davidson's (1990) interpretation of sponsorship as minimal, short-term responses by many corporations to environmental

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<sup>13</sup> For those visitors who are more educated with respect to such matters, these tactics may work against zoos which continue to have companies such as this as one of their sponsors and which provide those companies with high profile signage. There may be members of the public who feel these messages are incompatible with a conservation ethos. One visitor responding to this project's survey item which asked visitors about any ideas they were taking away with them stated, " McDonald's is everywhere and that the human race is in serious decline". Hence, there is a danger of further ingraining into the public consciousness the notions expressed by those inside the zoo community and by parts of the conservation community: that zoos are too commercial.



problems. It can indicate an unwillingness or inability to move towards a greater understanding and acceptance of the truly long-range and critical nature of the issues. Goodpaster (1990) claims that corporations must learn to discern between their notions of conscience from the counterfeits they employ: public relations, government relations, competitive strategy, marketing orientation, legal compliance and issues management. Are zoos merely places where business can apply a salve to its conscience and avoid addressing some of the 'harder' environmental issues? Metropolitan zoos could be depicted as 'wildlife islands' in the midst of our cities, providing safe havens for endangered species. Hence, corporations wishing to be (or be seen to be) community-minded and environmentally-responsible may have found the perfect sponsorship beneficiary in zoos. Helping to support the management of endangered species in *captivity* does not present corporations with some of the more thorny issues inherent in saving complex ecosystems or those experienced 'in the field' (such as when a mining company is involved in exploring or excavating an area that is a last holdout for an endangered species). Although zoos are increasingly having to justify their existence in the context of the animal rights and welfare issues which are growing in opposition to them, they still provide a relatively safe 'worthy cause' for corporations to back. They can still generate 'good news' stories and warm feelings amongst the public who want to know that species are being saved.

#### **8.4 CONCLUSION**

The central thesis in this chapter proposes that, in addition to zoos' collective forms, corporatised ideologies also impose a kind of rationality on zoo systems. Yet, these efficiencies are derived more from economic indicators than they are from orderly arrangements. A managerialist perspective reflects the dominant ethos of this century - sustainable development - which tends to make ecological imperatives subservient to economic mandates. Zoos are faced with what is essentially a business ethic that defines effectiveness in strictly quantitative terms. The conservation imperative becomes a means to the end of efficiency in this product-oriented system. Municipal zoos in Australasia became the most vulnerable to managerialism's influence when government reforms swept through the public sector during the 1980s. The corporate framework is now held firmly in place by the managerial elite that it empowers.

Corporatised ideologies represent the values of higher levels of zoos and government bureaucracies. There are other perspectives that support alternative methods for facilitating and managing zoo conservation roles. The following chapter will present a range of perceptions from the zoo and conservation communities and zoo visitors, and will consider how - if at all - these perceptions influence zoo conservation policy.

## **CHAPTER 9 - PUBLIC PERCEPTIONS OF THE ROLE OF ZOOS IN CONSERVATION**

*Partnerships in conservation is as much about the people involved as it is the animals. Do not let us pretend we, that is the Zoo (sic) community, know all the answers or even (sic) have the best ideas. We may be experts in exhibit management and species management, but in many respects we are perceived to be novices in the broader conservation issues outside the Zoo. It is not for us to move in and dictate terms, but rather to, in many cases, listen before we speak - to collectively instil our credibility to our conservation colleagues and partners. It should not matter to us whether it is an Adelaide, Perth, Melbourne, Taronga or any ARAZPA organisation's conservation initiative as long as WE all see ourselves as equal partners in the success (Craig 1996: 5).*

### **9.1 THE IMPORTANCE OF PUBLIC PERCEPTIONS IN CONSERVATION NETWORKS**

Public perceptions and attitudes are designated in this research as one of the factors influencing zoo conservation roles. This chapter, a result of an intensive empirical examination, explores public perceptions of this role held by selected members of the zoo and conservation communities and by zoo visitors. In examining the relevance of those views for the Australasian zoo community's conservation policies, the multiple, shared and sometimes contradictory nature of the relationships existing within this 'network' are taken into account.

The increasing degradation of our natural environment and limited government resources to combat it are creating the need for more cooperative and creative efforts among a variety of agencies in order to generate solutions. Consequently, the notion of networks for conservation is growing in popularity. 'Networks' are said to exist when individuals or groups sharing similar goals establish temporary channels of communication and engage in some form of collective activity (Doyle 1986). The common concern of government wildlife agencies, NGOs, community groups and zoological parks for the multitudes of endangered species has facilitated some collaboration on a variety of programs.

The many issues constituting endangered species decision-making express a range of human values (Yaffee 1994). A better understanding of the "participants, their perspectives, the situation, their base values and demands, their strategies of action, and the effects of all these elements on each other and on the decision and policy processes" (Clark 1992: 428) is needed because it can inform inquiry. It is always important to acknowledge the intricate, changeable and value-laden nature of wildlife policy decisions. It is equally instructive to appreciate how power functions in the policy process. Research which illuminates the divergence of conservation meanings held by different people and organisations without acknowledging the existence of disproportionate access to decision-making processes is incomplete. Rein (1976: 257) points out that:

... whatever group is dominant imposes its ideology upon others. Differing definitions and solutions of problems are resolved by power. The choice of a dominant ideology is thus determined by which interest group is most powerful in a particular situation.

In this chapter, while highlighting the diverse and sometimes contradictory outlooks concerning appropriate conservation roles for zoos, I will also argue that perspectives held by those in positions of power tend to come to the fore.

### 9.1.2 The Zoo Community

The zoo community often refers to itself as a network of institutions whose full collective potential has yet to be tapped. There is a strong coalition within the international zoo community which has been relatively successful in arguing for collaborative, scientifically managed breeding programs for endangered species to be implemented amongst the world's zoos (eg Conway 1986; Hutchins & Conway 1995). Despite these outward signs of solidarity and a regional program which is comparatively advanced in its development, it remains the case that the Australasian zoo community contains a diverse range of people whose valuations of 'nature' vary. It is worth understanding how people perceive the role of zoos when analysing their conservation policies since values are a good predictor of how people will behave. Ultimately the creation and implementation of zoo policies and overall direction of zoos is made through the multitude of decisions people make as they go about their daily work (Bullis & Kennedy 1991) and the sphere of influence possessed by such people.

## 9.2 THE EFFECTS OF ORGANISATIONAL CULTURE ON NETWORK RELATIONSHIPS

While networks are informal structures that operate quite differently from formal organisations, certain aspects of organisational culture can illuminate some personal and organisational dynamics occurring among endangered species networks that zoos operate in. Chapter One's discussion of organisational culture focused on Sackmann's (1991) thesis. This perspective claims that 'culture' represents not only physical artefacts of an organisation, but also assists people within those organisations in attributing meaning to events; that is, culture functions as sense-making mechanisms. Cultures within an organisation will influence personnel's selection of goals and strategies. They will also have an effect on the technology and resources deemed appropriate for the achievement of organisational aims (Sathe 1983; Sackmann 1991; Schein 1990).

A cognitive view of culture is consistent with Bullis & Kennedy's (1991) pluralistic model of values "which acknowledges subcultural diversity rather than assuming administrative unity" in organisations. In short, there are likely to be clusters of people within organisations who subscribe to particular values. Such axioms are the overarching criteria that people use to make decisions and will guide decision-making in environmental and conservation policy choices. These cultural groupings may constitute a single organisation and can transcend the boundaries of single agencies. Sinclair (1989) asserts that *subcultures* whose members join with others across organisational boundaries may be stronger than those restricted to a single institution, because they provide "a basis for a social identity and social relationships and because they are built on self-defined [as opposed to corporately-defined] principles of control and commitment" (Sinclair 1989: 395). The following sections will consider commonalities and differences

among zoo and conservation communities' and zoo visitors' perceptions about zoo roles in conservation.

### 9.2.1 Zoo Culture

Zoos present a largely united front to the conservation community. A closer look, however, reveals profound differences of opinion among the different factions of the zoo community regarding the conservation role of zoos. One hundred and twenty-six open-ended, informal interviews were conducted by me with all levels of zoo staff at the following zoos: Perth Zoo, Territory Wildlife Park, Currumbin Sanctuary, Taronga Zoo, Western Plains Zoo, Melbourne Zoo, Healesville Sanctuary, Werribee Zoo and Auckland Zoo<sup>1</sup>. Of those interviewed, 39 percent were operational staff (animal keepers, education officers, grounds staff); 30 percent were middle managers (section heads, curators); 21 percent were senior managers (curators, assistant directors, directors); 6 percent were zoo board representatives; and 4 percent were group interviews. The data reveal a degree of uncertainty in the zoo community about its conservation identity. Members of the zoo community refer to zoos in a variety of ways: as cultural institutions, places of recreation, an industry and conservation organisations, each of these in turn requiring particular policy emphases. Such views reveal the existence of 'cultural groupings' in the zoo community that are affected by employees and the work they perform, as well as by hierarchies and division boundaries. My discussions with zoo staff revealed significant structural and cultural dynamics, operating both explicitly and implicitly to affect each zoo's conservation policies. Chapters Five and Seven have explored the structural specifics. Some of these forces are unique to each institution, others are common across the zoo community.

#### *i. Organisational Climate*

Selected quotations in Table 25 represent a cross section of the 80 references made to organisational issues by zoo staff at all levels of the 10 Australasian zoos. Eighty-five percent of the comments refer to the ideological distance between animal management staff and administrative staff<sup>2</sup>. They perceive a marked divergence among their colleagues' backgrounds, ideologies and professional responsibilities. The quotations also exemplify how zoos' bureaucratised structure and management ideology are perceived as inhibiting the achievement of conservation aims. Such conservative organisational arrangements and values occupy an inordinate amount of institutional attention and constrain the flexibility needed for producing creative conservation programs. The trend towards a business orientation in zoo management appears to be an issue of considerable concern to many animal management staff, although some managerial staff have similar worries. There is a distinctive tension between efficiently managing zoos and maximising conservation contributions that has yet to be resolved.

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<sup>1</sup>Due to the Australasian zoo community's relatively small size and in the interests of maintaining confidentiality, the statements listed in the text and Appendices have not been identified with individuals or particular institutions. Extensive representation of Adelaide Zoo staff was minimised due to the fact that an earlier study (Mazur 1991) had already emphasised their views concerning zoos' conservation role.

<sup>2</sup> Mazur (1991) found similar communication problems plaguing the Adelaide Zoo.

**TABLE 25: Zoo staff perceptions of organisational divisions**

- here there are no meetings of animal divisions ... middle management has always been a problem here ... (*middle manager*)
- keepers and accountants have different ideologies ... all the higher-ups [in zoos] are not animal people ... (*keeper*)
- grand plans of management ... filter down and become logistical nightmares for lower levels of staff ... not enough time is spent thinking about how these 'great' ideas are going to actually work (*middle manager*)
- I'm a manager now, I have to stop thinking like a keeper (*middle manager*)
- the rhetoric of senior management includes a lot of assumptions about the zoo (*keeper*)
- more bureaucracy here ... [its] very insulated ... there's a façade of an open door, but is the willingness to listen really there? (*keeper*)
- curators are concerned with animals, management wants nice-looking exhibits ... there is a lack of compromise from both sides ... a never ending battle to get management to understand the balance between naturalistic enclosures and viability (*keeper*)
- directors and board members and their toys are still a bit of an issue in the [zoo] industry (*middle manager*)
- we need to change the attitudes of the people high up ... who see the [zoo] as a tourist venture ... is the general manager a wildlife based person or a commercial based person? (*keeper*)
- I'm a dedicated conservationist ... the zoo is run by people who are more like bureaucrats, politicians ... or those with [strictly] financial interests rather than those with any real biological knowledge ... (*keeper*)
- someone has to be business oriented, but it should be tempered by someone influential [an] influential position with [knowledge of] moral issues about the welfare of animals (*senior manager*)
- if [the] zoo is treated as a business, businesses should take the recommendations of the experts - their employees (*senior manager*)
- we are the people doing the practical [work] ... there are big gaps between us and them up there ... where's the involvement of lower levels of staff? (*keeper*)
- bureaucracy and red tape ... there's far too much of it ... things move too slowly as a result (*keeper*)
- mid-level management may be acting as the mechanism for ensuring the integrity against too much commercialism (*senior manager*)
- [The zoo] is a very political institution ... it's mostly about pleasing ministers ... there is little curatorial input or receiving of information ... (*middle manager*)
- curators have little input ... the top is run by administrators who are not animal people ... lots of autonomy among the different divisions .. (*middle manager*)
- decisions of curators/directors are about what the public wants rather than what we know ... our needs are seen to be relatively irrelevant ... management is too top heavy (*keeper*)

Despite a concern that commercial and conservation imperatives may cause some conflict, a majority of zoo personnel, irrespective of their positions, recognise the financial imperatives that are imposed upon zoos. Table 26 lists only some of the 68 references made to such sentiments by zoo staff during their interviews.

Despite what appear to be uniform opinions on the subject, interpretations of those financial demands and strategies for dealing with them vary. The need to be economically viable is translated into being commercial by some. "Zoos need to be commercial" is a commonly-expressed sentiment. Conversely, a number of animal management staff, particularly keepers and curators, are concerned that "the need to raise money is a corrupting influence" on zoos' conservation role, and that "there are some aspects of business management that aren't appropriate". Yet, these financial imperatives continue to drive zoo policy. Some zoo staff cite that the influence of "market *misinformation*" as a guide to management decisions, resulting in the continued acquisition of high profile, charismatic mega-fauna ("charismatic mega-fauna are directors' toys") and new exhibits with exorbitant price-tags at the expense of more environmental objectives or animal welfare concerns. The primacy of commercial imperatives is seen by some to be insular and damaging to the integrity of the zoo.

Staff interviewed in marketing and senior management positions counter these concerns by noting that "commercial objectives do not threaten conservation". Moreover, some zoo staff continue to believe that "if you ignore the commercial stuff you are really putting [the zoo] at risk". They assert that "we are only free to do those things we have the money for". Hence, without the revenue, "the zoo does not have any conservation imperatives". A customer-service orientation predominates: "we can't take people's money without delivering something" as the "reality is that we need to attract visitors" and "our primary aim is to attract customers and [provide for] customer satisfaction".

#### *ii. Zoos and Education*

Debates about commercialisation are also discernible in discussions about zoos' education role (Table 27). Interviewee data reveal that while the majority of staff (83%) in all divisions of the 10 zoos see education as the main objective of zoos' conservation potential (Table 28), some people are concerned that "the role of the zoo is being circumscribed by the perception that people want a fun day out". There seems to be no doubt about whether zoos should educate or not, the question remains how and to what extent they should do so. There is a sentiment that zoos are in "show business", "selling recreation not conservation". But, this belief is often countered by the view that "we should be changing public opinion". Two middle managers spoke of an ideological split whereby:

... [there are] two schools of thought in the [zoo] industry. One is give the people what they want, the second is that zoos should direct people to what they want ...

and;

There are two camps in zoos ... those who think the public is not blind to conservation and those who say we must have lions, tigers, and giraffes ... [it] creates difficulties in getting along the path ...

**TABLE 26: Zoo staff recognition of financial imperatives**

- government support is going down ... it will be hard (*senior manager*)
- financial resources are finite (*senior manager*)
- money is a big issue for zoos ... 'bums on seats' feed us (*keeper*)
- without the money we would not be here ... (*keeper*)
- zoos must survive in harsh economic circumstances (*middle manager*)
- the zoo tries to do the best it can with the finances it has (*keeper*)
- it comes down to the money and staffing ... those two limit the degree of excellence one can achieve (*veterinary staff*)

**TABLE 27: Compromising education roles**

- people *would* come if there were no elephants ... we have a knowledgeable community (*middle manager*)
- raise the profile of the less charismatic species ... public relations is light-weight and panders to the lowest common denominator (*keeper*)
- zoos need to be agents for social change. (*keeper*)
- public relations centres on the cutesy animals ... that's not much good for conservation (*keeper*)
- conservation is still a catch phrase used [by zoos] for political expediency ... education departments are largely trimmings (*middle manager*)
- [education] doesn't play as big a role as it should (*keeper*)
- education role ... most of it is public relations, they have to come up with a reason for zoos' existence (*keeper*)
- the conservation thrust ... not going to make them any money and it gets diluted in business affairs (*keeper*)

**TABLE 28: Education roles**

- Zoos first and foremost are environmental educators (*middle manager*)
- [Zoos'] greatest role is in shaping attitudes (*middle manager*)
- My view is that zoos today are there to educate the public in conservation of biodiversity (*keeper*)
- Zoos' role is on the education side ... what they can do is increase awareness so that [visitors] will act differently (*education officer*)
- Our role is to promote awareness of biodiversity (*keeper*)

There is substantive anecdotal and empirical evidence to show that most people visit the zoo for a leisurely, fun day out (eg Bitgood et al 1988; Kellert & Dunlap 1989). The way in which this knowledge is exploited depends on staff members' particular orientations towards zoos' conservation role. It seems that those who are most concerned about maintaining an optimal income level for the zoo are wary of loading zoo messages with too much seriousness about conservation or environmental matters, lest they scare current and potential visitors away (Table 29).

While interviewing zoo employees, I asked them what they felt zoos should be trying to tell people about conservation. Analysis of the data reveals several recurring educational themes: zoos' conservation activities; endangered species and extinction processes; animal-specific knowledge; the importance of biodiversity; ecosystems; habitat loss; human pressures on the environment; attitude change (engendering empathy and respect for nature, animals in particular); and behavioural change. Additionally, references were made to balancing zoos' educational imperative against the demonstrated utility of captive breeding programs. These comments suggest that many staff endorse educating zoo visitors about an array of environmental messages. What is not agreed upon, however, is the form such information should take and how often it should be conveyed to the general public.

### *iii. Captive Breeding*

The comments in Table 30 indicate the scepticism within the zoo community at all organisational levels about the role of captive breeding in the conservation profile of zoos. Ninety-two percent (60 people) of those interviewees commenting specifically on ex-situ conservation acknowledge that it is (and should be) merely *part of* a much larger conservation process. There is considerable recognition that the capacity of zoos to assist in this process does, at times, get overstated, functioning to justify the existence of zoos more than making an actual contribution to restoring endangered species. Low rates of success and high costs of captive breeding and reintroduction, inadequate institutional support from zoos, and the need for safe habitats to release animals to, all negatively affect the feasibility of ex-situ techniques of conservation.

### *iv. Inter-agency Relations*

When commenting on inter agency relations most people in the zoo community refer to interactions between zoos and State (and to a lesser degree Federal) government wildlife agencies. While some perceive their relationships with these organisations to be improving ("it's getting better from a communication point of view", "it's heartening to know that [the agency] appreciates our expertise"), the vast majority recognise that much of the interaction remains problematic. Table 31 lists a variety of causes to which people attribute the difficulties.

While the zoo community is aware of some fundamental conflicts between itself and certain government wildlife agencies, not all zoo professionals view the situation as hopeless. The remarks in Table 32 show that some zoo staff, particularly those whose duties include interacting with non-zoo organisations, acknowledge their responsibility to clarify



**TABLE 29: Tones of education messages**

- As we become advocates of conservation, we become less focused on what it is (*senior manager*)
- [Zoos] can't *not* have exotic species ... can't lose sight of the fact that we're a commercial operation in a tourist area ... at a certain point you start to cross a fuzzy line, from enjoyment to education ... you've got to be subtle (*senior manager*)
- As the public becomes more educated the zoos could do more ... we still have to have a more subtle approach (*keeper*)
- We're really selling recreation, not conservation ... we need more interesting animals to draw people in (*senior manager*)
- Why have a zoo? ... its 50/50, education and entertainment (*senior manager*)
- We're primarily for entertainment, conservation is a spin-off (*keeper*)
- You need recreational aspects (in education) .. a middle ground needs to be hit (*middle manager*)

**TABLE 30: The place of captive breeding on zoos' list of priorities**

- Overstating the role [of captive breeding] does happen ... people really want to believe they are doing something ... have to keep it low key (*middle manager*)
- The captive breeding of endangered species is not enough, it's not the be all and end all (*keeper*)
- zoos in species conservation ... are really only an ark, until issues of why animals are disappearing is addressed it's a waste of time (*keeper*)
- Captive breeding is not a big role as far as there are so few releases (*middle manager*)
- We're playing with ourselves if we think we've made a big contribution to endangered species ... only a handful of programs warrant the expense (*keeper*)
- Captive breeding is a small part of the larger picture ... the propaganda is misleading ... is it a machine with a life itself? (*keeper*)
- Captive breeding is part of the process, not the whole one (*middle manager*)
- [It] shouldn't be a role ... need to be selective about the species we get involved with (*senior manager*)
- captive breeding ... we're not going to save the world's species, but we can assist by sending the message and where it meets zoo objectives ... the captive breeding role has been overstated [by zoos] (*senior manager*)

misunderstandings and acknowledge what they see to be an auxiliary conservation role in relation to Federal and State wildlife authorities' mandates.

### **9.2.2 The Conservation Community**

Traditionally, zoos have operated somewhat independently from the traditional wildlife policy domain. More recently, however, the zoo community has interacted with government wildlife agencies, NGOs, and community groups in actualising its conservation goals as we have seen in Chapters Six and Seven. Given the exchanges among individual zoos, the zoo community as a whole and the conservation community, it is important to acknowledge goal disparities as they will surely influence inter-agency relations.

It is too early to tell whether these webs of interaction indicate a growing trend in the strengthening of relations between zoos and the wider conservation community. While there is increasing formalisation of their inter agency relationships in the form of memorandums of agreement between zoos and government wildlife agencies and wildlife agency staff attending zoos' regional collection planning meetings, the zoo community still relies quite heavily upon informal communications for establishing and sustaining inter-agency associations. Doyle's (1986: 28) discussion of networks within the environmental movement can be applied to zoos because to date:

... no constitution defines the nature of all their interactions with other organisations and individuals. In the absence of an overall, formalised hierarchical structure, it has been necessary to create temporary channels of communication between groups which are interested in a specific issue.

Initially, many of the connections between zoos and other conservation bodies tended to be facilitated by long-time personal associations among key players in the organisations (Banks 1992). Friendships among the zoo and agency staff, as well as previous employment experience on the part of zoo staff in other wildlife agencies, still allows for greater knowledge about organisational programs and opportunities for joint efforts. These informal links have been instrumental in maintaining a certain degree of connectivity for zoos to the rest of the conservation community by ensuring that zoos are able to participate in endangered species recovery efforts or cooperative education programs.

Nonetheless, zoos continue to operate largely on the margins of the conservation policy community. Those formal channels of communication that do exist between zoos and other conservation agencies involved with saving endangered species are, for the most part, restricted to state-initiated Recovery Plans and negotiations with regulatory bodies such as those mentioned in Chapters Six and Seven. As discussed in Chapters Seven and Eight, there are myriad structural forces and institutional capabilities that impose limits on the extent to which the zoo community is able to alter its functional and operating domains, and strengthen its position in the conservation network. Acknowledged and discussed less often, however, are the

**TABLE 31: Sources of inter-agency dynamics**

**personal difficulties:**

- personal relationships are a big issue (*middle manager*)
- We need to have better relationships with the [wildlife] authorities ... they have a whole range of attitudes [towards zoos] ... the extremes rise and fall due to personalities rather than systematic differences (*senior manager*)

**agency rivalry:**

- jealousy about things ... it's human nature ... you've often got 3 different organisations dealing with one animal (*senior manager*)
- Territoriality is a big issue ... you'll never not have that problem between agencies (*senior manager*)

**working within a bureaucratic framework:**

- National parks is a bureaucracy that's run out of control ... (*teacher*)
- working with a government bureaucracy ... a whole merry-go-round of people who don't have a good understanding of what we are trying to do (*senior manager*)"
- [There are] restrictions from being tied to government (*senior manager*)

**political dynamics:**

- Our environment minister is publicly very supportive of zoos, but it's not clear where he stands in general on zoos (*senior manager*)
- No politician will knock back the opportunity to have their photo taken at the zoo (*senior manager*)
- Zoos can act as good news ploys for government (*senior manager*)

**competition for funds:**

- Government has got problems with [zoos] ... [we] are consumers of government resources and [we'd] better have good reason for [our] existence (*senior manager*)
- [The agency] and the zoo seem to be at opposing ends, they have to tap into federal funds and the zoo has become a competitor vying for those funds (*middle manager*)
- Zoos are able to access corporate sponsors and show people what they are getting for their money ... there is residual resentment from suspicions of motives of zoos and competition for funds (*senior manager*)

**lack of acknowledgment of zoo expertise:**

- Wildlife agencies don't use captivity soon enough (*keeper*)
- There is a lack of recognition of zoos' role ... they seldom seek out zoos' advice (*senior manager*)
- The [wildlife agency] doesn't acknowledge that the zoo is a specialist captive breeding facility (*senior manager*)
- There's a lot of misinformation outside the [zoo] industry about captive breeding (*senior manager*)
- We're seen as bit players [in conservation] (*senior manager*)

**lack of communication:**

- [There is] a lot of history for zoos as consumers of wildlife and successes haven't been repeated enough (*middle manager*)
- There's some ignorance of the potential of and culture in zoos ... you get a clash of cultures [between the agencies] (*middle manager*)
- There's an appalling lack of communication between zoos and [government wildlife agency] ... too much competition and ownership (*senior manager*)

**TABLE 32: Responsibilities for maintaining alliances**

- Zoos have muddied up the waters ... [we] haven't helped ourselves by not clearly stating what our purpose is (*senior manager*)
- zoos as resources for conservation ... it has to happen in conjunction with [government] conservation departments (*senior manager*)
- Zoos need to build our credibility without being threatening, and be seen to be the stable body in the background that complements conservation organisations (*senior manager*)
- Zoos and [wildlife agency] haven't defined the problem or program very well ... the two agencies are seen to be doing the same thing, which will lead to conflict (*senior manager*)
- We'd like to get a much greater level of open discussion and debate about ideas and strategies than perhaps we get (*senior manager*)
- We should not be trying to take the place of the conservation role of state authorities, we should be providing our experience to assist them (*senior manager*)

unofficial and unplanned constraints such as personal sources of resistance, moral and ethical issues and perceived threats to the domain of other organisations<sup>3</sup>.

### 9.2.3 Conservation Community Interviews and Questionnaires

Interviews and questionnaires conducted during this research have shown that there are distinct differences in organisational goals, agency ideology and culture and favoured methodologies among zoos, government wildlife agencies and non-government conservation groups. However, there are also important similarities among zoo and conservation communities regarding what are appropriate conservation roles for zoos. Forty-eight in-depth confidential interviews were conducted by the author with selected members of the conservation community representing federal and state wildlife agencies, NGOs, academia, a museum and private industry. Additionally, 116 questionnaires were collected from two major environmental conferences held in June and July 1993.

The questionnaire and interview data reveal the existence of certain commonly-held opinions within the conservation community about the role of zoos in conservation. The criticisms of zoos incorporate a range of issues and reflect many of the views held by those working in zoos. These include matters concerning the effectiveness of zoo education programs, methodological and ideological flaws of captive breeding, and more elusive issues of resistance to the change in zoos' domain.

#### *i. Questionnaire Results*

The survey questions were designed to elicit information about respondents' place of employment, their zoo visitation patterns, the basis of relations between zoos and government and non-government organisations, and ways in which zoos contribute to conservation (Appendix 4). The survey was directed at the connection between zoos and conservation in the eyes of an informed and interested public. Respondents had the opportunity to select from several possible answers to each question, with space provided for additional information or alternative selections. The prompts were derived from those issues which arose during the course of my numerous interviews conducted with wildlife agency, NGO and zoo staff during the first year of the research. The survey has provided an appropriate vehicle for investigating those matters further and an opportunity for clarifying and quantifying them.

Thirty-five percent of the respondents were representatives of government wildlife agencies, thirty percent were from a university, another twenty percent indicated their affiliation with an NGO, nine percent were from some other government agency, and the remaining three percent were from a zoo<sup>4</sup>. Respondents were asked how often they visited zoos (Table 33). I originally surmised that environmental activists and government wildlife agency staff would provide a

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<sup>3</sup>Domain overlap, which occurs when two or more agencies lay claim to the same policies and their attendant resources (Benson 1975), is frequently cited as a possible cause for conflict between organisations (Althaus & Yarwood 1993). These factors are highly relevant for zoo inter-agency relations.

<sup>4</sup>The high number of government employees was not surprising given that the Conserving Biodiversity Conference in Sydney was hosted by the New South Wales NPWS. The Ecopolitics conference traditionally attracts a high percentage of academics and people concerned about environmental issues.

<b>TABLE 33: Conservation community respondents' zoo visitation patterns</b>	
<b>No. of visits to zoo</b>	<b>%</b>
3 or more times a year	9
1-2 times a year	14
less than once a year	17
once every 2-3 years	23
less than once every 5 years	28
Never	10

sample of people who were more critical of zoos than the 'typical' zoo visitor, hence their visitation patterns would show a much lower frequency. These results are consistent with visitor surveys conducted for this research and an earlier survey conducted in Adelaide (Mazur 1991), where it was found that most people tend to visit zoos less than once a year.

Respondents were asked what goals they felt that government wildlife protection agencies, conservation groups and zoos had in common. There were five possible responses to this question: educating the public; protecting endangered species; research; fundraising; or other (Table 34). A majority of respondents selected a combination of the options.

Although the figures show that a high number of respondents do consider research, education and protecting endangered species to be mutual goals among the different organisations, the reasons for respondents' selections should be investigated. Some respondents qualified their selection of zoos' role in protecting endangered species by commenting that it was a minor role. Others cited the utility of captive breeding for release programs and ensuring a gene pool for the future in case of emergencies.

Furthermore, it is of particular interest that 26 percent of the respondents did *not* include protecting endangered species as something that zoos have in common with the other agencies. Some more negative comments included allegations that zoos were first and foremost commercial ventures whose profit motives were the driving force behind their endangered species breeding programs. These views are consistent with the perceptions of many zoo staff who are concerned about the detrimental effects that commercialisation is having on the integrity of zoos' conservation programs. Such beliefs intimate discrepancies between the image that part of the zoo community believes it is portraying and how the zoo is actually being perceived.

The fourth question on the survey asked respondents what they believed distinguished government wildlife protection agencies and conservation groups from zoos: the scope of their agendas; the ability or will to lobby for political change; or save habitats rather than species (Table 35). Again, respondents were offered the choice of selecting one answer, a combination of options, or provide their own response.

These results seem to indicate that people feel that the scope of zoos is narrower in focus than a wildlife agency brief, and that zoos employ methods which do not sufficiently or appropriately address wildlife conservation. Although parts of the zoo community might want to emphasise here that zoos are not meant to be doing those things in the first place, the existence of these results are evidence that, despite those claims, zoos are being perceived as saying otherwise - that they are legitimate conservation organisations.

When asked whether zoos made a contribution to conservation most people answered favourably. Respondents were given the opportunity to answer 'yes', or 'no' and were asked to qualify their choice. Eighty-two percent selected 'yes', eleven percent chose 'no', with the

<b>TABLE 34: Goals conservation community respondents indicated government wildlife protection agencies, NGOs, and zoos have in common</b>	
<b>Common Goals</b>	<b>%</b>
Educating the public, protecting endangered species, & research	30
Educating the public, protecting endangered species, research, & fundraising	21
Educating the public & protecting endangered species	15
Educating the public	13
Educating the public & research	9
No mutual goals	4
Other combinations	8

<b>TABLE 35: Features conservation community respondents indicate they believe distinguish government wildlife protection agencies and NGOs from zoos</b>	
<b>Distinguishing Characteristics</b>	<b>%</b>
Save habitats rather than species	29
Scope of the organisations' agendas & save habitats rather than species	20
Scope of the organisations' agendas, save habitats rather than species, & the ability/will to lobby for political change	20
The scope of their agendas	14
Other combinations	5
The ability/will to lobby for political change	4
The scope of their agendas & the ability/will to lobby for political change	4
Save habitats rather than species & the ability/will to lobby for political change	4



remainder (seven percent) providing some type of neutral response. Ninety-two percent commented on their selection. Education and raising public awareness were the most prevalent matters. People stated that zoos provide contact with animals which can engender care, provide information for people, and generate public support by making a case for conservation. References to captive breeding included an emphasis on the limited utility of such methods, reference to the insignificance of the few successes of re-introduction programs and that ex-situ conservation should be secondary to zoos' educational functions. Some of the people surveyed held that zoos' research contributions to conservation included provision of a skills base for intensive wildlife management and knowledge about behavioural and nutritional needs of endangered species.

The next question on the survey asked how conservation might be better served by zoos. A blank space was provided for respondents to write their own answers. A selection of possible answers was not provided as unprompted answers were being sought. Analysis of the answers revealed several recurring themes. The first category includes improving the quality of education for the public by strengthening the quality of interpretation, signage and displays in zoos. Suggestions included providing more information on environmental impacts on animals; highlighting the differences between 'preservation' and 'conservation'; educating young people about threatening processes, population dynamics, cooperative endangered species programs, land-care, and the importance of habitats; placing a greater emphasis on ecosystems; and providing information on personal action for conservation.

Other answers were grouped around what species are held in zoos and how they are housed. Some of the comments made were as follows: reduce collections of charismatic mega-fauna; increase the emphasis on endangered species; place greater emphasis on invertebrates; focus on Australian and local species; keep fewer types of animals - less diversity in collection; emphasise more information about habitat protection and rehabilitation; publicise more research on ecological communities; keep stocks of genetic materials; pursue more release to the wild programs.

Several comments are relevant to zoos' inter-organisational relationships and communication processes therein. Respondents indicate that zoos should: take a more proactive stance on conservation by not shying away from making political stands and lobbying for conservation; better service the needs of other conservation organisations by sharing information on the reproductive needs of species and/or provide funds and other infrastructure support to 'worthy' conservation projects; re-educate their colleagues about themselves and share more information with the public. Other responses revolve around the 'integrity' of zoos' actions. Respondents felt that zoo professionals could: better inform themselves of what is 'happening' in the community and in the conservation field; realign their priorities by de-emphasising the 'commercial' and staying focused on issues they are familiar with; increase zoos' validity by providing more examples of zoos' value and applicability; take on board a more holistic

approach by avoiding 'flavour of the month' strategies and focusing more on long-term approaches.

The last item on the questionnaire asked whether NGOs and government wildlife protection agencies would benefit from closer alliances with zoos. The respondents could select 'yes' or 'no' and were asked to make comments. Ninety-six of the 116 responses contained comments. Seventy-four percent felt that other organisations *would* benefit from closer relationships with zoos. Some of the reasons provided highlighted the importance of shared ideas and communication for facilitating the integration of common goals, expertise and appropriate resource pooling. Planned and willing team approaches were cited as vital for avoiding repetition and overlap of projects. Zoo access to media and the public are seen by some respondents as a potential asset for promoting zoo conservation projects, as well as those of other conservation organisations. Some see the potential for zoos providing assistance to NGOs through the use of their facilities and NGOs lending more credibility to zoos via endorsements.

The results of the survey illustrate that the perceptions of this sample of people are consistent with the views of those expressed by wildlife agency and conservation personnel interviewed earlier in the year *and in subsequent interviews*. Questions concerning the utility of ex-situ conservation practices, the goals of zoos' public relations and educational programs, and traditional domains of wildlife agencies and non-government conservation organisations, all point to perceived ambiguities regarding zoos' role in conservation.

#### *ii. Interview Results*

In addition to the survey, 54 in-depth interviews were conducted with various people in the conservation community. Of those interviewed, thirty-four people were from Federal and State government wildlife agencies, twelve were NGO staff, five academics, one museum administrator and two from private industry<sup>5</sup>. Data from those discussions concur with the findings of the surveys; revealing not only considerable scepticism about the motives, capabilities and ideologies of the zoo industry, but showing that some people rarely consider a conservation role for zoos at all. Some of these perceptions are based on negative interactions with the zoos, staid images of zoos' past, and the different 'cultures' existing among the organisations - all of which can be neatly summed up in the comment of one interviewee who stated, "People used to working with animals in the wild are very suspicious of those working with animals in captivity".

Despite the presence of cynicism in the conservation community as evidenced by the interview data, there is recognition of the huge scope of things zoos can do for conservation, education being paramount. Table 36 lists some quotations from conservation community interviewees which illustrate their appreciation of the substantial changes occurring and the progressive, outward-looking perspectives and cooperative attitudes that do exist in the zoos.

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<sup>5</sup> Due to the relatively small size of the endangered species network, personal and professional identity of the interviewees has been kept confidential.

**TABLE 36: Supportive attitudes in the conservation community towards zoos**

- I prefer to believe that people's intentions are real ... they are working very hard to make the World Zoo Conservation Strategy part of their charter ... and we are very pleased to see that communication has improved ... it's quite clear they are genuine (*government wildlife agency senior manager*)
- our relationship with zoos is very good from an administrative point of view ... ARAZPA has made a major step forward in fostering relations (*government wildlife agency senior manager*)
- Zoos are a fabulous opportunity ... an island in the middle of a metropolis (*government wildlife agency middle manager*)
- the education and promotional role that zoos can play is very substantial (*government wildlife agency senior manager*)

Nearly every person I spoke to made specific references to zoos' educational imperatives. Not all of them, however, were in agreement about how seriously or appropriately zoos are addressing this mandate. One person stated that, "at best they evoke sympathy, at worst a vicarious thrill and that humans have control over the environment ..." Another cited the tendency for zoos to "show animals in isolation ... doesn't account for interrelationships". Virtually all respondents acknowledged the need for zoo visitors to understand and appreciate issues such as the interrelatedness of animals and habitats, biological diversity and numerous forms and causes of environmental degradation. Another interviewee characterised much of the sentiment found when he stated:

I think they [zoos] have an enormous contribution to conservation education. I am not at all convinced of the conviction of zoo management to it ... they see it as a good way to improve their image ... it's a total waste of time for zoos to fiddle with the margins of conservation ... my perception is that until zoos create an internal culture of commitment to conservation biology as a good thing in itself, rather than as something that will get them out of trouble ... a device ...

Zoos are being charged with overstating the accomplishments of their endangered species breeding programs and public education efforts in attempts to secure their place in the public eye as conservation organisations. Others attribute the move by zoos towards conservation programs as nothing more than a passing trend, designed to ensure their survival.

Other objections to zoo conservation policy reflect a certain apprehension about exactly what zoos are trying to accomplish by strengthening their role in conservation. Many of those interviewed question motivations behind the zoo community's push for conservation, particularly in lieu of what they perceive to be a fluctuating level of commitment to conservation. It would appear that the more 'commercial' operations in the zoo community do damage its overall 'conservation credibility' in the eyes of the conservation community. People have made some general references to the fact that zoos' efforts should be, but are "not all altruistic". Some zoo programs are viewed simply as "money-making ventures". Such economic imperatives are thought to corrupt zoos' more munificent goals. Specific reference was made by one interviewee to the high incidence at Taronga Zoo of problems that they believed were most likely money-driven: "perhaps they are looking outwards in a commercial sense rather than a philosophical sense - they need to do both together". This sentiment was not restricted to just that organisation. Rather, some people believe that zoos in general are highly reactive, selfish and unenlightened organisations.

Some contend that the resources going to 'conservation' are far less than what zoos would have the public believe. While several interviewees approve of zoos' efforts to implement animal collection plans that support conservation, they simultaneously query the integrity of such exercises. They believe that budgets for publicising zoos' conservation efforts and the high percentage of non threatened animals that constitute zoo collections indicate serious inconsistencies between zoos' conservation rhetoric and their actual practices. For example, one interviewee said, "We're concerned when they [the zoos] spend so much money on some species and the Oz wildlife are crying out for assistance". This comment reflects the

(nationalistic) concern of many of those interviewed about the emphasis placed by zoos on exotic, high profile, charismatic species generating a considerable level of media attention, rather than on some of the more obscure native species.

There are also feelings of unease among interviewees over the potential competition zoos represent for government and private funding, one person describing the subsidies received as a "hand-out which comes right from Treasury." The implication is zoos are somewhat less deserving of these monies than government wildlife agencies or non-government conservation groups which address a host of environmental problems more appropriately and proficiently. Reference was also made to the perceived flexibility of zoos and their ability to gain access to the kinds of money that are more difficult for government bureaucracies to obtain. Zoos are perceived as being able to 'capitalise' on what the Federal and State conservation agencies cannot do well, namely fundraising and mounting public relations campaigns. The inference is that the zoological institutions should be directing some of those monies towards what people in the conservation community perceive to be more worthwhile and needy projects.

While there is some sympathy for the fact that zoos must support themselves financially and that they are "getting pulled and pushed by different forces", interviewees also recognise that some of this conflict is due to the fact that within the zoo community "different people have different ideas about where they are going". Some people feel the trend towards zoos being run by business people was something to be gravely concerned about, generating "a corporate culture rather than an air of scholarship", or scientific credibility. Some are perceiving "a mix of people in charge of the zoo, [some of whom] don't have training in conservation and animal behaviour which is bad".

Some within conservation agencies perceive that the traditional conservation 'territories' of government and conservation groups are being infringed upon by the newly stated goals of zoos. Most of the people from government wildlife agencies feel that the statutory responsibility of the government wildlife agencies should be guiding zoo involvement in wildlife conservation, certainly with respect to native species and perhaps less so regarding exotics. When discussing the movements of animals across state, national and international boundaries one person stated that there could be no doubt regarding the authority of the state; "the regulations are quite strong [and] clear".

Respondent arguments based in conservation biology contend that captive breeding is costly, has a high rate of failure, and de-emphasises the importance of conserving habitats. These views are well supported by the scientific literature (eg Fiedler et al 1993; McIntryre et al 1992; Rojas 1992; Snyder et al 1996). More specific concerns revolve around the genetic and behavioural degeneration of species held in zoos over extended periods of time. Moreover, the rigidly taxonomic concerns of zoos' species-based approaches are purported to address merely "the result of the problem not the cause".

Findings from conservation community surveys and interviews point to what appears to be an overall reticence on the part of the conservation community to consider zoos as centres of learning, science and conservation. Such beliefs are quite relevant to wildlife decision-making processes. Policy-making and implementation is an interpretive process that is heavily influenced by the values held by those involved (Bullis & Kennedy 1991). Participants in the policy process (which includes program implementation) can be operating from very different perspectives. In addition to their divergent views and preferences, groups involved in wildlife policy-making compete for access to power and information (Kellert & Clark 1989).

Whether originating in a zoo, government department, or NGO, wildlife conservation policies, will involve various economic, ecological and social-psychological valuations of wildlife that can, on occasion, result in inter- and intra-agency conflict (Kellert & Clark 1989). These factors operate among the network of organisations, groups and individuals involved in wildlife conservation. Eighty-five percent of the interviews and ninety percent of the surveys reveal that there is considerable scepticism within the wildlife conservation network regarding the ability of zoos to make significant contributions to conservation. Some respondents seriously doubt whether zoos have a role to play in conservation in the first place. Although many agencies, including zoos, formally declare the conservation of biodiversity as one of their major constitutional goals, common aims do not guarantee complementary or compatible programs. Within and between different agencies interested in protecting wildlife the divergent views about what is considered appropriate conservation action, and what the role of the different bodies *should* be, have considerable effects on policy development and action plans. Consequently, zoos may not be considered when government or non-government agencies are devising joint programs, restricting their inclusion in the larger wildlife and conservation policy community. The zoo community's exclusion from mainstream conservation programs hinders zoo contributions to preserving biodiversity. In turn, the awareness of such a marginal conservation role may encourage defensiveness in some zoo professionals who continue to use exaggerated (and misleading) accounts of zoo conservation performance when they create public relations and marketing policies (Mazur & Clark In Press, In Review).

#### **9.2.4 The Zoo Visitors**

While zoo visitors may not be key players in the creation of zoo or conservation policies, their perceptions of and attitudes towards zoos remain relevant to any discussion of zoo capacities for restoring endangered species or educating the public. By virtue of zoos' dependence upon public monies for their survival, these institutions are sensitive to public opinion. Additionally, zoo visitors are important 'barometers' for measuring the validity of zoo claims of being conservation advocates. We have already seen that there is considerable concern about zoos' capacities to educate. The questionnaire administered to visitors at Adelaide, Perth, Melbourne Taronga and Werribee Zoos, the Territory Wildlife Park, and Currumbin and Healesville Sanctuaries was designed to generate a national data base on zoo visitors' backgrounds and their perspectives of zoos and conservation.

### *i. Questionnaire Results Trends*

Certain questionnaire items produced largely similar results irrespective of which zoo respondents were attending: visitor awareness of the existence and causes of species decline; evaluations of nature; individual responsibilities towards conservation; perceptions of conservation methods and priorities; interests and expectations of zoo visits; and knowledge acquisition. Questions designed to elicit visitor perceptions of zoos' effectiveness in disseminating information and entertaining the public produced significant variations among particular institutions. In an effort to understand what factors may have been influencing some of visitors' responses, particular statistical analyses<sup>6</sup> assessed the predictive value of respondents' age, sex, schooling levels, occupation, visitation patterns, and membership of and time donated to environmental groups.

### *ii. Who Uses the Zoo?*

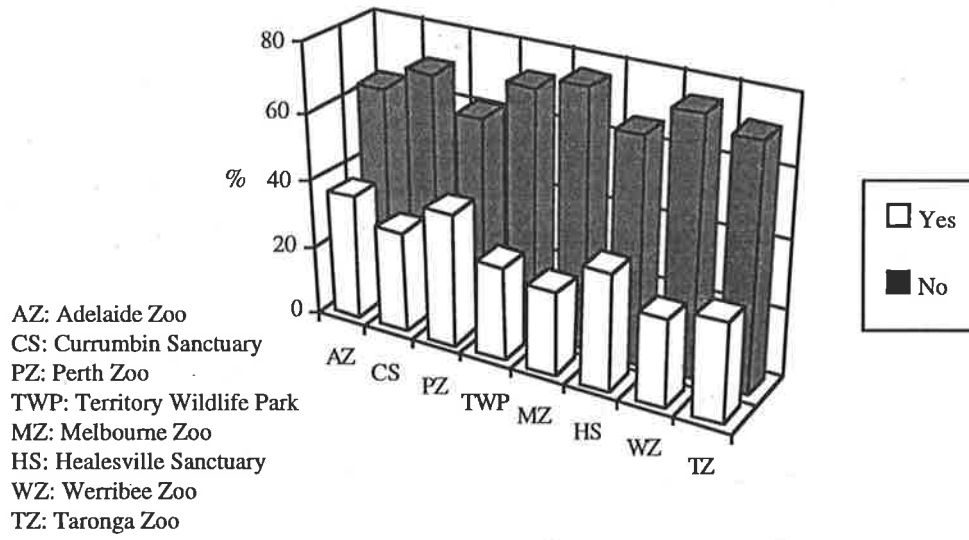
Results from the questionnaires support findings from other studies that zoos and wildlife sanctuaries tend to attract family groups (Kellert & Dunlap 1989). A majority of people responding to the questionnaires were accompanying children, except for those respondents at both the Territory Wildlife Park and the Healesville Sanctuary, where the majority were without children (Appendix 7). Visitors were well educated: most had completed either a secondary or tertiary-level education (Appendix 8). Survey data revealed a high incidence of visitors aged between 21-40 years of age (Appendix 9). Many were either professionals, those who performed house duties, tradespeople, clerks or students (Appendix 10). Currumbin Sanctuary and the Territory Wildlife Park were the only institutions *not* to show a majority of *local* visitors in the data. It appears as if the metropolitan-based zoos, or those within an hour of a large city (eg Werribee Zoo and Healesville Sanctuary) attract the most local visitors (Appendix 11).

A majority of respondents at each zoo indicated that they did not belong to any environmental groups (Figure 25), and did not contribute time to them (Figure 26). For the overwhelming majority of respondents who indicate they *were* affiliated with environmental groups, that association was constituted primarily by monetary contributions made to such groups as Greenpeace or the World Wide Fund for Nature. This low level of activism is consistent with findings from other studies which have categorised zoo visitors as a group with less complex knowledge of and concern for conservation when compared to other wildlife-related interest groups (eg Kellert 1978; Kellert 1987; The Roper Organisation Inc. 1990). We have seen in Chapter Six that zoo visitors tend to be motivated by an interest in having family-based recreational experiences in urban, park-like settings, rather than seeking to increase their knowledge or understanding of wildlife.

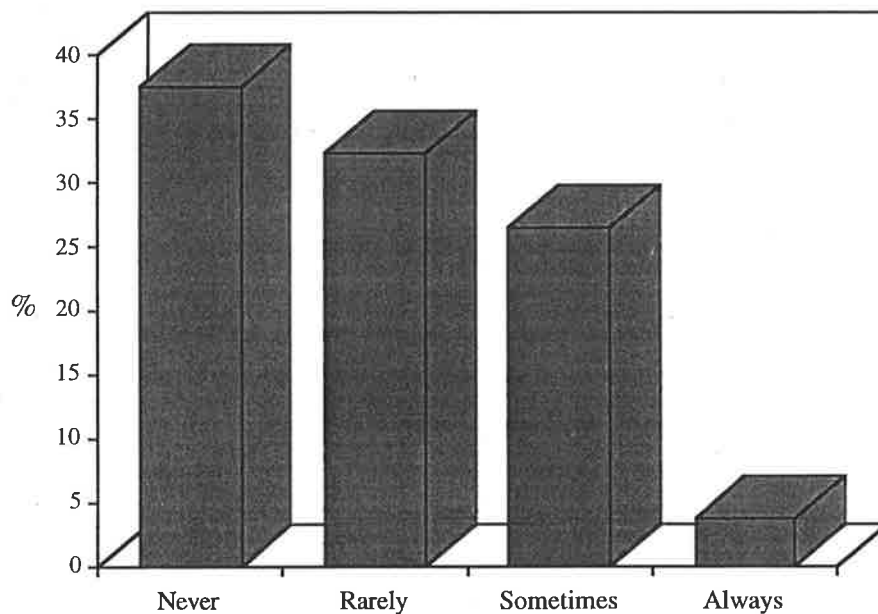
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<sup>6</sup> Logistic regression was used to assess the probability of a visitor offering a particular response based on the items listed above. This analysis entailed conceptualising particular questions as one of two possible outcome variables. For example, the four point scale of agreement (totally agree, agree, disagree, and totally disagree) was converted to a two point scale (agree and disagree). The multiple predictors (age, sex, visitation patterns) were then related to the outcomes.

**FIGURE 25: Are you affiliated with any environmental or conservation groups?**



**FIGURE 26: How often visitors donate time to environmental or conservation groups**





### *iii. Visitor Interests & Knowledge*

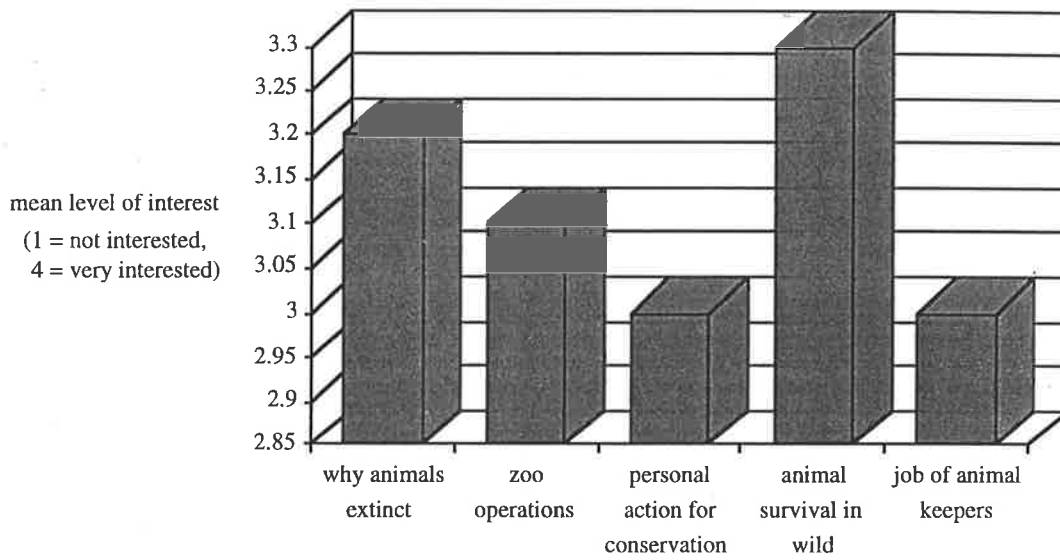
What people indicated they would be *interested in learning about* while at the zoo was comparable across the six properties - a bias for answering positively seemed most apparent here. On a four point scale of 'not interested' to 'very interested', the majority of zoo visitors selected 'interested' - the most neutral, yet still positive, answer for each selection: how animals survive in the wild; why animals become extinct; how zoos work; the job of the animal keepers; and what the public can do personally for conservation (Figure 27). It is interesting to note that '*personal action for conservation*' did not score as highly as some of the other categories. Due to their recreational motivations, it is not surprising that zoo visitors might show greater interest in topics that do not challenge their choice of a somewhat passive and relaxing form of amusement, rather than focusing on challenging and potentially disturbing issues such as conservation. It is also possible that visitors did not want to appear ignorant about this issue.

A closer examination of visitors' purported interest in personal action for conservation reveals that affiliation with environmental or conservation groups, the amount of time contributed to local conservation groups, and visitation rates were significant predictors of how visitors responded to the question: '*How interested would you be in learning about personal action for conservation*'. Those visitors who *did* record an affiliation with environmental groups showed a *lower* probability of having less interest in learning about personal action for conservation than those visitors who were not affiliated with conservation groups. However shallow their association with environmental groups may be, these visitors are predisposed to having a greater sympathy or enthusiasm for increasing their knowledge about environmental issues. Similarly, those respondents visiting zoos *more* frequently were more likely to indicate that they *were* interested in learning about conservation action. These visitors' enthusiasm for the zoo and its wildlife, as evidenced by their frequent visitation, may also be a precursor for expanding conservation knowledge. However, those visitors who devoted greater amounts of time to environmental groups were less likely to be interested in learning about personal conservation action. Given these visitors' levels of environmentally-oriented activities, it is not surprising that they feel less of a need to learn about what they can do for conservation.

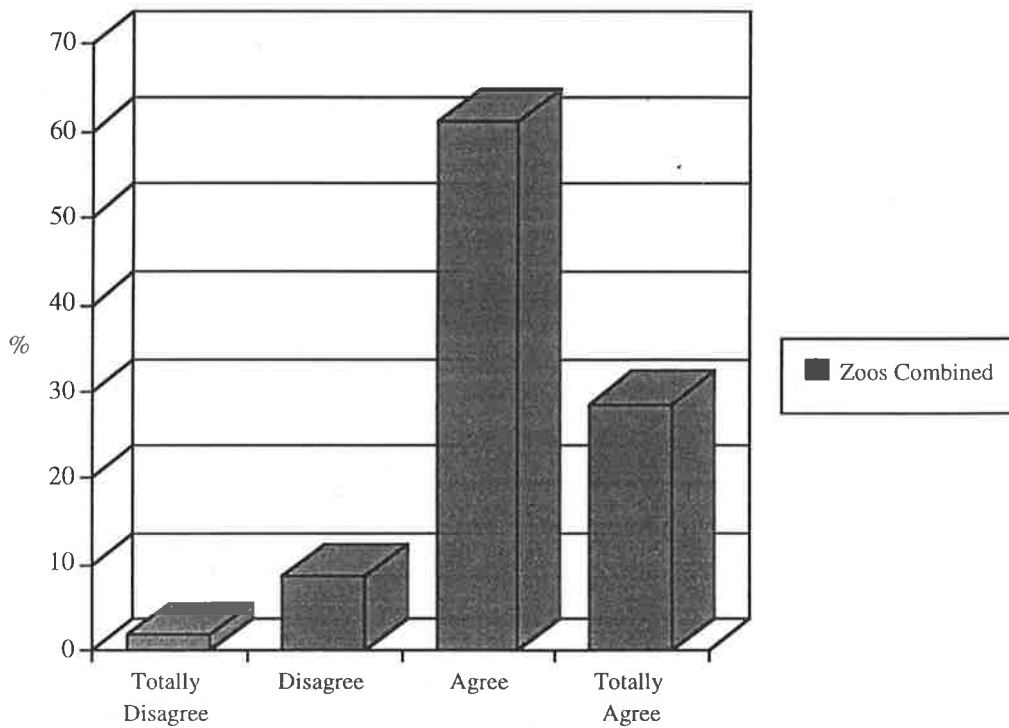
A majority (63%) of survey respondents agreed when asked whether they *expected to learn something about environmental issues when I go to the zoo* (Figure 28). However, further statistical analyses showed that respondents reporting they belonged to environmental groups had a higher probability of agreeing they had expectations of learning about environmental issues at zoo than those respondents *not* belonging to environmental groups. Additionally, the more formal education visitors possessed and the more time they purportedly contributed to environmental groups, the greater the probability that they would state their interest in learning about environmental issues at the zoo.

In an attempt to appraise the learning experiences of zoo visitors and the effectiveness of each zoo for imparting a conservation message, respondents were asked whether they were 'taking away' any new ideas with them, or did they recall anything in particular. They were given the

**FIGURE 27: I would be interested in learning about...**



**FIGURE 28: I expect to learn something about environmental issues when I go to the zoo**



choice to respond to one or both of two prompts: *'I didn't know/never realised that'* and *'It reminded me that'*. The questionnaire form provided several blank lines for their answers.

Visitors' comments were quantified and grouped according to six broad themes as shown in Table 37. Most visitors chose not to respond to this item on the questionnaire. This trend could have been caused by the effects of placing this question at the end of a long survey, as opposed to the likelihood that visitors did not learn anything, or were not reminded of anything during their zoo visit. Other factors contributing to the high no-response rate may have been respondents' varying abilities or unwillingness to articulate their thoughts on the matter.

For the first prompt, *I didn't know/never realised that*, the next common category after 'no response' - were answers which fit into the taxonomic/behavioural category. Such a distribution may be consistent with an historical and predominant emphasis on taxonomy in zoo education and interpretive materials up until fairly recently. A small percentage of the replies were conservation-oriented.

However, for the second prompt, *It reminded me that*, conservation-oriented comments comprised a greater percentage of the total. This variance may have been influenced by several factors. Both the wording and placement of the question could have exacerbated the content-bias of the survey. Respondents could have been influenced by the numerous conservation-related items while completing the survey, reacting to what they believed they were *expected* to say. Additionally, the wording of the second prompt may have been more appropriate for eliciting a 'conservation' response, if we assume that many people today possess some environmental awareness or 'conservation knowledge' before they come to a zoo. The conservation-oriented replies to both prompts were grouped into eight sub-themes as laid out in Table 38. A selection of the comments in each category is provided in Appendix 12.

Figure 29 shows that attendance levels and membership in environmental groups were found to be predictors for visitors offering conservation-oriented responses to the first prompt, *I didn't know/never realised that*.. Whether visitors belonged to environmental groups or not, the probability for selecting conservation answers *declined* as the frequency of zoo-visits *increased*, although there was a lower overall probability for conservation answers for those zoo visitors who were *not* affiliated with environmental groups. Visitors attending zoos more often may have a greater chance of being exposed to whatever conservation messages the zoo is providing, hence they are less likely to select 'not know' or 'never realise'. Similarly, visitors may be more familiar with basic conservation issues due to their affiliations with environmental organisations.

Figure 30, however, does show that a particular zoo was *the* predictor, over and above several demographic factors, for them selecting a conservation-oriented response to the second prompt, *It reminded me that*.. Members of the public surveyed at Adelaide Zoo had the highest probability for eliciting a conservation response from a zoo visitor - significantly higher than for the Territory Wildlife Park, Werribee Zoo, Melbourne Zoo, Currumbin Sanctuary or Taronga Zoo. Perth Zoo and Healesville Sanctuary had a relatively high probability of eliciting

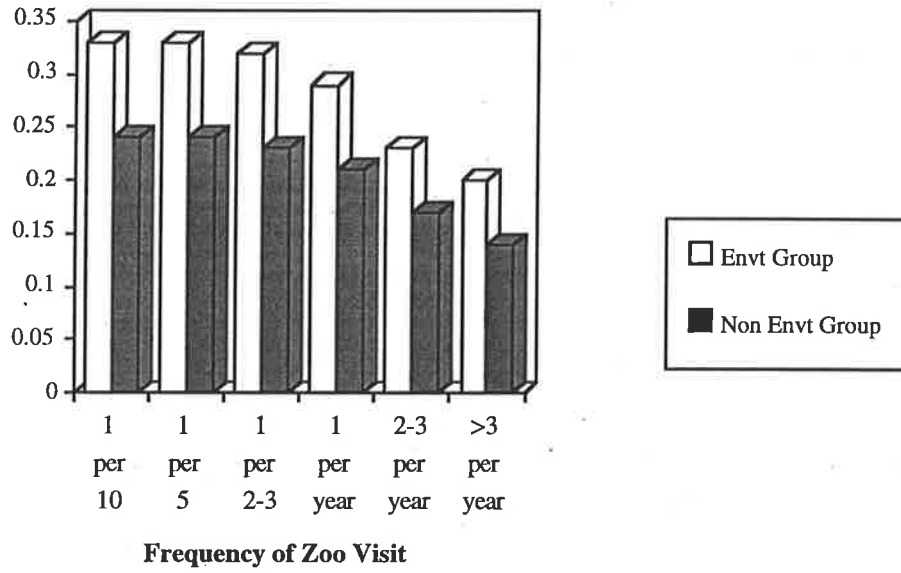
**TABLE 37: Categories for zoo visitor responses to qualitative questionnaire item**

Response Themes	% of Responses	
	Didn't Know	Never realised
Answers showing some appreciation or awareness of conservation or environment-specific issues and the role of zoos in conservation (e.g. <i>we might not see many of the species that exist today because of human disregard</i> )	10.2	23.1
Responses pertaining to taxonomic and behavioural information about certain animals and species (eg lizards <i>use their tongues to smell.</i> )	20.8	2.7
Answers indicating visitors' appreciation of the zoo and its physical surroundings (e.g. <i>this place is so relaxing</i> )	10.7	6.7
Statements indicating a visitors' general appreciation of animals (eg <i>all animals are beautiful</i> )	3.2	5.1
Any sort of negative response	3.4	2.8
No response of any kind	51.7	59.6

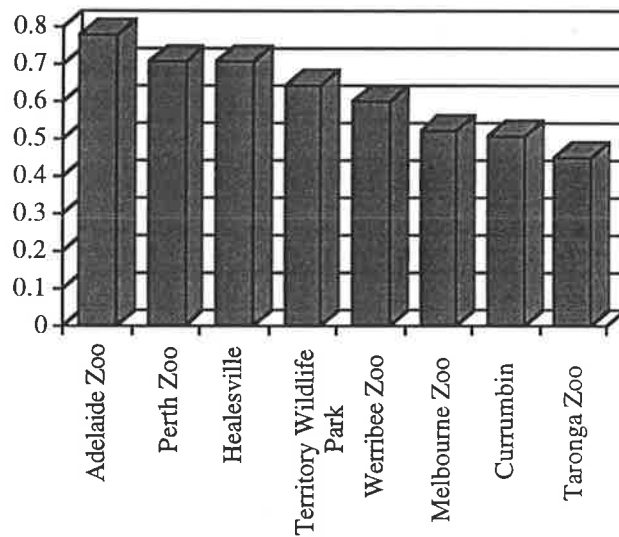
**TABLE 38: Zoo visitors' conservation-oriented replies**

Response themes	No. of responses
Perceptions of the role of zoos in conservation	74
References to zoo environments and exhibit designs	78
Generalised awareness of environmental problems	84
Recognition of humans' accountability for these dilemmas	37
Acknowledgment of individuals' responsibility towards environmental issues	30
Appreciation of different aspects of non-human nature	29
Perceiving the importance of conservation	14
Identifying the instrumental value of non-human nature as a primary justification for conservation	41
Prescribing future conservation actions	85
<b>TOTAL</b>	<b>472</b>

**FIGURE 29: Probability of a visitor offering a conservation-oriented response to 'I didn't know/never realised that ...'**



**FIGURE 30: Probability of a visitor offering a conservation-oriented response to 'it reminded me that ...'**



conservation answers, but only significantly higher with respect to Melbourne Zoo, Currumbin Sanctuary, and Taronga Zoo. The Territory Wildlife Park's probability for evoking conservation answers was only more significant than Taronga Zoo. While numerous factors may contribute to these data, a zoo's reputation and track record in endangered species conservation (as relayed by its 'successful' public relations campaigns) and the quality and emphasis of interpretive materials and education programs on threats to our environment have an important influence on visitors' perceptions. It may be that Adelaide Zoo's effective use of local media and extensive exhibit renovations in recent years contributed to its high rating.

*iv. How Informed are Zoo Visitors?*

Visitors had the chance to respond to several items on the survey concerning visitor awareness of species endangerment and its possible causes. Most respondents at all eight properties agreed on some level that the endangered species dilemma is one of considerable gravity, and that a major cause of this decline in species is due in part to large-scale loss of habitats (Appendices 17 & 18). The concern and interest of most citizens about environmental matters (eg The Roper Organisation Inc 1990; Lothian 1994) would account for these results.

*v. Visitor Valuations of Non-human Nature and Locus of Control*

Several survey items asked respondents to consider the value of nature in relation to human beings and their personal capacities and responsibilities for arresting species decline. A majority of respondents (57%) indicated that 'nature' is an entity deserving of consideration - above and beyond its utility to humans. Most respondents (82%) also indicated that they considered themselves to be environmentalists. Furthermore, a majority (94%) of people did not agree that they could not assist with conservation efforts for endangered species and agreed (95%) that individuals have some responsibility to help save endangered species. Despite findings from other studies that show zoo visitors to be less interested in conservation-specific knowledge, the popularity of environmental concern has ensured that zoo audiences too have at least a superficial understanding of the more commonly-known environmental problems such as species extinctions.

*vi. Visitors' Assessment of Zoo Performance*

Respondents tended to rate zoos' performance favourably in several categories. However, there were some differences among individual institutions. Respondents were given a five point scale where

- 1 indicated poor;
- 2 indicated average;
- 3 indicated good;
- 4 indicated excellent; and
- 5 indicated don't know.

Where mean ratings are calculated, the "don't know" option was excluded from the scale. Most respondents rated zoos' performance favourably with regard to *conserving endangered species* and *conducting animal research*. Yet, 47 percent indicated they 'didn't know' about zoo research capacities. With regard to *entertaining the public*, Perth Zoo's scores were significantly lower than the Melbourne Zoo, Werribee Zoo and the Territory Wildlife Park. Taronga and

Adelaide Zoos' ratings showed a marked difference from the Territory Wildlife Park (Figure 31). Relative to the experiences at some metropolitan zoos, it appears as if the unique open-range formats and guided visits offered by Werribee Zoo and the Territory Wildlife Park have very high entertainment value.

When it came to visitors perceiving a zoo's capacity for *educating the public* the Territory Wildlife Park's ratings were markedly higher than those of Perth, Adelaide, or Taronga Zoos. Perth Zoo's scores reflected a significantly lower rating than Currumbin and Healesville Sanctuaries, Werribee Zoo, or the Territory Wildlife Park (Figure 32). Again, the higher rating of certain zoos is most likely attributable to several features: naturalistic exhibits set in open-range and/or bushland settings; easily discernible themes portrayed by exhibited animals (eg Australian or African native species); and high levels of interaction with zoo staff. The mixture of these programs may heighten learning experiences of zoo visitors.

With respect to the ability of *the zoos to provide information* on certain topics, a *four point scale* similar to the one mentioned above was applied:

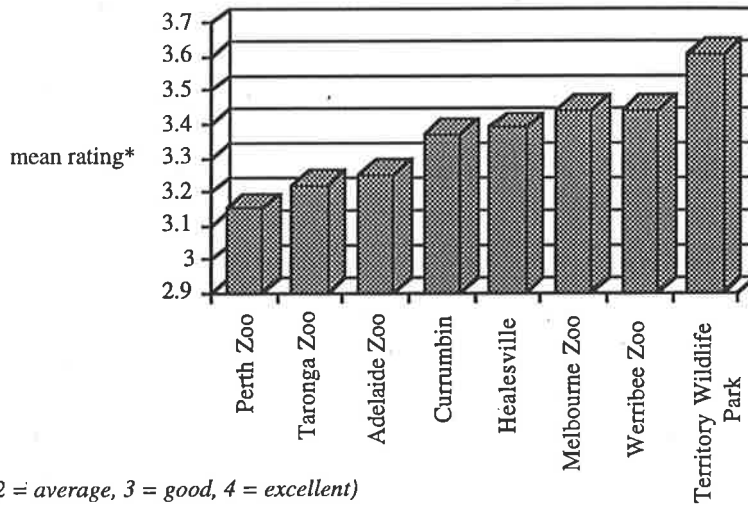
- 1 indicated totally ineffective;
- 2 indicated ineffective;
- 3 indicated effective and;
- 4 indicated totally effective.

Overall, the ratings were favourable. There were no discernible institutional differences regarding zoos' capacity to inform visitors on *why species are endangered*, mean scores - ranging from 2.71 - 3.07 - reflected an 'effective' performance rating. However, with regards to telling visitors about *public action for conservation* (Figure 33) ratings for Taronga and Adelaide Zoos were significantly different from Currumbin. The reasons for these results are unclear, however there is a tendency for zoos such as Taronga and Adelaide to emphasise publicising their own accomplishments in endangered species restoration as a means for facilitating environmentally-conscious behaviour in their visitors. The wildlife presentations at Currumbin Sanctuary, particularly the wild bird feeding sessions, and some of the signage, encourage visitors to understand and interact with native wildlife. Sanctuary visitors may be interpreting this type of information as supporting 'conservation.'

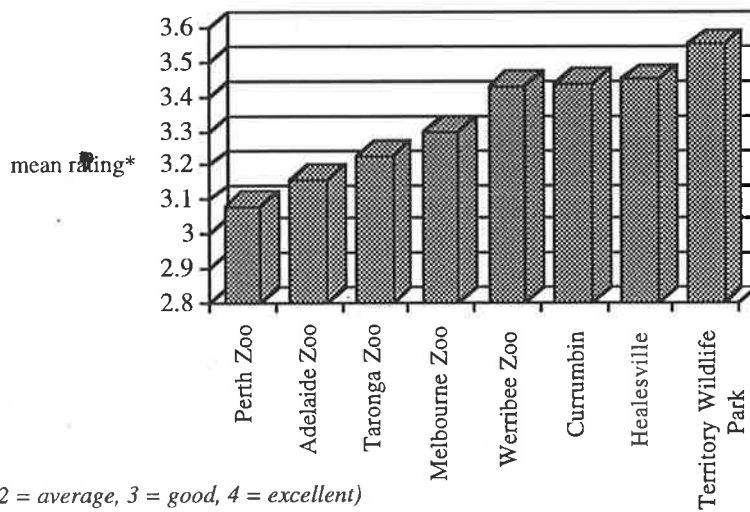
Taronga Zoo also performed significantly below Melbourne, Healesville, Currumbin and the Territory Wildlife Park when it came to providing details about *animal keeper's jobs* (Figure 34). This discrepancy may also be attributable to keeper talks and animal presentations that comprise an integral component of the interpretive program for the latter institutions.

The category *natural habitats for animals* showed Healesville Sanctuary and the Territory Wildlife Park ratings as significantly higher than those for Taronga, Adelaide and Perth Zoos (Figure 35). The bushland features and wildlife presentation narratives at the Sanctuary and Wildlife Park presumably provide more information about animals' environments than has traditionally been catered for by the metropolitan zoos. Zoos' ratings for supplying

**FIGURE 31: How good a job do you think the zoo is doing at: entertaining the public**

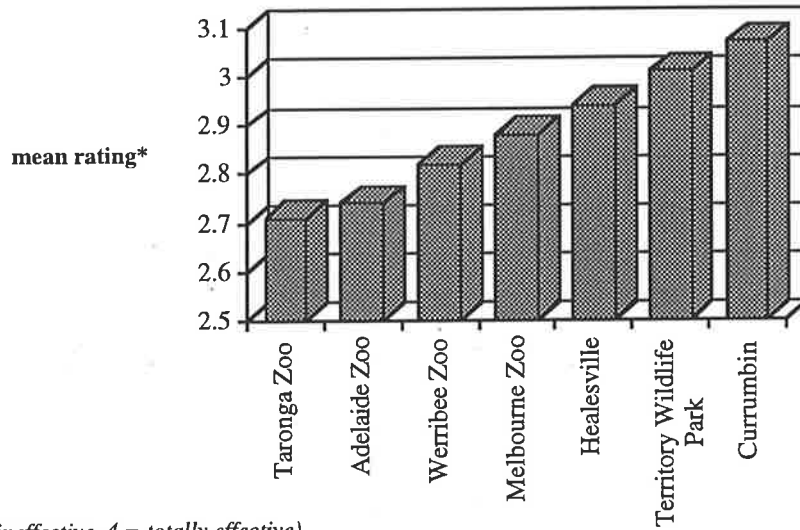


**FIGURE 32: How good a job do you think the zoo is doing at: educating the public**



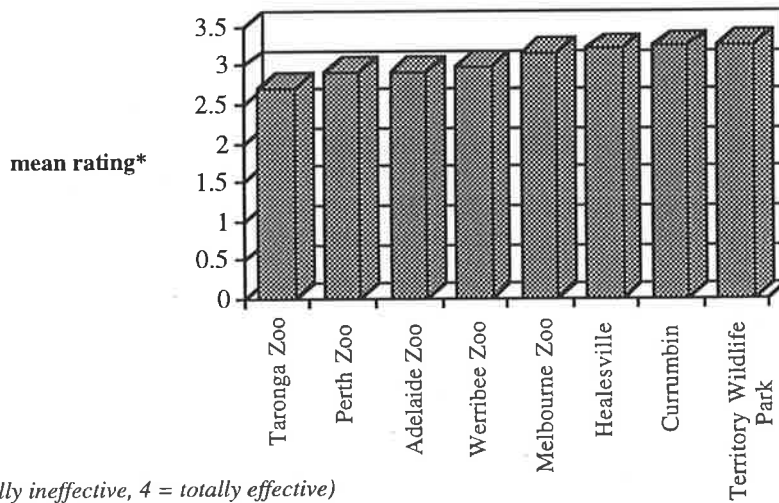


**FIGURE 33: How effective is the zoo in providing information on: public action for conservation**



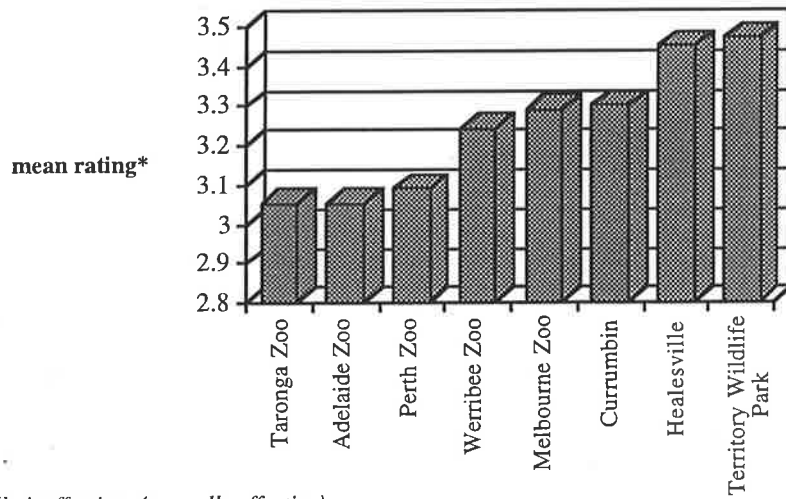
*\*(1 = totally ineffective, 4 = totally effective)*

**FIGURE 34: How effective is the zoo in providing information on: animal keeper's jobs**



*\*(1 = totally ineffective, 4 = totally effective)*

**FIGURE 35: How effective is the zoo in providing information on:  
natural habitats for animals.**



*\*(1 = totally ineffective, 4 = toally effective)*

information on *animal behaviour* also varied (Figure 36). Werribee Zoo's ratings were significantly higher than those of Perth, Adelaide and Taronga Zoos. The scores for Healesville Sanctuary and Territory Wildlife Park were markedly different from those for Perth and Adelaide Zoos. Perth Zoo's score was distinctively lower than most of the other zoos, except for Adelaide and Taronga Zoos. Adelaide Zoo fared less well compared to Healesville Sanctuary and Werribee Zoo. There is a strong emphasis at Werribee on encouraging visitors to understand 'natural' behaviours of the animals they observe. Expansive enclosures enable the Zoo to display species and social groups of animals that closely resemble conditions of the wild. Zoo animals are more likely to exhibit characteristic behaviours if their enclosures provide appropriate social and biological stimuli. It may then follow that those zoos that can best simulate 'natural' environments for their animals are more likely to feature these 'normal' behaviours in their animals.

Respondents were also asked to rate zoo effectiveness in conveying information on their *daily operations* (Figure 37). Generally, visitors viewed zoos favourably with an estimated 12 percent of visitors indicating they 'didn't know'. Mean scores, however, illustrate that Perth and Taronga Zoo scored significantly below the Melbourne Zoo, Healesville and Currumbin Sanctuaries and the Territory Wildlife Park. Adelaide and Werribee Zoos' ratings were markedly lower when compared to Currumbin Sanctuary and Territory Wildlife Park. These ratings indicate the varying priority that is assigned by various institutions to educating visitors about the zoos' day-to-day activities. In some cases, animal presentations will include some discussion of zoo procedures. The Territory Wildlife Park's animal hospital and nursery has large windows that enable visitors to view keepers tending their animals.

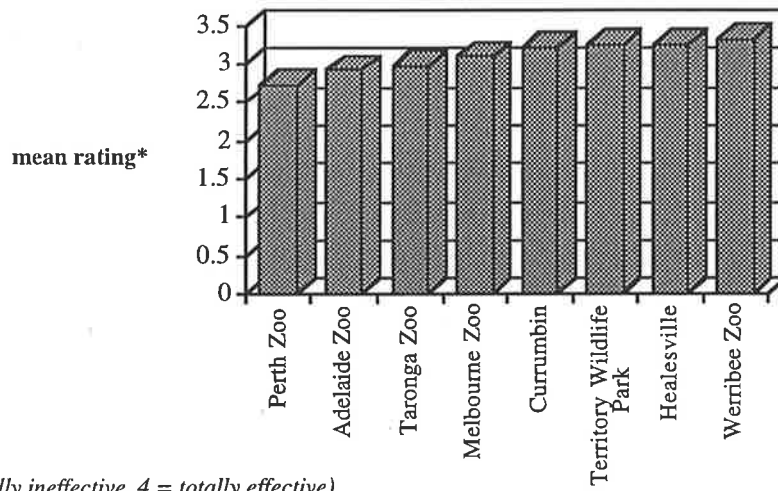
When asked to rate how effective zoos were in providing material on *how species have evolved*, an average of 20 percent of respondents selected 'don't know'. The remainder appraised zoos on a somewhat unfavourable basis (Figure 38) and this response indicates zoos' traditional emphasis on taxonomic and biological features of their animals, rather than on ecosystems.

#### vii. Visitor Perceptions and Appraisals of Zoos and Other Agencies

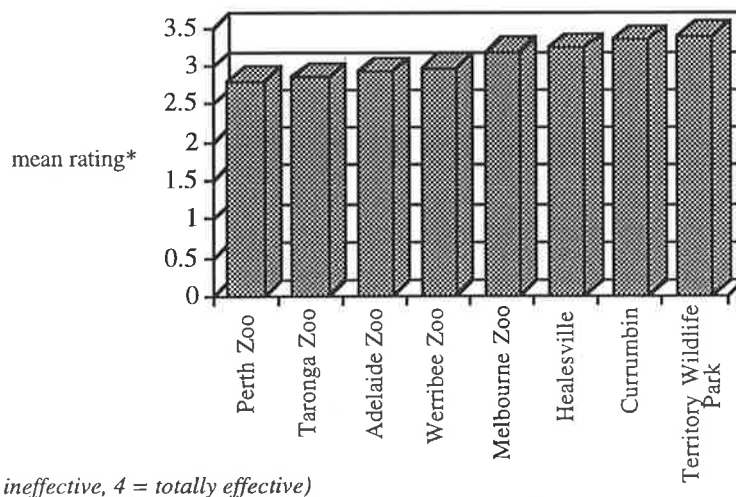
I asked visitors to rate zoos' conservation performance alongside other organisations, groups and individuals. Respondents rated government, NGOs, zoos, private citizens, community groups and themselves on a four point effectiveness scale. A majority of visitors (61%) responded negatively towards the effectiveness of *government* (Figure 39). *Non-government conservation organisations* were rated comparably across all properties, with a majority of people (58%) perceiving them to be 'effective'. Most people rated *zoos* in a similar manner. Responses to the effectiveness of *private citizens, community groups* and *myself* were consistent at all eight zoos in their less-than-favourable ratings.

It is highly likely that the public's negative perceptions of politicians or ignorance of how Federal and State governments function with regards to conservation accounts for the consistently low ratings for 'government'. This does not rule out, however, the public's deeply

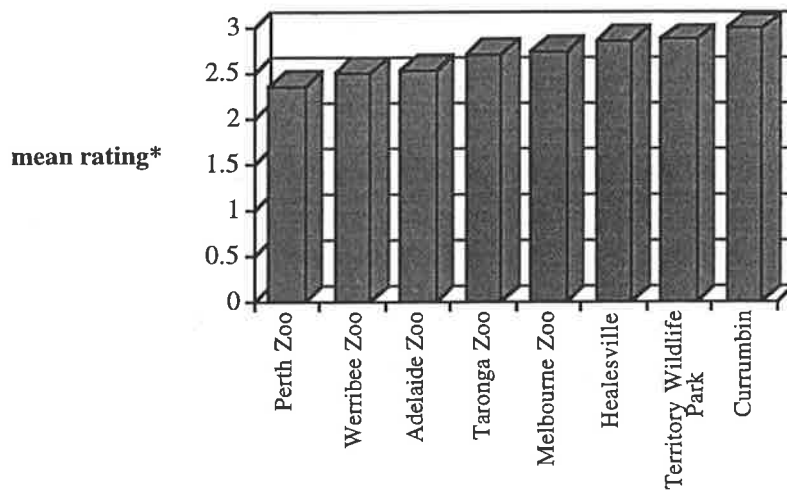
**FIGURE 36: How effective is the zoo in providing information on: animal behaviour**



**FIGURE 37: How effective is the zoo in providing information on: its daily operations**

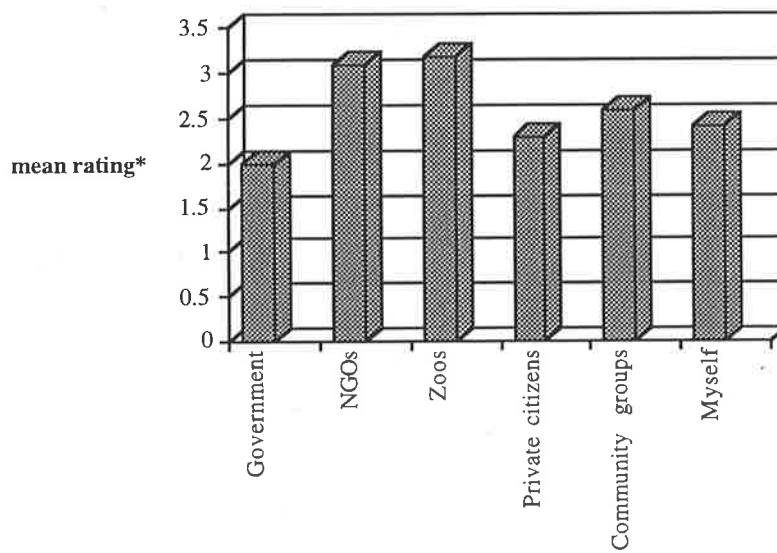


**FIGURE 38: How effective is the zoo in providing information on: how species evolve**



\*(1 = totally ineffective, 4 = totally effective)

**FIGURE 39: How effective items are in contributing to conserving endangered species**



\*(1 = totally ineffective, 4 = totally effective)

entrenched (and justifiable) cynicism towards government. The slightly more favourable rating for conservation organisations as opposed to 'government' may be due in part to respondents not being familiar with what governments really do to preserve wildlife or their associating the word 'conservation' with organisational effectiveness in preserving wildlife.

#### viii. Inter-agency Efforts

Many respondents (40%) agreed that *Government wildlife agencies & Zoo have similar goals regarding conservation of endangered species*, although 38 percent selected 'don't know' in response to this survey item. Overall, most agreed that *many environmental groups (such as Greenpeace, World Wide Fund for Nature, Australian Conservation Foundation) and zoos have similar goals*: 51 percent agreed and 20 percent totally agreed. When asked whether *zoos, government wildlife agencies and NGOs should work together for the conservation of endangered species* a majority of visitors (68%) indicated that they 'totally agreed'.

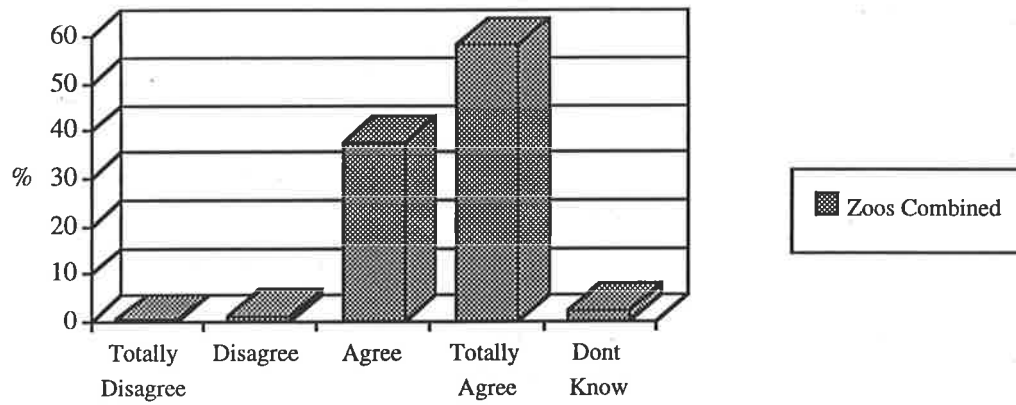
Respondents appear to believe that environmental or conservation groups are more closely aligned in purpose to zoos than are governments, which may explain why these organisations were rated more highly on their conservation performance than was government. There remains a significant number of people who are unsure about how such organisations are related in function as evidenced by the substantial amount of visitors selecting 'don't know' for their responses to each of the items mentioned above. Despite this lack of clarity, most visitors were strong in their endorsement of cooperative conservation efforts.

#### ix. Conservation Methods and Priorities

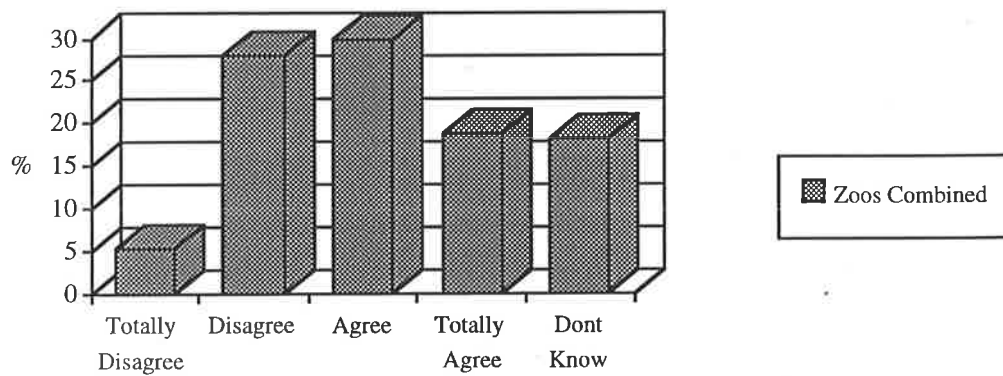
The conservation community and animal welfare groups have been critical of zoo wildlife conservation methods, namely captive breeding for reintroduction. In an effort to determine whether visitors had similar attitudes, visitors were asked to indicate either their approval or disapproval of these methods and the related issues. Most people agree that habitat preservation is a necessity for saving species (Figure 40).

When asked whether habitat preservation should take priority over saving species in zoos, 30 percent of respondents agreed, 33 percent disagreed, and another 19 percent indicated they did not know (Figure 41). Those people belonging or contributing money to environmental groups had a higher probability of agreeing with this item on this questionnaire, as did those who were older and had higher levels of formal education. Certain life and educational experiences may enable some zoo visitors to comprehend better the intricacies of endangered species restoration, namely that ex-situ programs should not receive a greater priority over in-situ conservation. Visitors reporting that they go to zoos *more* frequently, when compared with visitors indicating infrequent attendance levels, showed a higher probability of disagreeing that spending money on habitats was more important than putting it towards zoos. Their support of the zoo is not unexpected given their recurrent visitation patterns. This trend was consistent across all properties, but was most pronounced at Werribee Zoo where a significant proportion of respondents were members of Friends of the Zoo.

**FIGURE 40: To be effective, endangered species protection must include habitat preservation**



**FIGURE 41: It is more important to spend money on habitat perservation than to spend money on breeding endangered species in zoos**



Results were mixed concerning respondent perceptions of zoo animals' chances for survival after reintroduction to the wild (Figure 42). An average of 18 percent of respondents from each zoo indicated that they didn't know. This result is not an unremarkable result since most zoo visitors tend not to have an advanced understanding of conservation issues and would not be exposed to the substantive evidence that illustrates the difficulties associated with reintroduction processes.

Notwithstanding this trend, most respondents agree on some level (48% agree and 48% totally agree) that it is acceptable to keep some wild animals in the zoo if that would help to prevent them from becoming extinct in the wild (Figure 43). By virtue of their attendance, we might assume that most visitors are largely supportive of zoos and their conservation efforts. It then follows that while some zoo visitors may have concerns about the ethical and practical dilemmas associated with breeding endangered species in captivity, it is unlikely that they - as a group - would strongly object to such measures, especially if a species' survival is in question.

The majority of respondents also indicate that it was 'sometimes' appropriate to remove animals from the wild and place them in zoos if they face extinction (Figure 44). It may be that respondents are indicating their favour of zoo methods, but as a conditional hedge against extinction and not as a priority over habitat conservation.

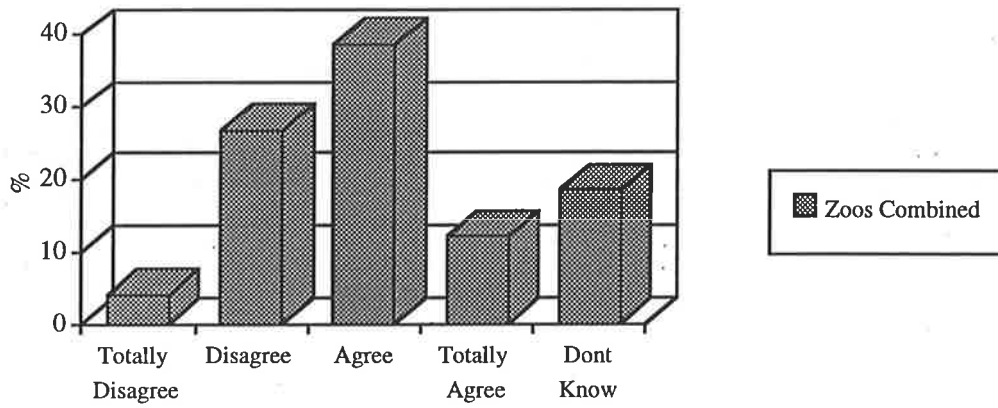
#### x. Discussion

The survey data show that certain views are held consistently by visitors across the different zoos. Not surprisingly, visitors are largely supportive of zoos' conservation role and rate zoos' education and entertainment performances highly. A substantial proportion of zoo visitors surveyed have some compassion for and interest in nature and are more or less attuned to the existence of many species' demise. Most visitors appear to appreciate the need for endangered species advocacy at all levels of society and that current efforts - including their own - need improvement. What form such efforts might take, however, has not been elicited and is likely to vary greatly among individuals.

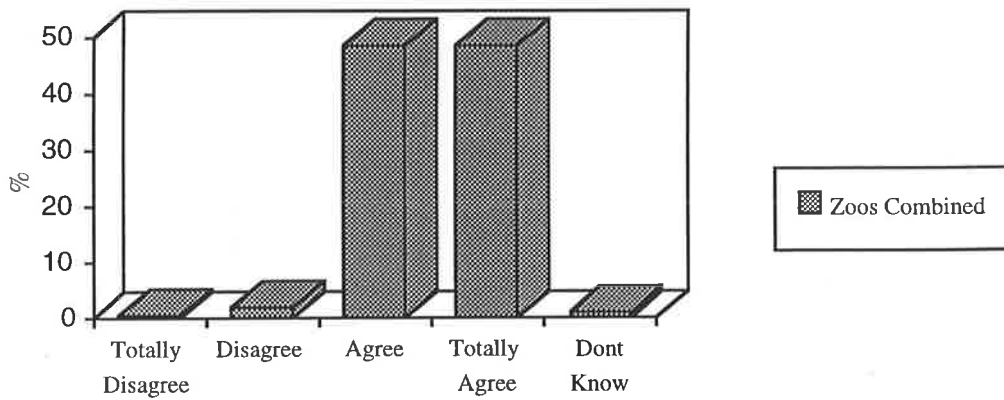
There are considerable disparities between agreeing that environmental efforts need improving and choosing to act on those observations. Despite high levels of purported interest in and expectations of environmental learning experiences at the zoo, a lack of commitment to conservation activism among zoo visitors remains. The primary indicator for this finding has been the small numbers of visitors belonging to and donating time to environmental or conservation groups. This is not meant to rule out the possibility that zoo visitors demonstrate some environmental concern at home or in their workplaces (such as recycling or using environmentally-benign cleaning products). Nonetheless, there is some evidence to show that those visitors who are affiliated in some manner with conservation groups and have higher levels of education will be more discerning with regards to zoos' conservation policies and be more inclined to view the zoo as an institution which should be promoting environmental values. It *could* be argued that because (1) most visitors do *not* have strong ties to conservation groups,



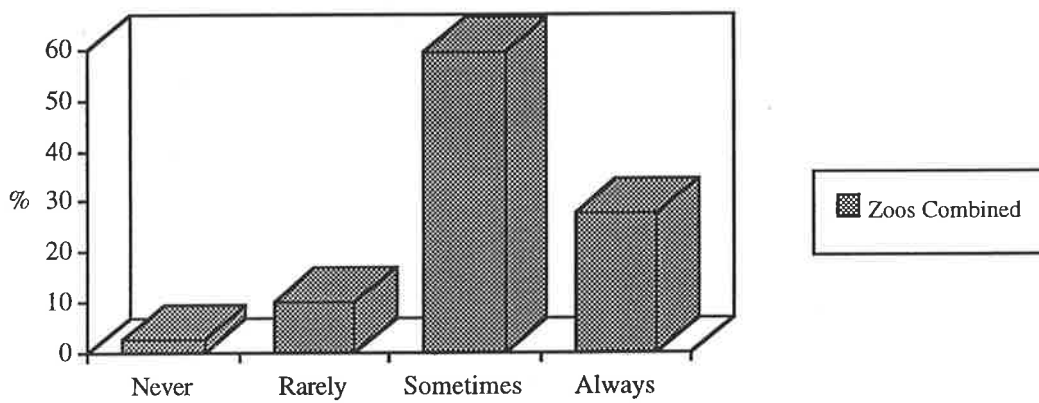
**FIGURE 42: Animals born in zoos rarely survive when put back in the wild**



**FIGURE 43: It is acceptable to keep some wild animal in zoos if that will help to prevent them from becoming extinct in the wild**



**Figure 44: If a species is about to become extinct we should take these animals from the wild and put them in a zoo**



and (2) most are less interested in learning about conservation activism than other topics, zoos' programs are deficient. That is, they are not effectively oriented towards attracting conservation-minded people nor facilitating more 'environmentally-conscious' behaviours in visitors. This performance discrepancy is consistent with criticisms that accuse zoos of being mere lightweights in the fight for conservation, who are also backing down from opportunities to re-educate visitors with more progressive environmental values wherever possible.

Variable performance ratings among the eight zoos indicates that some institutions may be better equipped than others for successfully educating and engaging its visitors in meaningful conservation dialogues. While each zoo has its strengths and weaknesses, the consistently higher performance of the sanctuaries, wildlife park, and open-range zoo intimates they are doing something 'right', particularly with respect to the provision of specialised information. Some metropolitan zoos will perform better than others. However, the highly naturalistic settings of the sanctuaries, wildlife parks and open range zoos combined with their programs such as guided visits, keeper talks and educationally-oriented animal shows are likely to foster richer encounters between animals and people.

### 9.3 CONCLUSION

This chapter has presented a compendium of views on the role of zoos in conservation. Individuals' perceptions and values are closely linked to the design and implementation of zoo conservation policy. Those perspectives included samples from the zoo and conservation communities and zoo visitors. Interview and questionnaire results indicate that there are favourable and negative attitudes towards zoos, and that these come from outside *and inside* the zoo community. There are readily discernible similarities in some areas among the opinions of zoo and conservation professionals about zoos. Misgivings parallel the issues covered in Chapter Four. That is, not only are there fairly widespread doubts about zoos' ability to support conservation, but there are questions about *how* the conservation imperative is construed in zoos and whether zoos' contemporary conservation policies are suitable given current ecological and ethical contexts. Commendatory views are usually associated with zoos efforts to change and focus more on education programs than on zoos' endangered species track record. Zoo visitors are typically supportive of zoos. However, their backgrounds and responses to the questionnaire administered as part of this research allude to a knowledge base that is founded on popularised and generalised understandings of environmental issues and zoo programs.

How can zoo professionals serve the interests of their constituency while simultaneously improving zoo conservation performance? The next chapter will conclude this dissertation by reviewing how the role of zoos in conservation flows from the varied public perceptions discussed in this chapter and myriad issues presented in previous chapters. Recommendations for zoo conservation policy reform will also be offered.

## **CHAPTER TEN: CONCLUSIONS AND RECOMMENDATIONS**

*The issues facing the zoo community are much broader today ... zoos are sailing into uncharted waters. There is no substitute for critical thinking, without which one would be wandering deeper into a forest without a compass ... (Kawata 1991: 5)*

*.. researchers working in fields which impinge on social, economic and political issues have a responsibility actively to promote the dissemination and discussion of their findings not only with the customer but also with others for whom they may have relevance ... the academic researcher has a vital role within an increasingly complex world, in helping people understand the operation of social institutions, the power relationships within them and ways in which change may be brought about (Hadley 1987: 99).*

### **10.1 ZOO INCLINATIONS**

The following discussion will review the principal arguments, methods, and findings of this research. In lieu of what must be a finite capacity of any single inquiry for detecting and generating zoo knowledge, several areas for future research are identified as a means for remedying information voids. Establishing a series of interdisciplinary policy analyses could then be directed towards assisting the zoo community's acceptance, understanding, and implementation of the recommendations produced by this research.

Zoos' conservation role encompasses an array of activities which are designed to protect endangered species and promote favourable human attitudes towards nature - and towards zoos themselves. The zoo community continues to demonstrate a substantial level of creativity and determination in its efforts to transform zoos into more socially relevant and acceptable institutions. Conservation ambitions are realised in face of substantial philosophical and practical challenges. Species management can compromise the well-being of individual animals and requires an inordinate amount of coordination, cooperation, and the dedication of resources. Education programs are also 'resource-hungry' and enjoin a high level of organisational commitment. Matching the conservation potential of zoos to genuine capabilities will remain an important point of debate for the zoo community and the general public.

The structural context of zoos is particularly relevant to both the design and realisation of conservation aims. Zoos' conservation principles and practices are created and shaped in part by an assemblage of legislative, governmental and organisational arrangements. This structural context imposes a particular order and ideology on zoos (and other conservation organisations) that reflects and reinforces a highly rationalised and industrialised society. Such a restrictive framework is not necessarily equipped to face the unique, complex challenges presented by environmental problems. Indeed, the dependence on bureaucratic forms of organisation in environmental policy has been depicted as fundamentally incompatible with the holism inherent in the ecological perspective, because environmental problems tend to defy boundaries conceived of and imposed by humans (Doyle & Kellow 1995; Torgerson & Paehlke 1990). The technocentric environmentalism fostered by these circumscribed policy settings may actually guarantee that a species-approach to conserving biodiversity - as embodied by zoos - will always be needed.

It then follows that we may wish to ask what we can expect from zoological parks as they aspire to become conservation resource centres? To what degree are zoos encumbered or assisted by the technical and instrumental rationality of bureaucracies which prescribe certain ideologies and institutional practices? Unfortunately, zoos' mission to restore endangered species and shape public opinion and behaviour in favour of an ecocentric environmental ethic may be beyond the scope of its fragmented structural context. These conservation ambitions require flexible, adaptive settings and solutions. It has been my experience that the capacity of Australasian zoos to implement ecologically-inspired conservation policies has been more a function of exceptionally dedicated and motivated individuals working to implement a conservation role *in spite of* the structures they work within, than because of those structures.

This dissertation has shown that the corporate management ideologies that also promote order and accountability tend also to accompany restrictive administrative arrangements. Zoo professionals *can* benefit from articulating goals and strategies, evaluating organisational performance and securing reliable funding bases for their institutions. These are useful exercises in some settings. In this context, however, both the pressures that zoo professionals respond to and the tools they select to articulate and implement goals are at issue. At a time when governments look to their cultural and educational institutions as places to impose severe cost-savings, zoo professionals are being told (and telling themselves) that if they became more 'business-like' they would be less of a strain on the public purse. Certainly, zoos can benefit from implementing greater efficiencies, but what is usually meant by this is that zoos should behave more like commercial enterprises. Such an imperative begs a question similar to those that Griffen (1993) implores museum professionals to pose. What is the proper 'business' of zoos, and how is that *different* from commercial enterprises?

Like museums, modern zoos were originally established for the general benefit of members of the public and many of them still require public and private subsidies to supplement income derived from their visiting public. If conservation (in an ecological and educational sense) is truly zoos' primary activity, there are major ideological and methodological problems with zoos attempting to recover their expenses by pricing those programs. Many zoos are also like museums, insofar as the absence of bottom-line profit margins as a way to assess performance has encouraged zoo professionals to use an array of narrow, quantitative measurements to show themselves and others how well they are doing. Under a corporate management framework, these policies have definite and negative effects on the zoo community's capacity to implement its conservation role: animals are objectified and conservation becomes an activity defined primarily by economic indicators.

These trends beg the question, what *kind* of conservation ethic is being woven throughout zoos' principles and practices? Environmental concern is neither straightforward nor simple. Rather, it embodies a wide spectrum of values such as O'Riordan's (1986) technocentrism and ecocentrism. In the last two decades, zoo professionals have fared well at incorporating ecological principles into some education programs. Nonetheless, the zoo community remains

largely dependent on highly technical and artificial ex-situ conservation methods for endangered species restoration and corporate philosophies which encourage commercialised business practices. These preferences are consistent with the broader context of administrative and environmental problem solving which inhibits policy shifts away from the 'light green' values of technocentrism towards the 'dark green' merits of ecocentrism. The nature of the environmental movement which acted as the initial catalyst for zoos' transformation has changed in some ways. Doyle & Walker (1996) suggest that political interests of the "Far Right" in contemporary democracies have facilitated a "business as usual" orientation to environmental change whereby ecological dilemmas are narrowly considered within an economic and political framework. Additionally, the methodological and administrative complexities of ecosystem approaches to conserving biodiversity have yet to be overcome. Collectively, these conditions may be more favourable for the selection and use of conservative (as opposed to radical) conservation measures as embodied by zoos.

Perhaps it should come as no surprise that zoos' public images are still seen to be those of an institution whose conservation identity is subordinate to its fundamental recreational and commercial goals. This is evidenced by the type of visitors zoos tend to attract and the experiences zoos provide for those customers. A telling indicator of zoos' conservative conservation profile is the considerable doubt found in parts of the conservation *and* zoo communities about the integrity of zoos' conservation role. Of primary concern to many is the degree to which the zoo community should distance itself from more historical attributes and functions of zoos, and how closely aligned zoos (as a community and as separate institutions) should be with industry, the media, government and various factions within the conservation community. There is considerable scope for zoo professionals to strengthen their relationships with members of the conservation community (government and non-government), while simultaneously assessing how - and to what degree - the rest of its constituency (media and industry) should assist zoo conservation policy.

Different strategies require different approaches. If some zoo professionals choose to direct a higher proportion of time and resources to developing more commercially-oriented programs that raise the zoo's entertainment profile and revenues, there may be less time and fewer resources for research, education, or conservation-based projects. Unless the zoo community can find ways to manage its commercial imperatives in a way that does not degrade the ecological integrity of its conservation efforts, the doubt about zoos that exist in the conservation *and* zoo communities is likely to continue, and could deepen. While there will always be some ideological gaps between and within agencies, a consistent and more committed approach to conservation by zoos will eventually arise in part from the ways in which powerful members of the zoo community come to terms with numerous and sometimes contradictory zoo functions and beliefs that favour particular policy directions. Until then, the ability to wholeheartedly embrace a conservation identity remains in jeopardy due to particular external pressures imposed upon them and perceived priorities of powerful individuals within the zoo community.

## 10.2 ZOOS AND ENVIRONMENTALISM

This dissertation demonstrates that the tradition of maintaining wild animals in captivity for display purposes has long been the defining characteristic of any zoo. More recently, the international zoo community, led by professionals from wealthy Western zoos, uses conservation as the feature that most aptly characterises what a zoo does. No longer content to sustain the old image of zoos as 'entertaining menageries', members of the zoo community are now largely intent on becoming more active proponents for conservation. Much of the rhetoric emanating from the zoo community constructs, supports and points to profound changes that have occurred in zoological gardens. Such a claim has constituted the starting point for this investigation into the nature of zoos' conservation policies.

Many zoo professionals have been able to effect notable conservation developments in their institutions. Despite this progress, modern zoos still exhibit some characteristics that are profoundly similar to royal menageries and zoological gardens of previous centuries. In addition to displaying these cognate features, many zoo professionals have embraced certain contemporary management trends that confine zoo conservation policy to the realm of conventionality.

This dissertation demonstrates that zoos' alliance with conservation is an instructive example of the various ways in which contemporary environmental interests are manifest in predominantly conservative organisations. The zoo example verifies claims which assert that technocentric ideologies and methods tend to dominate most modern environmental policies. Multiple values and approaches comprise modern environmental concern. Environmental decision-making is highly politicised; official policies, characterised by piecemeal, fragmented approaches to problems, are often biased in favour of the status-quo. This dissertation uncovers various streams of environmental thought present in zoo conservation policy and points out that technocentric values dominate. Hence, the zoo example functions as a microcosm of broader, contemporary environmental policy.

## 10.3 EXPANDING THE ZOO-CONSERVATION DISCOURSE

Understanding conservation values and how they are related to practice is ideally an important focus for any piece of environmental studies research, irrespective of the institution being studied. I undertook the task of researching zoo conservation roles in a manner that differs from traditional conceptual treatments of and methodological approaches to studying these issues. In this dissertation the role of zoos in conservation is defined as a *social* problem encompassing numerous political, economic, institutional and interpersonal variables.

The zoo conservation issue is constituted in this inquiry chiefly by its complexity. Any conceptual, theoretical or methodological approach that fails to account for the intricate nature of zoo conservation policy, risks a substantial loss of meaning in any findings or conclusions reached. Analysing the role of zoos in conservation necessitates an approach that offers an alternative to the predominantly rigid and mechanistic treatments which proliferate in research in

zoos, research on zoos, and organisational practices of zoos. I challenged these narrow methods by using the notion of context as the primary criteria for my research design. Contextualising the 'research problem' is informed by a need for relevant data that the zoo community can use when redressing discrepancies between conservation rhetoric and reality.

In relying upon the broad perspective of an environmental studies framework, the dissertation utilises several theoretical domains. The role of zoos in conservation is considered to be a policy issue. That is, the zoo community is engaged in an aggregate of decision-making processes, and multiple products result from those processes. Zoo professionals make a series of formal and informal choices about what are appropriate actions (and inaction) with respect to conservation. These choices are made using decision-making models that are often fundamentally informed by a perceived need for rationality. Zoos conservation goals imply that all factors relevant to endangered species restoration can be conceived of and mastered, and that a conservation identity can (and will) be secured. The reality of overly-rational and incremental models of decision-making ensure only minor levels of reform.

This dissertation demonstrates that zoo policy is also constituted by its structural environment which effects choices made by zoo professionals. The prevalence of bureaucracy as a guiding principle for organisation in Western society is shown to be relevant to zoo conservation aims and objectives. Traditionally, bureaucracies constituted the state and were separate from business interests. Hence, they could perform a regulatory role. Today that emphasis is shifting to a more corporatised state which has seen a relaxing of environmental standards. Irrespective of its metamorphosis, this collective form still fosters narrow conceptions of problems and favours particular interests, both of which can be antithetical to ecological values.

Highlighting the importance of structure also points to the need to consider zoos as organisations, paying particular attention to how the interplay between formal and informal components of zoos influence policy. These relational dynamics support the notion of the centrality of politics as an influence in policy-making. Hence, zoo's conservation policies have been considered in a political light. This conceptual exercise could not be undertaken without contemplating how the institutionalisation of certain axioms - in this case, conservation - is informed by power. The dissertation has established that different models of power are relevant to a zoo discourse, particularly those processes that give rise to a primacy of business interests in industrialised nations.

### **10.3.1 Future Research**

The contextualised, interdisciplinary approach discussed above poses significant multiple challenges for research. Such an inquiry calls for an inordinate amount of breadth *and* depth. The researcher must determine what is an acceptable amount of detail, while simultaneously acknowledging that this type of analysis is never complete. On the contrary, the deeper one's understanding of policy and its context becomes, the more questions one tends to produce. This



situation mirrors my experience of examining the role of zoos in conservation using an environmental studies perspective.

A greater amount of detail concerning zoo policy and organisational processes is required. More intricate knowledge about how (and in what form) power is exercised in zoo decision-making forums is critical. Additionally, future research should document closely the specific responsibilities of the full range of zoo personnel and how those positions are related to one another. This avenue of inquiry should place a special emphasis on zoo staff who create and/or implement policies most directly related to conservation, such as those personnel whose duties include interacting with other zoos and individuals, groups and agencies outside the zoo community.

These goals can be advanced by conducting more systematic observations of zoo organisational routines, analysing new formal zoo policy documents and administering further interviews with members of the zoo and conservation communities. Interview questions could be designed to elicit more information on zoo staff perceptions of and attitudes towards contemporary conservation principles and practices; the functioning of their own organisations; and how greater empowerment in decision-making can be achieved for all zoo employees. Discussions with members of the conservation community can target a wider range of professionals, particularly those people with policy-making authority and those whose responsibilities include working directly with zoos. Specific questions should expand on the issues generated by data from this research, such as how zoos can assist government and non-government conservation agencies.

Expanded knowledge of zoo visitors would substantiate zoo claims to a role in educating people about conservation. Qualitative surveys can be designed to strengthen current knowledge about visitor attitudes and behaviour generated by this research. For example, greater understanding of the nature of conservation messages being received by zoo visitors is needed, as is appreciating how visitors conceptualise zoo conservation roles. Additionally, further knowledge of what kind (and what amount) of environmentally-oriented behaviours visitors undertake would help zoo professionals design appropriate interpretive and educational programs.

Contextually-oriented research initiatives are vital components for improving zoo performance. Any zoos' capacity to deliver vital, progressive conservation and education benefits that draw on ecological principles is contingent upon a host of policy and organisational variables. These issues, largely neglected in contemporary discourses on zoos and conservation, are addressed by the series of recommendations offered below.

#### **10.4 POLICY RECOMMENDATIONS**

As a member of the conservation policy community, I believe zoo conservation achievements can be enhanced by addressing several pertinent matters. The following recommendations are offered constructively and encourage those interested in zoos to specify their interests and reach a consensus on how to proceed.

#### **10.4.1 Zoo-Based Endangered Species Restoration**

An integral component of the conservation role of zoos is constituted by breeding endangered species in captivity and assisting with reintroduction programs. These practices are not without their problems, as listed in Table 39. There is the danger that if zoos rely too heavily on this conservation methodology, they risk minimising their overall and future practical contributions to conservation.

Given ex-situ's limited utility, zoos might wish to reconsider their current policy emphasis on highly technical ex-situ programs. While zoos should continue to refine their captive management practices, they need to avoid disproportionate funding to highly technical ex-situ methods. Zoos can acknowledge publicly the differences between ex-situ and in-situ conservation. Finally, zoos can allocate a greater amount of funds to supporting in-situ projects, conservation advocacy, and education.

#### **10.4.2 Zoo Education**

Zoos' credibility with the community also increasingly hinges upon their ability to implement effective conservation education programs. Table 40 lists several criticisms that are commonly lodged against zoo efforts to date.

Despite these problems, the zoo community has made perhaps its most impressive conservation advances through education programs. Further improvements would flow from continued and intensified efforts to appropriately fund and integrate education throughout all zoo operations. Additionally, the traditional education brief can be extended beyond schools programs to the general community. Finally, humanised images of charismatic fauna in public relations, marketing and educational materials and programs should be eliminated and replaced with environmental and ecological themes. Zoo messages should be instructing visitors in a manner that is neither patronising nor overbearing. Educational programs have the potential to fill the gap between visitors' purported environmental interests and 'real' action. Equipping the visiting public with appropriate information may make it 'easier' for people to increase their empathy for conservation-related causes and become motivated to act on behalf of conservation. Finally, zoos could consider ways to develop their relatively unexplored potential as strong advocates for conservation.

#### **10.4.3 Zoo Policy: Specifying Goals and Sustaining Relevance**

It is necessary to consider how 'policy' affects zoos' conservation choices and accomplishments. These decision-making processes are influenced by a host of contextual factors. The social and ecological context in which zoos originally existed is now vastly different. This shift in conditions has created a mandate for the zoo community to clarify its direction and determine how its programs are both relevant to and practically serving biodiversity conservation. While zoo professionals recognise the need for significant change and are actively seeking ways to clarify their aims and maintain their relevance in a rapidly changing world, significant problems

**TABLE 39: Problems with Ex-Situ Conservation**

- Emphasising species-based conservation discounts ecosystem approaches
- Emergency efforts discourage long-term planning
- Feasibility problems (extreme costs, intensive management & high level of inter-agency cooperation required)
- Zoos' limited capacity/space
- Misleads the public about what are 'real', practical solutions to conservation issues

**TABLE 40: Problems with zoo-based education programs**

- Gaps between stated commitment to education & actual practice
- Limited scope of education programs (schools programs have a greater emphasis than community education)
- Underdeveloped knowledge of effective interpretive schemes
- Viewing captive animals may convey messages about humans 'controlling' nature

confound these efforts (Table 41). In total, these conditions function to frustrate more adaptive and fundamental policy changes in zoos.

In response to these tensions, zoos must strive to ensure that their policy choices target reforms in captive management, exhibit design, animal welfare, and conservation and education projects (eg Norton et al 1995). Some zoo professionals advocate progressive concepts such as turning zoos into "Bioparks" which illustrate and promote the diversity and interconnectedness of all forms of life (particularly smaller life forms and regional and local specialisations) (Hancocks 1995; Robinson 1993, 1988). Others offer creative means for providing financial support for in-situ conservation (Gershenz & Saul 1993). Finding the means to standardise these kinds of efforts will advance zoos towards a more progressive conservation identity. Continued reliance upon short term strategies aimed at deflecting public criticism will discourage fundamental problem solving and ensure that zoos' profile remains entrenched in 19th century concepts. In order to shift to a longer range, less reactive perspective, the zoo community must acquire a host of skills for analysing and assessing the way in which decisions are (collectively) made.

#### **10.4.4 Discarding Defensive Decision-Making**

Many important decisions about conservation policies in zoos are made in the context of change and in response to criticisms (Table 42). Substantial criticisms target shortcomings of zoo captive breeding and education efforts and resistance from the conservation community can restrict opportunities for zoos to be involved in current or future conservation and education projects (eg recovery plans or conservation advocacy efforts). Essentially, zoos are still primarily viewed and treated as places of entertainment rather than institutions with a reputation for significant scholarly or scientific achievements.

In response to these critiques many zoo professionals expend considerable time and resources utilising official policies and position statements that in actuality misrepresent or overstate zoos' actual ability to deliver tangible and substantial benefits to wildlife and people. In coming to terms with negative (or uninformed) public opinion, zoos need to take care not to be reactionary. Offering grandiose statements about their accomplishments in response to criticism will only exacerbate the situation. While these defensive policies may protect individuals, groups or organisations from experiencing embarrassment or threat, they also prevent them from identifying and reducing *causes* of that embarrassment or threat (Argyris 1993). Instead, zoos can avoid seeing critics as "opponents" and look instead for lessons in self-improvement in those critiques. Indeed, many of the concerns of these "opponents" mirror perceptions *inside* zoos. Both the symposium on zoos held in Atlanta, Georgia (Norton et al 1995) and the 1996 ARAZPA/ASZK conference at Healesville Sanctuary are examples of the kind of open, constructive, proactive self-examination that will assist the zoo community in redressing disparities in their conservation policies; so long as the views aired there are represented in decision-making forums.

**TABLE 41: General zoo problems to be confronted**

- Persistent historical traditions that frustrate fundamental change
- Adhering to perceived conventional public preferences
- Captivity as primary interpretive medium
- Conservative organisational practices
- Negative public perceptions
- Incompatible multiple goals
- Commercialised & corporatised activities conflicting with conservation & education aims

**TABLE 42: Zoo program deficiencies to be overcome**

- Addressing shortcomings of captive breeding & education efforts
- Coping with unfavourable perceptions and/or misunderstandings of zoos' role
- Creating reactionary policies/position statements that overstate zoos' contributions
- Being overly righteous about zoo practices
- Viewing critics as 'the opposition'

#### **10.4.5 Utilising Policy Analysis in Zoos**

In order to accelerate their responsiveness and evolution, zoos need a new kind of analytic knowledge and skill. Neither enhancing technical capacities to rear animals in captivity nor improving formal education programs will be sufficient for establishing and demonstrating an effective conservation and education role for zoos. Much more attention needs to be paid to the complexities of policy-making processes in zoos; that is, the who, what, where, 'When', why, and how, the aggregate of decisions that constitute zoo policy.

Zoos need to integrate an explicit and systematic 'policy orientation' into their operations. This would entail appreciating the myriad dynamics that effect zoo policy. Zoos' structure, culture, management systems, general setting and professional approaches to problem-solving have a definitive and critical influence on decision making. Zoos would benefit greatly from considering the following questions. How well-matched are zoos organisationally to what they are trying to accomplish? Are zoos appropriately staffed? What is the nature of leadership in both the zoo community and individual organisations? Do zoos have sufficient political autonomy to achieve their objectives? How well is information used in zoo communication systems? How representative of the full range of zoo professionals' knowledge and interest are zoos' decision-making processes? Are zoos learning from their mistakes? In short, a policy orientation would provide the means for zoos to contextualise their situation by developing a kind of peripheral vision that continually refers them back to how social, scientific, economic and political dynamics contribute to their problems.

#### **10.4.6 Suitable Organisational Procedures**

Ex-situ conservation, regionalising animal collection plans, delivering education programs and supporting in-situ efforts all present formidable challenges for zoos. Zoos' conservation role is a highly complex task that requires each zoo (organisation) to be flexible, innovative and adaptable to changeable circumstances. Zoo structures and the management philosophies employed by zoo professionals are directly relevant to the nature of their conservation aims.

Table 43 lists several problems relating to zoo administrative arrangements and managerial practices. Bureaucratic structures are particularly inadequate for any zoo trying to contend with an array of complex tasks and environments which are part and parcel of implementing a conservation role. Additionally, the relatively recent management philosophy of corporatisation enshrines for-profit business principles in zoos. These rigid structures and commercialised policies are of great concern to many zoo (and conservation) professionals. While these staff willingly acknowledge certain managerial and economic imperatives, they are deeply worried by what they see to be misdirected priorities; bureaucratized and corporatized policies eventually overshadow animal welfare, conservation and education needs.

Zoos' basic challenge is to devise and introduce more appropriate organisational changes that better match the rapid changes in: the nature and size of zoos' tasks, the nature of the society that zoos serve; and in the skills and aspirations of zoo staff (Frazer et al 1985; Schon 1983). Each

**TABLE 43: Structural and management issues requiring attention**

Most bureaucratic organisations are highly structured, have strict hierarchies, and use impersonal & rigid rule systems which lead to:

- \* inefficient rigidity
- \* conservatism & resistance to change
- \* maintenance of social class differences
- \* an inability to respond adequately to the unique challenges of endangered species conservation & shaping public attitudes

Corporatisation of zoos implies:

- \* management like private businesses according to principles of economic rationalism
- \* integrity of conservation/education programs measured by cost-benefit analysis
- \* animals managed as commodities
- \* conservation often used as a public relations ploy
- \* poor staff morale

zoo, and the zoo community as a whole, can make a commitment to encouraging open discussions of zoos' problems, nurturing the dedication, motivation and creativity of zoo staff, and facilitating the participation of a wider range of zoo staff in problem-solving. Such a progressive climate can be fostered by creating supportive and enlightened organisational climates, and in so doing, zoos will also do justice to their conservation aspirations.

#### **10.4.7 Learning and Change in Zoo Organisations**

Over the last three decades zoos have shown they are willing to be introspective by shifting to conservation as a primary industry goal (Curry-Lindahl 1965; Hutchins & Conway 1995). The degree to which this new identity represents a fundamental shift in zoo philosophy and practice remains in question. Many of zoos' contemporary practices still embody principles from previous centuries and embrace technocentric environmental thought.

More basic change in zoos requires learning at an *organisational* level. Current discrepancies between zoo rhetoric and reality intimate that a substantial proportion of zoos' evolution is a result of simple (or single-loop) learning (Argyris & Schon 1978; Clark 1996). Zoos have detected some mistakes, corrected them, and then continued functioning without shifting basic operating principles. Greater change and improved performance would come from more complex (or double-loop) learning (see Argyris & Schon 1978; Clark et al 1989; Clark 1996). Organisations that exhibit this level of learning encourage and value openness and reflectivity and accept error and uncertainty as inevitable features of life in complex and changing environments. Essentially, zoos would have to observe and correct their mistakes to such an extent that they ask not just "how well are we doing", but also "does it make sense to be doing it?" (Leeuw et al 1994 cited in Clark In Press: 23).

This complex learning is often frustrated by certain organisational forces that obstruct securing new knowledge and modifying new routines by trying to develop fixed foundations for action (see Hellriegel & Slocum 1976; Jackson & Morgan 1982). Certainly corporatised management practices and the fundamental organising principles of bureaucratic organisations block the learning process (Morgan 1986). A low tolerance for uncertainty in these organisational climates both encourages and rewards defensive behaviours. People attend to short term problems with obvious, simple solutions, and in so doing dismiss more complex and fundamental problems plaguing the organisation. Zoos must improve their capacity to openly and honestly critique their own operating assumptions. While organisational change is not an easy or simple task, it is possible if a special effort is made to temper limiting forces (Table 44).

#### **10.4.8 Nurturing Zoo Personnel**

The conservation role of zoos could not be realised were it not for an array of exceptionally dedicated, knowledgeable and creative staff. Special care must be taken, however, to ensure that this wealth of talent is appropriately integrated into policy prescriptions and organisational arrangements. My research suggests that certain structural and cultural dynamics are obstructing zoos' capacity to deliver more rigorous conservation programs.



**TABLE 44: Recommendations for facilitating complex organisational learning in zoos**

Modify traditional authority structures (distributions of power), reward and incentive structures, & narrowly-defined divisions of labour (*Warwick 1975*)

Foster organisational learning by simultaneously:

1. thinking of the organisation as a system of interrelated parts
2. encouraging staff mastery of a wide range of skills
3. exposing assumptions we use to understand the world & act on
4. foster team learning
5. build shared visions (*Senge 1990*)

Zoo "subcultures" tend to form around people's views on what should or should not be appropriate conservation roles for zoos. These divisions are exacerbated by communication blockages between different zoo divisions (eg animal management and administrative divisions) and between different organisational levels (eg animal management and administrative divisions). Given the fact that dominant goals in organisations reflect influences of the most powerful individuals or groups and their special interests, it is not surprising that senior management views currently dominate zoo policies and practices. Unfortunately, what results from the ideological conflicts between the business-oriented interests of senior management and the animal/education-based concerns of operational staff is a considerable level of frustration. Poor staff morale is attributable in part to anger experienced by zoo staff who feel their enthusiasm for working with animals or in a zoo is being exploited by an uncaring management and their views regarding zoo conservation policies are not taken seriously enough. The presence of this conflict suggests that many zoos have an implicit policy problem that is in need of attention.

While some zoo professionals endorse implementing more cohesive and representative policies, such ideas remain largely outside standard zoo practices. Incorporating these models into daily zoo practice can be realised, but will require the assistance of zoo leaders. Their positions of authority, while burdening them with special problems that operational staff do not have to contend with, enable zoo leaders to encourage special approaches that lead to good use of creativity, information and honesty (Clark et al 1989; Westrum 1986) (Table 45). Shifting away from organisational arrangements that foster separatist departments and rigid hierarchies and implementing more participative decision-making processes will create more equitable policies. Consequently, more appropriate use of the wealth of knowledge and skill that exists at the middle and lower levels of most zoos may foster more effective conservation policies.

## **10.5 FINAL THOUGHTS**

The zoo community should be congratulated for its efforts at modernising zoos. A multitude of creative and highly-skilled zoo professionals have already shown that they are sensitive to changing social and ecological conditions and have dedicated themselves to the task of transforming zoos into conservation centres. Significant progress has clearly been achieved. Nonetheless, continued and increasing environmental degradation will ensure continued demands for more fundamental changes in zoos than what have transpired so far.

The zoo community recognizes some of the contradictions in its operating principles and inconsistencies in its conservation performance. Balancing animal-related imperatives and financial and public relations imperatives in particular creates special tensions. The conflict between zoos' struggle to increase its commercial capacities and its attempts to build a conservation profile has thwarted zoos' potential and is likely to continue to do so (Jamieson 1995).

Currently, certain political, economic and organisational trends colour the terms of the zoo debate. Economic rationalism as the predominate means for decision-making and increasing

**TABLE 45: Principles for developing open dialogues & common understandings among zoo staff**

1. Encourage an 'organisation-wide' awareness among all staff
2. Encourage creative and critical thought among all staff
3. Better link parts of the zoo that have interdependent work
4. Scan all parts of the zoo for relevant solutions or contributions to problems
5. Reward communication and activities that show a desire to contribute to entire zoo's thought processes
6. Avoid overstructuring
7. Examine mistakes honestly (*adapted from Westrum 1986*)

corporatisation of zoos threaten to dilute the ecological integrity of zoo-based conservation imperatives. The existence of persistent doubts about zoos in parts of the wider community, as well as the zoo community, intimates that a fundamental policy problem exists. This situation begs the question of whether zoos are meeting their problems with rationalisations that merely convey the *impression* that they know what they are doing in order to impress others; to convince themselves that all is well; and to show that they have the ability to cope (adapted from Morgan 1986: 92). Graham Mitchell (1992: 4) has wisely pointed out that:

The way in which a particular zoo reconciles frank entertainment and genuine conservation imperatives within its overall multivariant agenda may be one of several indices that can be used to determine how well that zoo is matching conservation messages with actions.

The interplay between organisational fantasies and organisational realities (Stein 1990) calls for zoo staff to contextualise their activities; they must continually query how suitable their policy choices are for meeting ecologically-inspired conservation goals. These problems can be combated by zoo professionals incorporating a policy orientation into their operating principles and practices. In so doing, the myriad dynamics that effect their decision-making processes and ultimately the nature of their chosen conservation role would be better appreciated. Additionally, a focus on organisational operations that redress power imbalances and rigid structures is needed. Genuinely open and flexible institutional environments in zoos are a prerequisite for designing and implementing potent conservation and education programs.

There is a widely held view that the environment of the future will change at an increasingly rapid rate, thereby intensifying the complexity of problems we face. While zoo professionals will need to continually monitor business, legal, technical, ethical, moral and social trends, zoo adaptability can be severely limited by narrow perceptions of environmental assessment. I am hopeful that my research has opened, and will continue to open, *new* pathways for thinking about the problems that zoos face. While my views are by no means a panacea for zoos' modern dilemmas, if the zoo community is willing to embrace policy-based analysis and organisational understanding, it stands a good chance of encouraging greater representation of ecological thought in programs and more equitable decision-making processes. Attention to these issues can foster more pertinent and effective conservation performances, in effect, achieving a 'greening' of zoos that has yet to be witnessed by contemporary Western society.

## **APPENDIX 1: Zoo Community Interview Outline**

Interview questions were designed to elicit information about:

- personal and/or professional definitions of 'conservation', in relation to zoos and outside the zoo context;
- visitors' perceptions of zoos' strengths and weaknesses; whether zoos can (or should) act as agents for social change through their education programs and how they might do so;
- visitor perceptions of zoos' role in conservation;
- appropriate foci for conservation education programs in zoos;
- zoos' role and relationships with other agencies in the wildlife conservation network; and
- the existence of a zoo culture and subcultures.

## APPENDIX 2: Conservation Community Interview Outline

Questions were directed towards eliciting information about:

- respondents' general responsibilities and function within their organisations;
- determining what direct experience respondents had with zoos;
- what respondents believed the role of zoos in conservation to be;
- zoo strengths and weaknesses;
- what respondents believed motivated the zoo community to implement a conservation role;
- the source of gaps between zoo rhetoric and reality\*;
- logistical problems with inter-agency ex-situ work (eg zoos participating in Recovery Plans)\*;
- competition for funding\*; and
- obstacles for improving zoos' relevance to conservation\*.

*\*When the interview and survey data of the first year were analysed and my knowledge of the issues became more sophisticated, subsequent interview questions were directed towards distinguishing more specific information on zoo conservation policy.*

APPENDIX 3: Zoo Visitor Questionnaire

Thank you for taking the time to complete this survey. This questionnaire is being conducted in cooperation with the \_\_\_\_ Zoo as part of a research project at the University of Adelaide on zoos.

By filling out this questionnaire you will be helping us to learn more about the role of zoos in today's world. We are interested in your opinions and they are of great value to this research!!

Please remember, there are no right or wrong answers! Your responses will remain totally anonymous.

**Appendix 3: continued**

(1)

**PLEASE RATE HOW GOOD A JOB YOU THINK \_\_\_\_\_ ZOO IS DOING AT;**  
*(For each question, please tick the appropriate box!)*

	poor	average	good	excellent	I don't know
1. Entertaining the public					
2. Conserving endangered species					
3. Educating the public					
4. Carrying out animal research projects					

**PLEASE RATE HOW EFFECTIVE YOU THINK \_\_\_\_\_ ZOO IS IN PROVIDING INFORMATION FOR THE PUBLIC ON:**  
*(For each question, please tick the appropriate box!)*

	totally ineffective	slightly ineffective	effective	totally effective	I don't know
5. Public action for conservation					
6. The job of the animal keepers					
7. Why certain species are endangered					
8. Natural habitats for animals					
9. Animal behaviour					
10. The daily operations of the Zoo					
11. How species have evolved					

**PLEASE RATE HOW EFFECTIVE YOU THINK THE LISTED ITEMS ARE IN CONTRIBUTING TO CONSERVING ENDANGERED SPECIES:**  
*(For each question, please tick the appropriate box!)*

	totally ineffective	slightly ineffective	effective	totally effective	I don't know
12. The government					
13. Conservation organizations (World Wide Fund for Nature, Greenpeace, Australian Conservation Foundation)					
14. Zoos					
15. Private citizens					
16. Community groups					
17. Myself					



**Appendix 3: continued**

(2)

**PLEASE RATE YOUR LEVEL OF AGREEMENT WITH THESE STATEMENTS ABOUT ZOOS AND CONSERVATION:**

*(For each question, please tick the appropriate box!)*

	Totally Disagree	Disagree	Agree	Totally Agree
18. I am disappointed when an animal exhibit at Adelaide Zoo does not have an interpretive sign				

	Totally Disagree	Disagree	Agree	Totally Agree	I don't know
19. Animals born in zoos rarely survive when put back into the wild					
20. The South Australian National Parks and Wildlife Service and Adelaide Zoo have similar goals regarding conservation of endangered species					
21. Habitat loss is the main cause of species extinctions					
22. Plants and animals exist primarily to be used by humans.					

	Totally Disagree	Disagree	Agree	Totally Agree
23. There is nothing I can do to help save endangered species				
24. I expect to learn something about environmental issues when I go to the zoo				

	Totally Disagree	Disagree	Agree	Totally Agree	I don't know
25. To be effective, an endangered species protection program must include habitat preservation					
26. Species extinctions have reached crisis proportions					
27. Zoos, government wildlife agencies and non-government organizations should work together for the conservation of endangered species					
28. It is more important to spend money on habitat preservation than to spend money on breeding endangered species in zoos					

**Appendix 3: continued**

(3)

**PLEASE RATE YOUR LEVEL OF AGREEMENT WITH THESE STATEMENTS ABOUT ZOOS AND CONSERVATION:**

*(For each question, please tick the appropriate box!)*

	Totally Disagree	Disagree	Agree	Totally Agree
29. I enjoy learning from the signs at the zoo about conservation (endangered species, etc.)				
30. I consider myself to be an environmentalist				
31. It is more fun to learn about conservation from watching television and videos than at a zoo				

	Totally Disagree	Disagree	Agree	Totally Agree	I don't know
32. Individuals should do something to save endangered species					
33. It is acceptable to keep some wild animals in zoos if that will help to prevent them from becoming extinct in the wild					
34. Many environmental/conservation groups (such as Greenpeace, WWF, ACF) and Zoos have similar goals					

**PLEASE RATE THE FOLLOWING:**

*(For each question, please tick the appropriate box!)*

	Never	Rarely	Sometimes	Always
35. I contribute time to local conservation organizations				
36. I read the signs associated with animals' exhibits in the zoo				
37. If a species is about to become extinct, we should take these animals from the wild and put them in a zoo				

**PLEASE RATE HOW INTERESTED YOU WOULD BE IN LEARNING ABOUT:**

*(For each question, please tick the appropriate box!)*

	not at all interested	slightly interested	interested	very interested
38. Why animals become extinct				
39. How Adelaide Zoo works				
40. What you can do personally for conservation				
41. How animals survive in the wild				
42. The job of the animal keepers				

**Appendix 3: continued**

**(4)**

**PLEASE RATE HOW OFTEN YOU HAVE USED THE FOLLOWING INFORMATION SOURCES TO FIND OUT ABOUT THE ROLE OF ZOOS:**

*(For each question, please tick the appropriate box!)*

	never	rarely	occasionally	frequently
43. Television programs				
44. Radio shows				
45. Newspaper articles				
46. Magazine feature stories				
47. Tourism brochures				
48. Knowing people who work at the zoo				
49. Visits to the zoo				

53. What is one new idea you are taking away with you today? (Please fill in the blank of one or both statements below)

a. I didn't know/never realized that...

-----  
-----  
-----  
-----

b. It reminded me that...

-----  
-----  
-----  
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**Don't stop here,... you've only got one more page to go!!!!!!**

### Appendix 3: continued

For the purposes of this research we would appreciate it if you could provide us with the following information about yourself....

1. Sex: (circle one)	Male	Female
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2. What age are you?	
----------------------	--

3. What level of schooling have you completed?	
4. What is your occupation?	

5. How many people are you visiting the Zoo with today?	
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6. Are you accompanying any children today? (please circle one)	Yes (if so, how many?)	No
---	------------------------	----

7. Have you ever been to this zoo before? (please circle one)	Yes	No
---	-----	----

8. What other zoos have you been to?	
--------------------------------------	--

9. How often, on average, do you visit a zoo?(please circle the appropriate box)	a. more than 3 times a year	c. once a year	e. once every 5 years
	b. 2-3 times a year	d. once every 2 or 3 years	f. once every ten years

10. Have you ever, or do you currently own any pets?(please tick the appropriate box)	Yes	No
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11. Please list any conservation/environmental groups you are a member of.	
--	--

12. Please list any conservation/environmental groups you contribute money to.	
--	--

12a. Is this money paid in the form of membership fees?	Yes	No
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13. Are you an...(please circle the appropriate box)	a. overseas visitor	b. interstate visitor	c. local resident
--	---------------------	-----------------------	-------------------

**You have finished!!!!...Thank you very much for your time!!!!!!**

## **APPENDIX 4: Conservation Community Questionnaire**

I am conducting my doctoral research on the role of zoos in conservation. I am particularly interested in understanding how zoos fit into the 'conservation network'. Your responses to this very brief questionnaire will be of great assistance to me in my research.

Please return this form to **the box at Poster #40** before you leave the conference. Thank you for your time.

---

**1. Are you employed by, or affiliated with, any of the following: (Please circle one or more)**

- a. zoo
- b. university
- c. scientific research organisation (eg CSIRO)
- d. government wildlife protection agency
- e. non-government conservation organisation (eg ACF, Wilderness Society, etc)

If you wish to specify the name of the institution, please do so in the space below.

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**2. Do you visit zoos: (Please circle one)**

- a. 3 or more times a year
- b. 1 - 2 times a year
- c. less than once a year
- d. once every 2-3 years
- e. less than once every 5 years
- f. I never visit zoos (Please explain why not in the space provided)

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**3. What goals do you believe government wildlife protection agencies, conservation groups, and zoos have in common?**

- a. educating the public
- b. protecting endangered species
- c. research
- d. fundraising
- e. Other (Please specify in the space provided)

**APPENDIX 4: continued**

**4. What do you believe distinguishes government wildlife protection agencies and NGOs from zoos?**

- a. the scope of their agendas
- b. the ability and/or will to lobby for change
- c. saving habitats rather than species
- d. Other (Please specify in the space provided)

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**5. Do you think zoos contribute to conservation? (Please circle one and comment on your selection in the space provided)**

- a. Yes
- b. No

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**6. How might conservation be better served by zoos? \_\_\_\_\_**

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**7. Would NGOs and government wildlife protection agencies benefit from closer alliances with Zoo? (Please circle one and comment on your selection in the space provided)**

- a. Yes
- b. No

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## APPENDIX 5: Histories of select Australasian zoos

### **THE PERTH ZOO**

*(Source: Jenkins 1977; Bryant 1964; Perth Zoo Master Plan 1993)*

The roots of the Perth Zoo are tied to the formation of the Western Australian Acclimitization Committee's formation in 1896. Like its counterparts in other states, the Committee was interested in introducing numerous species of plants and animals into their State. A proposal submitted to the Committee for establishing a zoological garden in Perth was unanimously accepted, and a zoo was eventually opened in 1898. An Act of Parliament sanctioned the Acclimitization Committee as the Zoo's Board of Management, its members were appointed (and could be removed) by the Governor. The Acclimitization Committee, in addition to accepting birds and animals as gifts for the zoo, imported numerous others for release. By the late 20s and early 30s, however, considerable opposition towards acclimitisation activities and their harmful effects had developed amongst the early conservationists. In response to these criticisms, the Committee refocused its energies towards developing the Zoo.

LeSoueff was the first director of the Perth Zoo. He was a member of a zoo family dynasty that had a considerable impact on early Australian zoo development. His father was the first director at Melbourne Zoo and had selected the site for the Perth Zoo. His brother eventually succeeded his father at Melbourne, and a third brother was principal curator at Taronga Zoo. As director, LeSoueff aimed to provide Perth with a noteworthy collection of animals set amongst an impressive botanical gardens which would constitute the ideal picnic venue for the public. The very earliest animal exhibits were a pair of lions and a tiger, and LeSoueff went to considerable lengths to transform the scrubland on which the Zoo was situated into gentle lawns and picnic areas with tearooms. By 1904, the Zoo had become so popular that virtually a third of the State's population had passed through its gates. Today the Zoo still boasts one of the highest visitor rates per capita in the country.

Despite its initial popularity, the slowing of the economic boom took its toll and subsequent zoo developments were minimal. For the next fifteen years or so, the Committee shifted its attentions back to its acclimitisation activities. Around this time, the first commercial activities also appeared in the Zoo in an effort to rejuvenate sagging revenues; providing tennis courts, circus acts, merry-go-rounds, a miniature train, Sunday concerts and various children's shows. Eventually, the Zoo's problems became substantial enough to warrant the decision by the Premier and the Acclimitisation Committee to hand the Zoo's management over to the State Gardens Board. By 1942 a new Committee had been appointed when the State Gardens Board became the National Parks Board. However, the Committee continued to act in an advisory capacity regarding zoo matters. The Secretary of the National Parks Board, a member of the Department of Lands and Surveys, remained as Chairman for both Boards.

It was not until after World War II that zoo development efforts were revived. Despite major reconstruction efforts in the 1950s, Western Australia's isolation restricted the Zoo's ability to incorporate some of the more innovative animal enclosure designs that were appearing across Europe and America. Hence, many of the small, barred cages remained. Commercial activities such as motor shows, jazz concerts, etc continued to be offered.

By 1968 the Zoo had its own administrative organisation when its link with the National Parks Board were broken and eventually formalized with the passing of the Zoological Gardens Act of 1972. At this time all references and usages of 'acclimitisation' were eliminated. A new series of changes and growth were to occur. The Zoo appointed its first professional director, a veterinarian named Tom Spence, and sought government support for a major redevelopment scheme. The Board stressed that recreation could no longer be the primary imperative of Perth Zoo, instead the Zoo should focus mainly on providing superior facilities for education, research and *conservation*. The 1973 Development Plans provided for upgrading public works, a new Ape precinct, Nocturnal House, Aviary Precinct, a walk-thru animal contact area with native species, a lake for water fowl with an island for primates, a new administration building, a food preparation area, new public amenities and an information kiosk. Unfortunately, all the funds needed for such endeavours was not available, and not until the appointment of John De Jose in 1984 did the zoo experience further redevelopment. During his 10 year reign, DeJose and his staff generated a high level of support from the State government, local businesses and the general community. New enclosures were built for the elephants, bears, koalas, and otters, and walk-in aviaries were erected. A new education centre was built in 1988, and innovative interactive exhibits with conservation themes such as MicroWorld, the Conservation Centre and Harmony Farm were built. By the early 90s the Zoo had established Byford, its endangered species breeding centre and off limits zoo service area on the outskirts of Perth.



## **THE ADELAIDE ZOO**

*(Source: Jenkins 1977; Rix 1978)*

The Adelaide Zoo's history is also steeped in acclimatisation traditions. The then Director of the Botanic Gardens, G.W. Francis, advocated the benefits of introducing animals and plants to what he and others perceived to be the 'barren' South Australian landscape. There was also much thought devoted to the concept of a Zoological Gardens. By 1882 the Acclimatisation Society had changed its name to the SA Zoological and Acclimatisation Society.

Initially, the Society financed itself through member subscriptions and donations, but eventually turned to the State government for additional support. In its very early days, the government granted the Society a pound subsidy for every pound it was able to raise. Today, the Society is still assisted by the Government in financing the Zoo. However, its relationship is somewhat different to the statutory zoos. It is managed wholly by a Council elected by Zoological Society Members. There are also 3 councillors appointed by the Governor, so long as the Society is in receipt of funds from the State government and the Lord Mayor of Adelaide is a councillor *ex-officio*.

In 1883 the Society was able to secure land at the Botanic Gardens as the site for its Zoo, but was only able to do so after a prolonged dispute between those favouring and opposing removing land from the Botanic Gardens for use as the Zoo. The Zoo was officially opened in 1883. Similar to the zoos in NSW, WA and Victoria, the Director's position was occupied by three different generations of the Minchin family for the first 60 years of the Zoo's history.

Despite an early emphasis and preference for exotic species, early collections did feature some native species. The yellow-footed rock wallaby was exhibited at the Zoo almost from its inception. Ironically, this species is still exhibited at the Zoo. However, its highly endangered status is a prominent feature of the exhibit. The bird collection has always been a distinctive part of the Zoo's history due in part to the particular interests and influence of Dr. A.H. Lendon, a one-time President of the Society and leading aviculturist. A series of aviaries was built in 1931 for parrots threatened with extinction in the hopes of establishing a breeding scheme.

The Society was granted a Royal Charter in 1938 and became the Royal Zoological Society of SA. The elimination of 'Acclimatisation' from the Society's title reflected negative sentiments emerging towards activities of that nature. The zoological gardens in Adelaide eventually succumbed to the effects of two world wars and the Depression. Like the zoos in other States material and labour shortages hampered zoo expansion. By the 1950s the Zoo was still experiencing a decline in standards, staff reductions were having negative affects and few animals were added to the collection.

It was not until the late 1960s and early 1970s that substantial improvements were made. This era also presented the Zoo with some difficulties. As a result of a ban on general exports of native Australian fauna by Trade and Customs officials in 1960, zoos were now required to

obtain permits for shipping animals to foreign zoos. The Zoo was investigated by the State government in 1963 due to the 'Commonwealth authorities' concern over discrepancies between the numbers of birds recorded and the amount actually being shipped overseas. The report recommended improving internal administrative arrangements, upgrading the accuracy of record keeping of stock, and preparing an overall Development plan.

The Zoo Board authorized the preparation of a Master Plan. Early work focused on improving basic services and converting some of the older 'Victorian type' buildings to more functional designs. The rapidly increasing urbanization and the ramifications that had for children having access to animals other than domestic pets, inspired the installation of a Children's Zoo. A Kiosk was also erected. The first moated enclosures introduced by Hagenbeck in the early part of the century did not appear in the Adelaide Zoo until 1969. The lack of space restricted the degree to which these open range exhibits could be incorporated. The first walk-through aviaries were introduced into the Zoo in the early 70s.

Around this time, the Society began to step up their efforts to raise the scientific and research profile of the Zoo by liaising with universities and museums, and offering the Zoo's facilities wherever possible. The Zoo was also able to offer more educational programs to the community with the appointment in 1975 of two full-time teachers responsible for education activities at the Zoo.

By the early 80s the last remaining vestiges of zoo traditions were disappearing. The elephant rides were discontinued. It was now quite apparent that a zoo as small as Adelaide could not provide adequate space for maintaining viable breeding groups of hoofstock. The Society made a plea to the Director of Lands for a site that would provide the accommodation necessary for the Society to participate in both organized breeding programs and displaying species in open-range, naturalistic exhibits. The decision to establish a zoo at Monarto was finalized in 1982.

By the late 80s the Zoo was voicing concern over the need to establish education programs which would encompass the entire organization. A feasibility study was conducted in 1991 for a new education centre. The Zoo was also heavily engaged in rationalizing its animal collection plans in order to provide more space for breeding and displaying endangered species. An animal records clerk was appointed in 1986 to facilitate implementing these plans.

## **ZOOLOGICAL BOARD OF VICTORIA (MELBOURNE ZOO)**

*(Source: Jenkins 1977; Strahan 1991; Melbourne Zoo)*

Origins of the Melbourne Zoo and the Acclimitization Society of Victoria date back to a public meeting held in 1857. The original intention was to investigate establishing an organization to promulgate rearing poultry and cage birds. Dr. Thomas Black, a prominent citizen, suggested that the proposal move beyond an ornithological focus to establishing a more general Zoological Society and corresponding gardens for promoting the scientific study of animals and affording the public the chance to view them. Despite its name, the resulting Zoological Society of Victoria still had as its main aim the acclimitisation of species. Many of its members were dissatisfied with the indigenous wildlife they came upon. Nonetheless, not long after this meeting the Government also became interested and granted both land and money to the Society for establishing a zoological garden. Some animals were displayed on land adjacent to the Yarra river, but were eventually moved to Royal Park.

In 1861 an offshoot of the Society formed an Acclimitization Committee, and henceforth the activities of the Society were directed primarily at introducing 'useful' and ornamental animals and plants. While the public were encouraged to visit the zoological gardens at Royal Park and see these animals, the Society considered this to be only a secondary function. Some visitors were disappointed by the what they considered to be a lack of variety of species and the Society found itself in the position of having to justify to an unenlightened public the benefits of these animals for the new land.

In 1871 the zoological and acclimitization interests merged and the organization was now called the Zoological and Acclimitization Society of Victoria. Gradually, animals were acquired in order to assemble a more comprehensive collection. Some of the first animals exhibited were donated by a foundation member who had owned a substantial collection of animals consisting of 15 native birds, 8 kangaroos and wallabies and two monkeys. Eventually camels, monkeys, apes, elephants, giraffes, hippos, tigers, leopards and various birds were added.

When the Zoological and Acclimitisation Society Incorporation Act was passed in 1884 management consisted of a committee of 12, nine of which were elected members, and another three were appointed by the Governor in Council. By 1910 the Society was granted a Royal Charter by King Edward VII. This organization controlled the zoo until 1937 when various legal and financial problems that had plagued the Society and its zoo prompted the State government to take full responsibility. The Zoological Board of Victoria was established as a statutory body consisting of eleven members appointed by the State government. The body still controls the Zoo and still utilizes both government monies and private bequests to fund ongoing development.

Around the turn of the century, financial problems had been brewing for some time. Although the Society had originally endeavoured to survive on donations and member subscriptions, it frequently turned to the government for assistance. By 1896 the Society was troubled by the Zoo's declining standards resulting from reduced government grants and a lack of new exhibits.

In an effort to solve some the Zoo's financial woes, the government eventually reversed its original decision not to charge visitors an entrance fee.

There were some developments over the next several decades. The Director, LeSoueff, was able to visit and consult with overseas zoos as to their development and management. Nonetheless, the Melbourne Zoo fell prey to the general economic malaise of the early 20th century and its attendant resource shortages. It too reached for commercial activities in the hopes of reviving attendance figures. A loudspeaker tower was installed in 1933 to broadcast entertainment and 'news of the world' but was met with little success.

A series of new developments were put in place during the late 1960s to the mid 1970s: a \$120,000 reptile house; seal and otter enclosures, several barless exhibits like the Gibbon Island; a moated elephant exhibit; the lion park; a new hippo enclosure; and an Australian fauna walk-through park. During the 1972 celebrations for the Zoo's 100 year celebration, several organizations pooled their efforts to provide an exhibit with the theme of animal welfare & conservation. Around this time the idea that became Werribee Zoo had formed. The original plan was to create an open-range fauna exhibit modelled after the Whipsnade tradition in England. One hundred and twenty acres of the famous Chirnside Estate's Werribee Park was set aside for the project. These efforts were financed by the State government, revenues from increased patronage, and donations from 'notable citizens'.

### **ZOOLOGICAL BOARD OF VICTORIA (HEALESVILLE SANCTUARY)**

*(Source: Jenkins 1977; Healesville Sanctuary)*

From its inception, Healesville Sanctuary had been devoted primarily to conserving native, not exotic, species endemic to the region in which the Sanctuary is located. The Sanctuary got its start from Sir Colin MacKensie, a noted anatomist and surgeon. MacKensie was able to finance the lease of 78 acres of land in the Coranderrk area of Victoria for studying native fauna for medical research. The entire area was fenced to keep out pests that were now so widespread and built a house and several pens and animal houses. For a number of years he, with the help of his assistants, observed, recorded and drew Australian animals living in their 'natural' environment.

MacKensie eventually won an appointment in 1929 to head the new Australian Institute of Anatomy in Canberra. Before he left Victoria, however, he convinced the Victorian government to declare the area he had fenced at Bader Creek a Sanctuary for Australian fauna for all time. His sanctuary was handed over to the Healesville Council to manage. The Shire Council and a group of Healesville citizens promoted the Sanctuary as a tourist resort. Robert Eadie, a dedicated naturalist who had been associated with Kruger National Park in South Africa, was appointed as honorary curator. He was largely responsible for transforming the Sanctuary's potential beyond a picnic reserve. The next director, David Fleay, had similar interests and had devoted his career to studying Australian wildlife. The Sanctuary opened in 1934, and many people came to see the first platypus to be maintained (albeit only for four years) in captivity. The Sanctuary was maintained for the next 15 years through the efforts of local citizens who

donated their time, labour, and in some instances, funds. By 1947 the Sanctuary was considered to be a valuable asset to the State and the government took on responsibility for its management, appointing a board of 13 trustees to maintain it in accordance with a conservation and education mandate. The Sanctuary has been managed by the Zoological Board of Victoria since 1978.

### **CURRUMBIN SANCTUARY**

*(Sources: Jenkins 1977; Currumbin Sanctuary)*

Although early settlers of Queensland engaged in acclimatisation activities, the societies formed were not connected to the establishment of Currumbin Sanctuary. The Queensland Acclimitization Society, initiated by the Governor, focused primarily on importing and propagating exotic plants rather than animals and was especially interested in plants with commercial potential. The Society is reported to have strongly advocated the protection and cultivation of native species. The Society did receive some government support for its activities, but it relied largely upon its subscription revenues. Its bias towards propagating plants created some competitive tensions with the Botanic Gardens. Unlike its counterparts in the Southern states, the Society did not seem to be interested in establishing an organized animal collection. Changing public opinion and the establishment of strict quarantine regulations eventually saw the Society's dissolution in 1956.

Currumbin Sanctuary was established by Alex Griffiths in 1946. Griffiths was a casual beekeeper who began feeding wild lorikeets at his home in order to distract them from his flowers. Increasing numbers of birds flocked to his feeding table at regular feeding times. He eventually acquired 25 hectares of bushland surrounding his home with the aim of creating a place of refuge amidst the rapidly expanding urban areas of the Gold Coast. Visitors came to feed the lorikeets and stayed to see Australian fauna. When Griffiths encountered financial difficulties, he donated the Sanctuary to the National Trust of Queensland in 1976.

## **ZOOLOGICAL PARKS BOARD OF NEW SOUTH WALES (TARONGA ZOO, WESTERN PLAINS ZOO)**

*(Sources: Jenkins 1977; Strahan 1991; Hediger 1966; Zoological Parks Board of NSW 1993)*

The notion of a zoo for New South Wales was first introduced at a public meeting in 1852. There, against a background of competitiveness given Melbourne's booming economy and its successful efforts at establishing a zoological garden, it was proposed that a Zoological Society establish a 'zoological institution in or near the city of Sydney, for the encouragement of Science and the Recreation of the Public'. A government official, Chief Justice Sir Alfred Stephen stated that '... the proposed institution might well prove highly beneficial in a scientific and education point of view and .. an additional attraction for the numerous visitors who might constantly be expected now to resort to this country and so aid in maintaining the position of Sydney as the metropolis of Australia'. It was suggested that the government would allocate land and assist with an annual grant. The proposed Society would also be involved in introducing new and rare animals for domestication and acclimatisation.

The emphasis on acclimatisation activities was reiterated by the 1879 prospectus of the New South Wales Acclimitization Society. While it called for the Society to be named the NSW Zoological Society, it recommended that the group concern itself primarily with the introduction and acclimitization of song birds and game.

By 1883 most of the animals held by the Museum in the Botanic Gardens were handed over to the Society and its Zoo at Moore Park. Donations and members' subscriptions financed the first animal collections. The Society received a grant from the State government in 1880 on the basis that the Society had to be able to raise a similar amount themselves. Throughout the Society's existence, government support has fluctuated but has largely been based on the principle that these monies would be spent on capital works and the Society would be responsible for general running costs.

The Zoo was first opened to the public in 1884. The collection was eventually shifted from Moore Park to its current site in Mosman when problems due to overcrowding and outbreaks of disease made maintaining a zoo there unworkable. The Premier, motivated by his personal interest in the Zoo, played a key role in acquiring the Mosman site in 1912. The public was admitted to the Zoo in 1914 for a small charge. As it turns out, the site's suitability was criticised due to the rugged terrain and exposed southern slopes that were not likely to provide a comfortable setting for the animals.

By 1915 official responsibility for the Zoo was transferred from the Zoological Society to the Taronga Park Trust, although the Society maintained a close association with the Zoo as well as retaining some of its privileges such as issuing members' passes. Like most other zoos in Australia, the Depression and resulting economies of two world wars had a deleterious affect on progress at Taronga Zoo.

Over the years, criticism of the Zoo had been escalating and had reached a high point by 1965. Subsequently, Henri Hediger, Director of the Zurich Zoo, was commissioned to investigate the Taronga Zoo and found it to be wanting on several accounts. He severely criticised the lack of zoological and veterinary training made available, as well as the autocratic style of management being utilised at that time. The selection of animals, conditions of many enclosures, labelling of exhibits and security were all found by Hediger to be substandard. In addition to the recommending a series of structural changes, he advised that the Society acquiring land outside Sydney in order to establish a Whipsnade-type zoo.

The Hediger report stimulated a major re-development scheme. A Planning Committee comprising government officials and Taronga Trust members produced a Master Plan in 1970. In an effort to further revitalize zoo development in New South Wales the Taronga Trust was dissolved and replaced by the Zoological Parks Board of NSW in 1973, a statutory body comprising members of the old Trust plus three additional citizens. The Board was given defined responsibilities in education and research, and perhaps more significantly, the power to establish other zoological parks within the State. In 1973 it was also decided to establish the Western Plains Zoo at Dubbo. The NSW government issued a grant of \$11,400 to enable the Zoo Board Chairman, Zoo Director and a government architect to travel overseas to consult with proprietors of open-range zoos. The first animals were transferred to Dubbo and the Zoo was officially opened by the Governor in 1977.

The land at Dubbo was originally plains country - open forests and extensive grasslands. This land was cleared and replanted by white settlers in order to raise sheep and cattle and grow wheat. The land at the Zoo site had been used as an army camp during the second world war and was heavily damaged due to mortar and grenade practice. Subsequent attempts to use the land for farming failed and the land was left idle in the care of the Department of Lands. Funds for developing the Zoo site were made available by the State government and supplementary funds were issued by the Federal government through a special grant for developing tourist enterprises.

## **AUCKLAND ZOO**

*(Source: Wood 1992)*

Auckland Zoo was started as a private zoo. J.J. Boyd owned a collection of 6 lions, a tiger, a panther, a hyena and several monkeys. The local Onehunga councillors, however, were concerned about his activities and took out a loan in 1922 to purchase some of his animals and establish a municipal zoo at Western Springs. There was some inter-city rivalry motivating the Councillors' actions, as Wellington had already established its own zoo in 1906. The Mayor's address at the official opening reflected these ambitions. He touted the zoo's great educative value to the community and its capacity to serve as a distinct asset to the city, providing attractions that would draw visitors from all over New Zealand and abroad.

The Councillors consulted with the creators of Taronga Zoo and from its inception a park-like setting was emphasized. In its early days, collection planning was heavily influenced by citizens, usually wealthy businessmen, donating animals for exhibits. The Mayor made frequent appeals to citizens travelling overseas to keep a watch for available animals, echoing a sentiment that still influences zoo development, that new exhibits were naturally what most attracted visitors.

By the late 1920s the Zoo was still looking to expand. The Mayor announced in 1926 the formation of the Zoological Society which was to contribute to managing the zoo and he hoped would take an active part in running the zoo and foster public interest by helping the council acquire new animal exhibits. The governor general served as Patron of the Society and founding members comprised a mix of scientists, civic leaders and influential citizens.

Unfortunately, as in Australia, these were hard times for zoos. Fearing the introduction of exotic diseases, in 1929 the Department of Agriculture introduced a ban on further importation of animals from South Africa. This had extremely detrimental effect on the Zoo's ability to offer display animals the public wanted to view. There was a subsequent drop in visitors between 1925-33. These setbacks seemed to inspire a renewed vigour in the push for further development. A new manager, M. Sawyer, progressive for his time, was appointed in 1935. He advised the Council that if took the opportunity to create a zoological of such high standards, the best and most important in the southern hemisphere, it would necessarily ensure they would show an ongoing comfortable profit margin. He also repeatedly raised the point that the Zoo's educational role was not receiving the support it warranted, that the Zoo was in jeopardy of becoming just a circus if both research and education functions were not duly noted and appropriately funded. He campaigned against the entertainment-oriented exhibits. He also campaigned heavily to have government restrictions lifted on importing of animals and on the exhibition of native birds and to this end, negotiated with the Minister of Internal Affairs. His efforts were successful and gained permission to do so in 1938.

Sawers efforts to minimize the circus-like activities of the Zoo were undone by the next Director who called for, in addition to regular exhibit upgrades, an increase in commercialized activities.



The momentum was gathering and by the late 1950s visitors could watch chimp performances, have elephant and train rides, and feed the zoo animals. While the chimp shows did not last long, this was more than likely a practical rather than ideological decision as the chimps proved difficult to handle.

The 1970s was an important period of growth and change for the Zoo. There were high levels of community, local government, and corporate support for the provision of new exhibits and acquisition of new animals. Plans were made to extend the Zoo further into Western Springs. Moreover, there was a perceived need to be able to offer New Zealanders an alternative to viewing bored and neurotic animals behind bars. There was a concerted push to introduce a more natural zoo environment by incorporating the moated and barless designs into the Zoos' exhibits. Restrictions on exhibiting native species had been lifted and the Zoo was able display the kiwi, kaka, kea, and tuatara. Approval had also been granted for importing animals by air and the Zoo was able to re-assess its collection plans. An Education Centre was built at the Zoo to mark Auckland City's centennial anniversary in 1973. In 1976, the first professional training course for keepers was offered.

The 1980s brought significant political and administrative changes to the Zoo. A decline in visitor numbers in the mid 1980s was believed to be a result of increased competition from new attractions. The Council believed the Zoo needed to be more actively promoted and marketed as well as becoming more financially independent. When the 11 territorial authorities in the Auckland region were amalgamated to form the larger Auckland City, a Zoo Enterprise Board was established to manage the Zoo. The Board's membership would consist of councillors and coopted appointed members who had experience in specialized areas of zoology, conservation, science and education. The Board met for the first time in 1989 at which time a mission statement and business plan objectives were determined.

Subsequently, a new series of programs were introduced for visitors including talks and demonstrations by keepers, special events, and a new elephant enclosure. Sponsorship schemes, a Friends of the Zoo program, Zoo Volunteers group, and an Activities Centre were also developed.

**Appendix 6: Further examples of Australasian inter-agency  
endangered species programs**

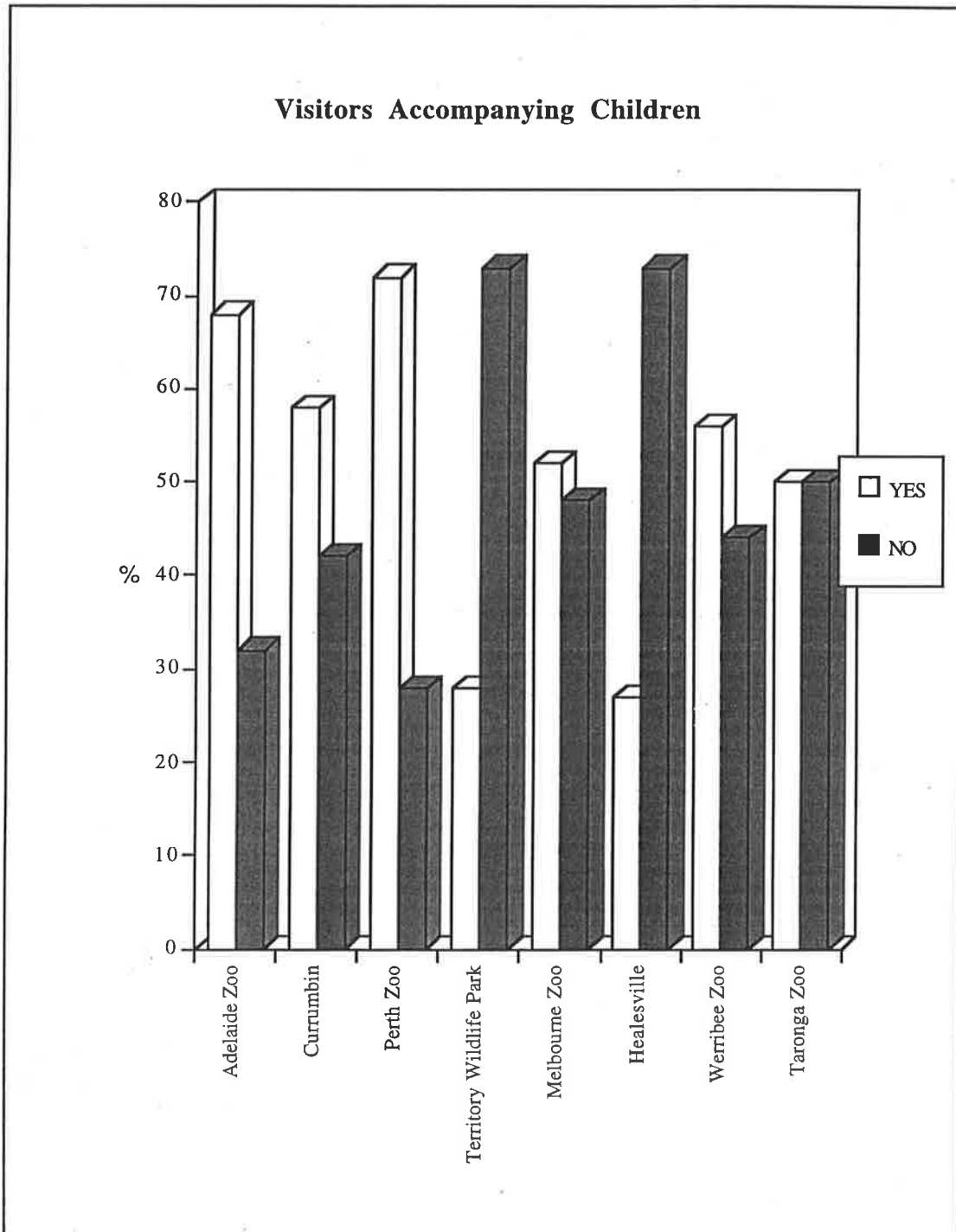
<p><b>Multi-agency program where captive populations are managed in direct support of an <i>in-situ</i> species recovery effort</b></p> <p><b>Category 1</b></p>	
<p><b>Eastern Barred Bandicoot</b>  <u>Program Coordinator:</u> Dept of Conservation &amp; Natural Resources (VIC)  <u>ASMP Zoo Program Coordinator:</u> Healesville Sanctuary Representative  <u>Coordinating Zoo (captive program):</u> Healesville Sanctuary  <u>Current ARAZPA Participants:</u> Healesville Sanctuary, Western Plains Zoo, Melbourne Zoo, Werribee Zoo, Taronga Zoo  <u>Zoo Services:</u> captive breeding, assist field studies (Healesville Sanctuary), provide animals for release-to-wild</p>	<p><b>New Zealand Dotterel</b>  <u>Coordinating Institution:</u> Dept of Conservation, NZ  <u>Current ARAZPA Participants:</u> Auckland Zoo  <u>Other Participants:</u> Dept of Conservation, NZ, Otorohonga Kiwi House  <u>Zoo Services:</u> provide artificial incubation &amp; rearing for release</p>
<p><b>Greater Stick-nest Rat</b>  <u>Program Coordinator:</u> Dept of Environment &amp; Natural Resources (SA)  <u>ASMP Zoo Program Coordinator:</u> Adelaide Zoo Representative  <u>Coordinating Zoo (captive program):</u> Western Plains Zoo  <u>Current ARAZPA Participants:</u> Adelaide Zoo, Monarto Zoo, Taronga Zoo  <u>Zoo Services:</u> assist DENR in captive breeding for release, provide genetic &amp; demographic management of captive colony</p>	<p><b>Western Swamp Tortoise</b>  <u>Program Coordinator:</u> Dept of Conservation &amp; Land Management (WA)  <u>ASMP Zoo Program Coordinator:</u> Perth Zoo Representative  <u>Coordinating Zoo (captive program):</u> Perth Zoo  <u>Current ARAZPA Participants:</u> Perth Zoo  <u>Other Participants:</u> Dept of Conservation &amp; Land Management, World Wide Fund for Nature  <u>Zoo Services:</u> maintain &amp; breed captive population for reintroduction program, serve as member on national recovery plan</p>
<p><b>Romer's Tree Frog</b>  <u>ASMP Program Coordinator:</u> Melbourne Zoo Representative  <u>Coordinating Zoo (captive program):</u> Melbourne Zoo  <u>Current ARAZPA Participants:</u> Melbourne Zoo  <u>Other Participants:</u> University of Hong Kong  <u>Zoo Services:</u> maintain and breed captive population, publicize joint recovery effort</p>	<p><b>Phillipines Crocodile</b>  <u>ASMP Zoo Program Coordinator:</u> Melbourne Zoo Representative  <u>Coordinating Zoo (captive program):</u> Melbourne Zoo  <u>Current ARAZPA Participants:</u> Melbourne Zoo  <u>Other Participants:</u> Dept of Env't, Phillipines, Silliman University  <u>Zoo Services:</u> maintain and breed captive population, publicise joint recovery effort</p>

<p><b>Regent Honeyeater</b></p> <p><u>Program Coordinator:</u> Dept of Conservation &amp; Natural Resources (VIC) Representative</p> <p><u>ASMP Zoo Program Coordinator:</u> Taronga Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> Taronga Zoo</p> <p><u>Current ARAZPA Participants:</u> Taronga Zoo</p> <p><u>Other Participants:</u> Dept. Conservation &amp; Natural Resources (VIC), NSW State Forests</p> <p><u>Zoo Services:</u> maintain &amp; breed captive population for release to wild</p>	<p><b>Green &amp; Golden Bell Frog</b></p> <p><u>ASMP Zoo Program Coordinator:</u> Taronga Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> Taronga Zoo</p> <p><u>Current ARAZPA Participants:</u> Taronga Zoo</p> <p><u>Other Participants:</u> NSW National Parks &amp; Wildlife Service</p> <p><u>Zoo Services:</u> maintain &amp; breed captive population for release to wild</p>
<p><b>Numbat</b></p> <p><u>Program Coordinator:</u> Dept of Conservation &amp; Land Management (WA)</p> <p><u>ASMP Zoo Program Coordinator:</u> Perth Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> Perth Zoo</p> <p><u>Current ARAZPA Participants:</u> Perth Zoo</p> <p><u>Other Participants:</u> Dept of Conservation &amp; Land Management</p> <p><u>Zoo Services:</u> maintain &amp; breed captive population for occasional reintroduction, some behavioural studies</p>	<p><b>Chuditch</b></p> <p><u>Program Coordinator:</u> Dept of Conservation &amp; Land Management (WA)</p> <p><u>ASMP Zoo Program Coordinator:</u> Perth Zoo</p> <p><u>Coordinating Zoo (captive program):</u> Perth Zoo</p> <p><u>Current ARAZPA Participants:</u> Perth Zoo</p> <p><u>Other Participants:</u> Dept of Conservation &amp; Land Management</p> <p><u>Zoo Services:</u> maintain &amp; breed captive population for reintroduction, conduction research on physiology &amp; reproduction</p>
<p><b>Robust Skink</b></p> <p><u>Coordinating Institution:</u> Dept of Conservation, NZ</p> <p><u>Current ARAZPA Participants:</u> Auckland Zoo</p> <p><u>Other Participants:</u> Dept of Conservation, NZ</p> <p><u>Zoo Services:</u> coordinate captive management, provide captive breeding advocacy</p>	<p><b>Golden Lion Tamarin</b></p> <p><u>ASMP Zoo Program Coordinator:</u> Melbourne Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> National Zoo (USA)</p> <p><u>Current ARAZPA Participants:</u> Adelaide Zoo, Melbourne Zoo, Perth Zoo, Taronga Zoo, Wellington Zoo</p> <p><u>Zoo Services:</u> maintain &amp; breed captive population</p>
<p><b>Malleefowl</b></p> <p><u>Program Coordinator:</u> NSW National Parks &amp; Wildlife Service Representative</p> <p><u>ASMP Zoo Program Coordinator:</u> Perth Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> Western Plains Zoo</p> <p><u>Current ARAZPA Participants:</u> Western Plains Zoo, Monarto Zoo, Adelaide Zoo, Taronga Zoo</p> <p><u>Other Participants:</u> Dept of Environment &amp; Natural Resources (SA), NSW National Parks &amp; Wildlife Service</p> <p><u>Zoo Services:</u> establish breeding colonies, provide material for genetic definition of population, provide birds for monitored-release</p>	<p><b>Greater Bilby</b></p> <p><u>Program Coordinator:</u> Conservation Commission of Norther Territory Representative</p> <p><u>ASMP Zoo Program Coordinator:</u> Western Plains Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> Western Plains Zoo</p> <p><u>Current ARAZPA Participants:</u> Western Plains Zoo, Monarto Zoo, Currumbin Sanctuary, Taronga Zoo, Territory Wildlife Park</p> <p><u>Other Participants:</u> Conservation Commission of Norther Territory Representative</p> <p><u>Zoo Services:</u> maintain captive populations &amp; (in some cases) breeding for release to wild</p>

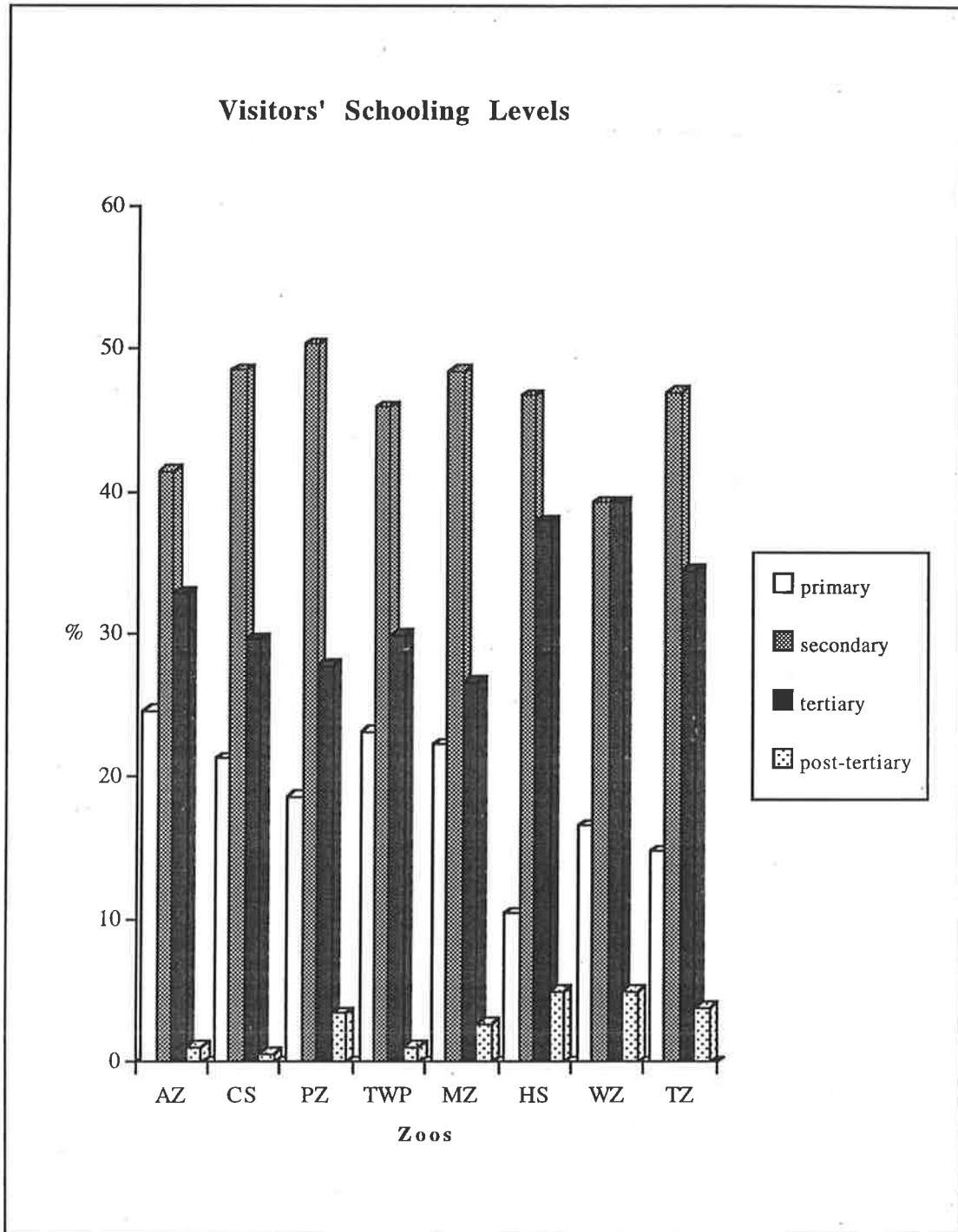
<p><b>Mala</b></p> <p><u>Program Coordinator:</u> Conservation Commission of Northern Territory Representative</p> <p><u>ASMP Zoo Program Coordinator:</u> Western Plains Zoo Representative</p> <p><u>Coordinating Zoo (captive program):</u> Western Plains Zoo</p> <p><u>Current ARAZPA Participants:</u> Western Plains Zoo</p> <p><u>Other Participants:</u> Conservation Commission of Northern Territory Representative</p> <p><u>Zoo Services:</u> maintain captive population, conduct some physiological and behavioural research</p>	<p><b>Eastern Barred Bandicoot</b></p> <p><u>Program Coordinator:</u> Dept of Conservation &amp; Natural Resources (VIC)</p> <p><u>ASMP Zoo Program Coordinator:</u> Healesville Sanctuary Representative</p> <p><u>Coordinating Zoo (captive program):</u> Healesville Sanctuary</p> <p><u>Current ARAZPA Participants:</u> Healesville Sanctuary, Western Plains Zoo, Melbourne Zoo, Werribee Zoo, Taronga Zoo</p> <p><u>Zoo Services:</u> captive breeding, assist field studies (Healesville Sanctuary), provide animals for release-to-wild</p>
<p><b>Orange-bellied Parrot</b></p> <p><u>Program Coordinator:</u> Dept of Conservation &amp; Natural Resources (VIC) Representative</p> <p><u>ASMP Zoo Program Coordinator:</u> Healesville Sanctuary Representative</p> <p><u>Coordinating Zoo (captive program):</u> Healesville Sanctuary</p> <p><u>Current ARAZPA Participants:</u> Healesville Sanctuary</p> <p><u>Other Participants:</u> Dept of Conservation &amp; Natural Resources (VIC), Royal Australasian Ornithologists Union, Australian Nature Conservation Agency, World Wide Fund for Nature, Dept of Environment &amp; Natural Resources (SA), Birdlife International, Latrobe, Melbourne, &amp; Sydney Universities</p> <p><u>Zoo Services:</u> maintain &amp; breed captive colony, advocacy role, assist field studies &amp; research, provide individual specimens for reintroductions</p>	<p><b>Helmeted Honeyeater</b></p> <p><u>Program Coordinator:</u> Dept of Conservation &amp; Natural Resources (VIC) Representative</p> <p><u>ASMP Zoo Program Coordinator:</u> Healesville Sanctuary Representative</p> <p><u>Coordinating Zoo (captive program):</u> Healesville Sanctuary</p> <p><u>Current ARAZPA Participants:</u> Healesville Sanctuary</p> <p><u>Other Participants:</u> Dept of Conservation &amp; Natural Resources (VIC), Royal Australasian Ornithologists Union, Australian Nature Conservation Agency</p> <p><u>Zoo Services:</u> maintain &amp; breed captive colony, advocacy role, assist field studies &amp; research, provide individual for reintroductions</p>
<p style="text-align: center;"><b>Greater Stick-nest Rat</b></p> <p style="text-align: center;"><u>Program Coordinator:</u> Dept of Environment &amp; Natural Resources (DENR), SA</p> <p style="text-align: center;"><u>ASMP Zoo Program Coordinator:</u> Adelaide Zoo Representative</p> <p style="text-align: center;"><u>Coordinating Zoo (captive program):</u> Western Plains Zoo</p> <p style="text-align: center;"><u>Current ARAZPA Participants:</u> Adelaide Zoo, Monarto Zoo, Taronga Zoo</p> <p style="text-align: center;"><u>Zoo Services:</u> assist DENR in captive breeding for release, provide genetic &amp; demographic management of captive colony</p>	

<b>Multi-agency programs where the captive component is not managed in <i>direct</i> support of an <i>in-situ</i> species recovery effort - managed for advocacy or to support research.</b>	
<b><u>Category 3 (2)</u></b>	<b><u>Category 4 (2)</u></b>
<p><b>Long-footed Potoroo</b>  <u>Contact Zoo:</u> Healesville Sanctuary  <u>Other Participants:</u> Dept of Conservation &amp; Natural Resources (VIC), Australian Nature Conservation Agency, Royal Australasian Ornithologists Union, Museum of Victoria  <u>Zoo Services:</u> establish captive population, assist field studies, undertake physiological &amp; behavioural research, develop &amp; test trapping techniques</p>	<p><b>North Island Kaka</b>  <u>Contact Zoo:</u> Auckland Zoo  <u>Other Participants:</u> Dept of Conservation (NZ)  <u>Zoo Services:</u> coordinate captive management, breeding, advocacy; develop artificial incubation &amp; rearing techniques as analogue for kakapo</p>
<b>Multi-agency programs where the captive component is not managed in <i>direct</i> support of an <i>in-situ</i> species recovery effort - managed for advocacy or to support research.</b>	
<b><u>Category 4 (3)</u></b>	
<p><b>White-bellied Frog</b>  <u>Contact Zoo:</u> Melbourne Zoo  <u>Other Participants:</u> Dept of Conservation &amp; Land Management (WA), University of WA  <u>Zoo Services:</u> establish husbandry &amp; reproductive protocols</p>	<p><b>Smokey Mouse &amp; Heath Rat</b>  <u>Contact Zoo:</u> Melbourne Zoo  <u>Other Participants:</u> LaTrobe University  <u>Zoo Services:</u> establish captive population &amp; breeding, undertake biological &amp; behavioural research; develop re-release protocols</p>
<p><b>Swamp Skink</b>  <u>Contact Zoo:</u> Healesville Sanctuary  <u>Other Participants:</u> Dept of Conservation &amp; Natural Resources (VIC)  <u>Zoo Services:</u> maintain &amp; breeding captive colony, provide animals for release, assist field studies, undertake physiological research</p>	
<b>Potential inter-agency programs, for which only preliminary discussion/work has been achieved, no species currently held by ARAZPA-member institutions.</b>	
<b><u>Category 4 (1)</u></b>	
<p><b>Pilliga Mouse</b>  <u>Contact Zoo:</u> Western Plains Zoo  <u>Other Participants:</u> NSW National Parks &amp; Wildlife Service</p>	

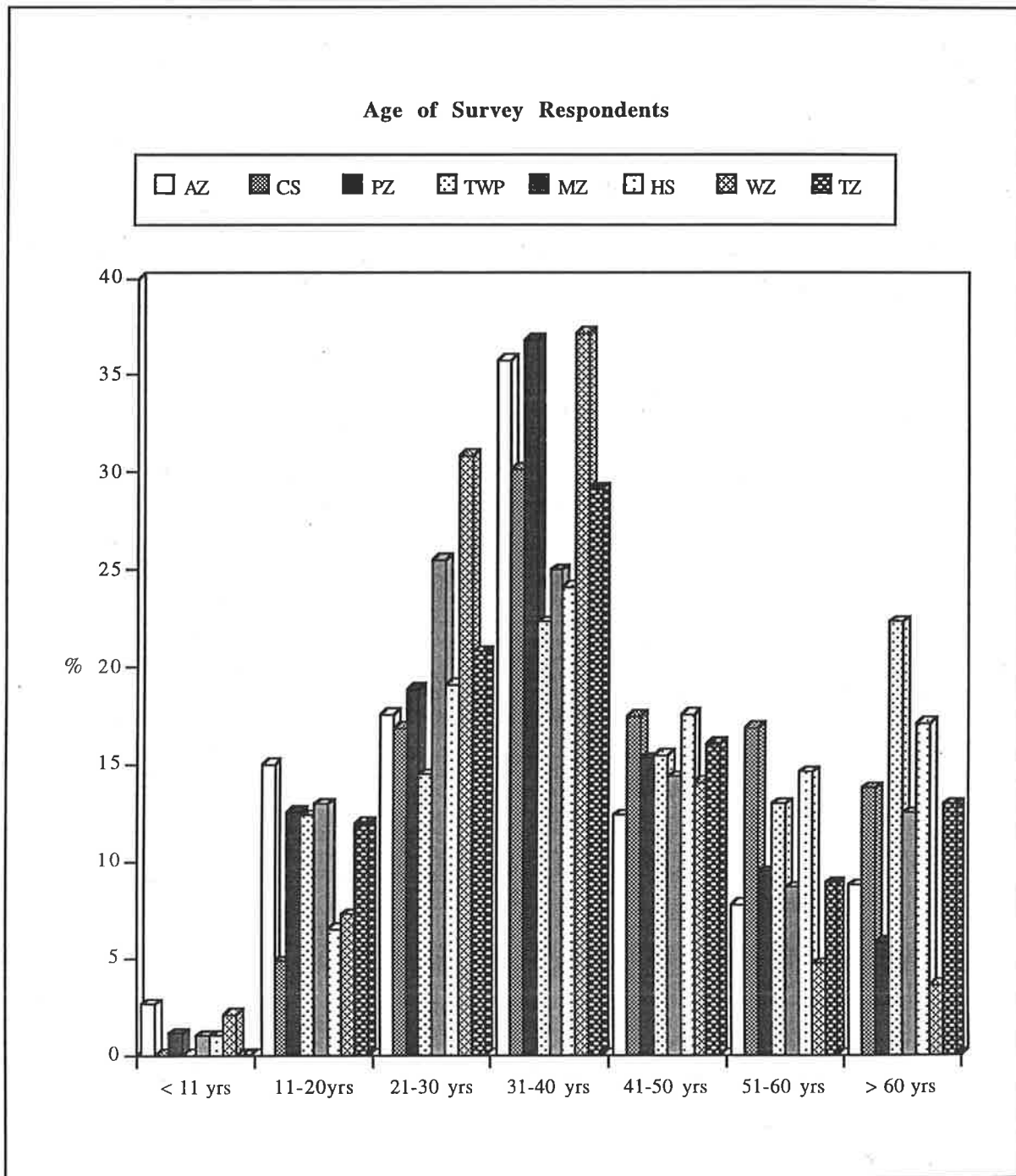
**APPENDIX 7: Visitors who were attending the zoo with and without children**



## APPENDIX 8: Schooling levels of zoo visitors

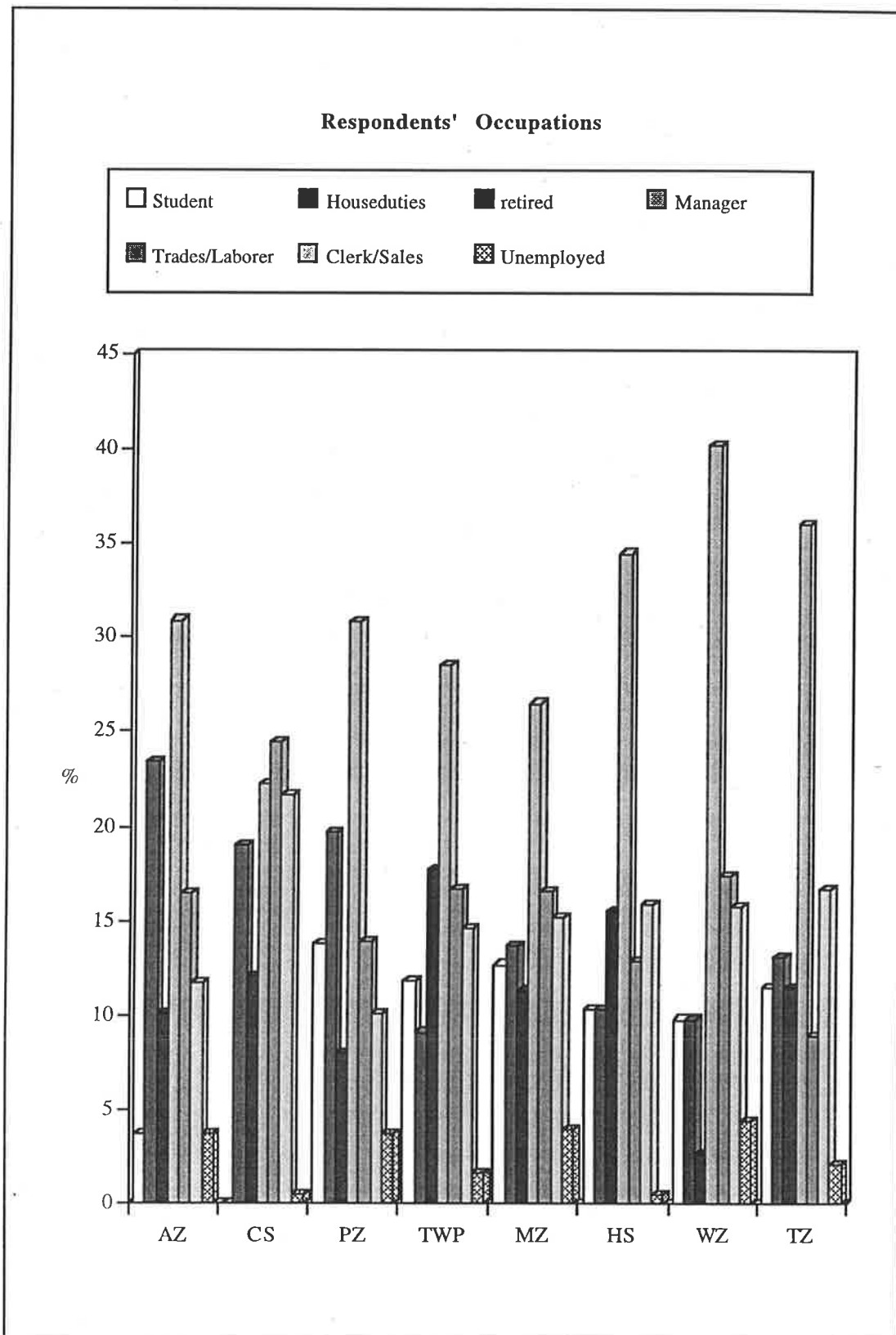


**APPENDIX 9: Age distribution of zoo visitors responding to survey**

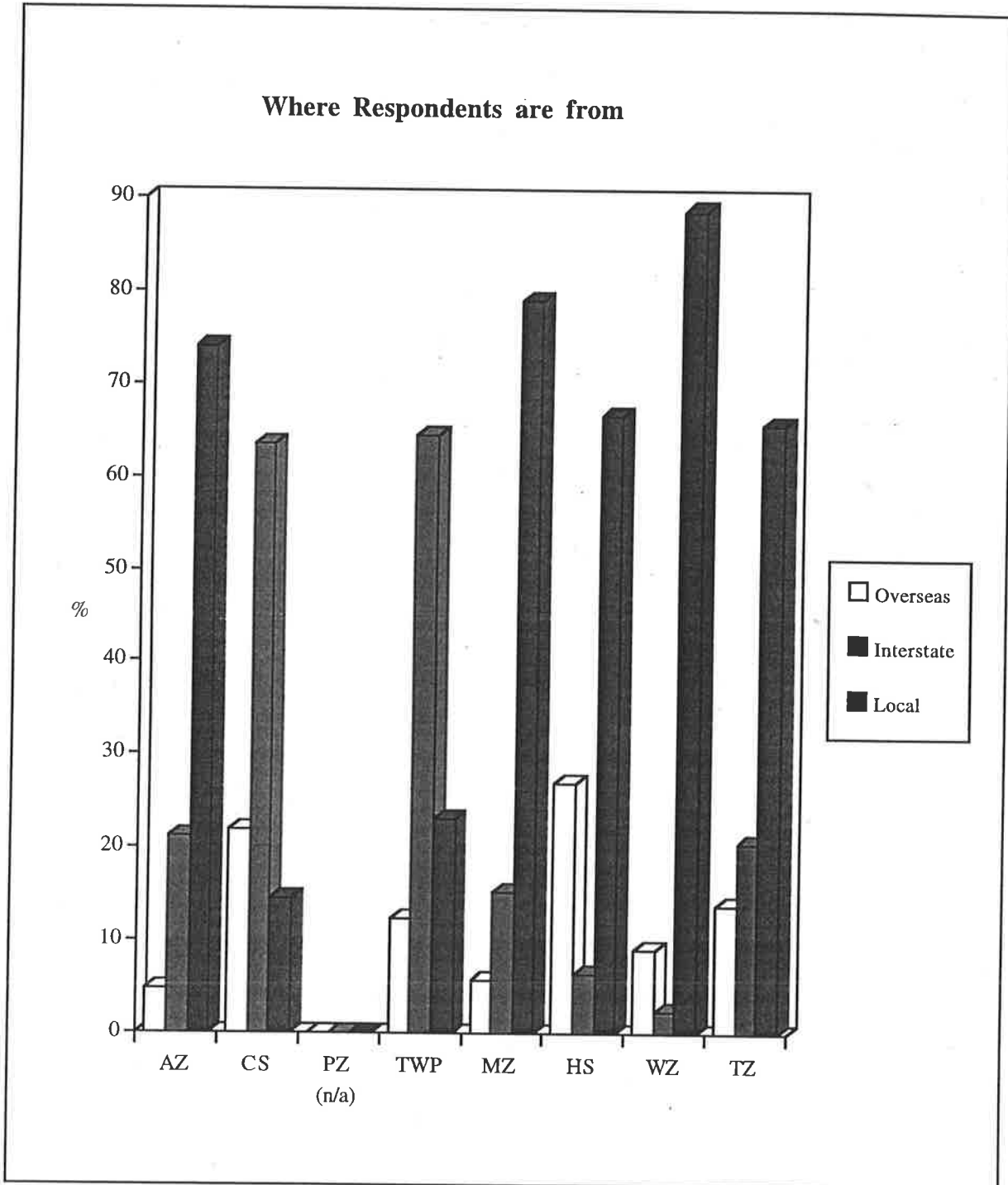




## APPENDIX 10: Zoo visitors' occupations



**APPENDIX 11: Where zoo visitors are from**



**APPENDIX 12: Categorised conservation responses to zoo visitor questionnaire item: *I didn't know/never realised that & It reminded me that***

<b>A selection of visitor responses indicating their perceptions of role of zoos in conservation</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• zoos were doing so much for endangered species</li> <li>• zoos are great for teaching adults and kids about animals - but the animals should be free</li> <li>• there are people working in the field for the preservation of so many species - keep up the good work</li> <li>• zoo people are saving animals by bringing them out of the wild</li> <li>• conservation and zoos were so integrally linked</li> <li>• Healesville was doing such a wonderful job for endangered species</li> <li>• how many animals are extinct and how little we care - thank god for our last stand-by - Zoos!</li> <li>• how important the zoo's role is - priceless</li> <li>• what Werribee Zoo had and the time and resources they dedicate to the welfare and preservation of animals</li> </ul>	<ul style="list-style-type: none"> <li>• it is important to have zoos so we can see animals - it reminds us we share the planet with them</li> <li>• the zoo provides an interesting and educational environment - one can relax and learn at the same time</li> <li>• the wildlife park plays an important role in educating the public on environmental issues</li> <li>• we need places like zoos to protect animals, so everyone can see them and the way they live</li> <li>• I must visit the zoo with my family more often ... children must be shown animals in their natural habitat</li> <li>• zoos like Melbourne are playing a most important role in educating the general public about how animals should be treated and their conservation approach to captive breeding</li> <li>• thought I really don't like animals behind fences, I realise that this is often the only way to preserve species and for some people to ever see a wild animal</li> <li>• Perth Zoo is at the forefront of educating people and conserving animals</li> <li>• Zoos taking time to breed endangered species is invaluable to the continuity of the Rhino species</li> </ul>

**APPENDIX 12: continued**

<b>Visitor responses indicating their perceptions of zoo environments and exhibit designs</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• the animal enclosures were becoming less enclosed</li> <li>• the relative inactivity of most of the animals</li> <li>• the large cats were confined to such a small area</li> <li>• it was so enjoyable to see animals in their natural environment</li> <li>• free-range zoos seem happier places for animals than conventional zoos</li> <li>• there were no more giraffes at Melbourne Zoo - it's a good thing because their enclosure was terrible</li> <li>• the importance of natural habitats in zoo exhibits</li> <li>• all the displays were excellent and showed the animals to advantage in their natural habitat</li> <li>• how beautiful you can make a zoo look, natural and enjoyable</li> <li>• the zoo had made the animals' places so like their real homes</li> <li>• the zoo environment is changing for the better</li> <li>• how small some animal enclosures are (eg elephants)</li> <li>• the animals should have much bigger (and more natural) areas</li> <li>• zoos can look natural and green ... they aren't all concrete jungles</li> <li>• animals can be so content in their natural surroundings</li> <li>• how natural a zoo can be</li> <li>• it's good to be able to see animals you might not normally have a chance to see, but I feel sorry for them - I think they should be free</li> <li>• animals don't necessarily need more space to move around (eg elephants, big animals), as long as they get their food and stimulation</li> <li>• the orang-utan rainforest park was so small - considering how much money was spent on the project</li> <li>• the vast improvement in conditions for zoo animals</li> </ul>	<ul style="list-style-type: none"> <li>• zoos can show natural habitats as well as the species that exist in them</li> <li>• watching animals - that's really how they behave in the wild</li> <li>• lots of the lions and birds should be free</li> <li>• not all animals are really happy to be here - the bears look sad and bored</li> <li>• here we can see that the animals and birds are in as close to the wild as possible in captivity</li> <li>• this type of nature park is far better than a zoo ... I am not in agreeance with zoos as such ... they are too limited in area and space for what should be an animal's natural habitat</li> <li>• zoo enclosures are improving and the animals look happier in more natural environments</li> <li>• caged animals are sad - even if the prime interest is conservation and protection of them</li> <li>• I don't think of Healesville as a Zoo, but a natural sanctuary ... to me a zoo is a place where big animals are in small cages (eg lions) and this distresses me.</li> <li>• a good platypus display has shown how these animals really live</li> <li>• there's been an improvement in zoo techniques</li> <li>• a better alternative than zoos should be in existence for animals such as tigers and bears ... any endangered animal really - the compounds are too small for large animals</li> <li>• animals are more contented in a more natural habitat</li> <li>• I dislike seeing aviaries and large felines in small cages</li> <li>• crocodiles should be in bigger and better cages where they can move around</li> <li>• I feel so sad seeing wild animals caged</li> <li>• how far we have come since the days of concrete and iron-bar enclosures</li> <li>• nothing should be locked up and should roam free like the animals at Werribee do</li> </ul>

**APPENDIX 12: continued**

<b>Visitor responses indicating their awareness of certain environmental problems</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• that there were so few tigers left</li> <li>• there are so many species facing extinction</li> <li>• the biodiversity of the planet is disappearing</li> <li>• koalas are in danger</li> <li>• dingoes contribute to reduction of rabbits, they kill less native species than feral animals do</li> <li>• the pollution of the mangrove system had such a total destruction of the associated animal life</li> <li>• imported animals do so much damage</li> <li>• the bilby was becoming extinct</li> <li>• there were so many animals becoming rare because of habitat loss</li> <li>• so many seals were in danger from plastics and such</li> <li>• some monkeys (baboons) are endangered</li> <li>• Australia had so many endangered species</li> <li>• tamarins were endangered</li> <li>• oryx are nearly extinct</li> <li>• rhinos do not need to be slaughtered for their horns</li> </ul>	<ul style="list-style-type: none"> <li>• each day more species are added to the endangered list</li> <li>• our natural habitat for animals, etc is rapidly dwindling away</li> <li>• how fragile the natural environment is in Australia</li> <li>• feral and other animals should have never been introduced</li> <li>• we should be aware of how cats are to blame for the extinction of so much birdlife</li> <li>• the imbalance of creatures in many aspects from the steady degeneration of life</li> <li>• appropriate habitats for animals are vital to their survival</li> <li>• so many animals were endangered</li> <li>• permaculture concepts are important to everyone playing a role in conservation</li> <li>• we are losing animals all over the world at an alarming rate</li> <li>• a lot more needs to be done to save tigers and rhinos</li> </ul>

**APPENDIX 12: continued**

<b>Visitor responses indicating their recognition of human agency in causing environmental problems</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• there are other beings sharing the earth with humans</li> <li>• pollution ... people destroy the environment walking through the monsoon forest ... I just realised what we are losing through our own stupidity</li> <li>• governments don't care so much for the environment as they do about making money</li> <li>• that so many animals were killed for fashion</li> <li>• we as humans are forcing our lifestyle upon animals and turning them into entertainment rather than respecting them as other creatures ... we share the planet with them</li> <li>• so many animals die because of humans</li> <li>• the hippo was being poached for its tusks and was losing its habitat and if man is not educated, these animals may become endangered</li> <li>• we must not destroy animals' habitats all the time, to protect endangered species</li> </ul>	<ul style="list-style-type: none"> <li>• how vulnerable the world is to irresponsible development</li> <li>• people need more respect for animals - they are not just for our entertainment</li> <li>• one day we might not see many of the species that exist today because of human disregard</li> <li>• we are only part of the living world</li> <li>• we all have responsibility to ensure its well-being of the planet's life forms and resources</li> <li>• our ecology is so fragile in the face of our technology</li> <li>• Australians take too much for granted when it comes to their own animals</li> <li>• man is the biggest danger to this planet</li> <li>• we don't know everything - humans are far too egocentric for the planet's good ... we are a part of the whole, not just the top looking down</li> <li>• European settlers were irresponsible in many of the ways they treated the environment</li> <li>• people kill animals for stupid reasons (eg Rhinos)</li> <li>• we, as humans, have a lot to answer for, for how we have treated the environment and animals</li> </ul>

**APPENDIX 12: continued**

<b>Visitor responses indicating their acknowledgment of individuals' responsibility for addressing environmental problems</b>	
<b>I didn't know/never realised that ....</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• there were so many endangered species - I am going to help them</li> <li>• I would like to be more active in animal/habitat conservation</li> </ul>	<ul style="list-style-type: none"> <li>• I must take more care and help to preserve what we have</li> <li>• to plant more native plants to encourage fauna on my own property</li> <li>• wildlife conservation starts with the individual rather than relying on the government or other conservation organisations</li> <li>• I want to give more money to Greenpeace</li> <li>• I have a lot to learn about conservation, preservation</li> <li>• I can do something about caring for wildlife</li> <li>• we have an important role to play as individuals in helping with plant and animal conservation</li> <li>• I should do something personally to help preserve habitats</li> <li>• I need to take time to watch and appreciate the environment and become informed</li> <li>• I don't do enough to help save endangered species or environments</li> <li>• I must send money to African-based animal rehab programs</li> <li>• I should try to do more to assist conservation of endangered species and help people understand what zoos are about</li> </ul>

**APPENDIX 12: continued**

<b>Visitor responses indicating their perceptions of varied components of non-human nature</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• there are so many animal species and plants</li> <li>• there are so many different species living in the Northern Territory</li> <li>• how cleverly adapted every species is to its own habitat</li> <li>• all of our animals are so important to each other ... and how they balance our ecosystems</li> <li>• there were so many animals I had not heard of or seen before</li> <li>• there are so many different animals in Australia</li> <li>• Australia had so many native animals</li> <li>• that birds and other animals co-habitate well, not like humans and animals</li> </ul>	<ul style="list-style-type: none"> <li>• life is deeply interconnected</li> <li>• we have a great diversity of animals and bird life</li> <li>• there are many varied and different animals in this wonderful world of ours</li> <li>• the interlinkages that exist in our small ecosystems</li> <li>• animals are very finely adapted to their environments</li> <li>• there is a lot you can learn about all animals and their associated habitats</li> <li>• nature is a matter of survival of the fittest</li> <li>• nature is a beautiful place to be</li> <li>• animals and humans are all protective of their environments</li> <li>• humans share the world with other species</li> <li>• all living creatures are here for a purpose</li> <li>• the world has a variety of creatures - not just humans</li> </ul>

<b>Visitor responses indicating their appreciation of the need for conservation</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• conservation is of paramount consideration in all aspects of flora and fauna</li> <li>• just by doing even a little, we help animals and the environment</li> </ul>	<ul style="list-style-type: none"> <li>• looking after wildlife is very important</li> <li>• we need to look after our environment</li> <li>• environmental control and conservation measures are most important</li> <li>• animals need lots of care</li> <li>• it is important to educate our children to love and care for animals</li> <li>• habitats are vital to animal survival</li> <li>• I don't know what most people mean by 'environment', but it's very important to save animals and plants, because once they disappear, we will too</li> <li>• all animals need to be conserved</li> </ul>



**Visitor responses indicating nonhuman nature's worth as a fundamental argument for conservation**

<b>I didn't know, never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• animals are smart - we have to act now to save them</li> <li>• animals are more intelligent and self-reliant than humans, however man controls them most of the time ... fortunately animals survive ... if not endangered, animals should remain free</li> <li>• that Oz's beautiful native birds need protecting</li> </ul>	<ul style="list-style-type: none"> <li>• biodiversity leads to quality of life for all of us</li> <li>• our animal world is unique and a national treasure ... we need to respect and learn from them</li> <li>• animals depend a lot on humans to be cared for if ill or injured and should not be abused</li> <li>• there are some truly beautiful creatures that I have never seen, and how precious they are ... it is so important to keep these creatures in our (and their) world</li> <li>• animals and humans need to live together, their survival is not necessarily critical to our own, but it helps</li> <li>• animals are very valuable to the country and to us</li> <li>• every animal and bird in Australia is precious and deserves the right to share this country with us - in their natural environment</li> <li>• animals have a right to exist in our world, something I tend to forget about at times</li> <li>• how beautiful nature is and how important it is to conserve the environment and the habitat for animals</li> <li>• how precious animals are and how much we can learn about our environments from them through their adaptations</li> <li>• people are closely related to animals and we should seriously consider their welfare, as well as our own</li> <li>• animals are precious gifts from God and should be looked after</li> <li>• the earth is a fragile place that needs our protection, not exploitation</li> <li>• our animal species and their habitats are extremely important, as is an awareness by the public of the issues</li> </ul>

**APPENDIX 12: continued**

<b>Visitor responses which prescribe particular conservation activities</b>	
<b>I didn't know/never realised that ...</b>	<b>It reminded me that ...</b>
<ul style="list-style-type: none"> <li>• we need to work harder on conservation</li> <li>• we must do more to conserve all remaining natural habitats</li> <li>• the public seem to be increasingly interested in animals, their welfare and presentation</li> <li>• we need to value all wildlife so that our children will enjoy the value of nature</li> <li>• lots more can be done to protect these creatures (endangered species)</li> </ul>	<ul style="list-style-type: none"> <li>• children should be made aware of the problem of extinction</li> <li>• we need to be more aware of global and local issues (eg habitat preservation)</li> <li>• we need to take more care for future generations to enjoy what we have now</li> <li>• should do more for our endangered bird species, especially golden-shouldered parrots</li> <li>• we need to conserve natural habitats for all time, especially the trees as we have trouble with the ozone layer</li> <li>• there's a long, hard road ahead in education of people about conservation</li> <li>• if we got more nature programs and our world programs on TV, people would be more conscious of what is lacking in Australia</li> <li>• we can't just live for today ... we need to always reflect on what we do today and how this will impact on the future ... I often feel that problems associated with conservation are not given much worth in the political arena ... governments aren't interested unless money is an outcome</li> <li>• we must all be doing 'something' (ie encourage our friends to help preserve the planet)</li> <li>• we cannot forget our natural environment - it's so easy to do when you live in the city</li> <li>• Australian native plants should be understood as an integral part of our life here and should be promoted as a viable alternative to non-native (European) vegetation when landscaping our suburban landscape</li> <li>• educating our children is our best chance to save our wildlife and the environment</li> <li>• life is too short - we must do something to help save the problems of the world NOW - before it's too late</li> <li>• we should treat animals with respect and do more to help preserve them</li> <li>• we should all be conservationists in our daily lives</li> <li>• animal habitats should be preserved and extended more than has been done in the past</li> <li>• we must be extra careful of the environment</li> <li>• more should be done to preserve the animals of this world and that humans should learn to live in harmony with animals ... conserve not destroy</li> </ul>

## **BIBLIOGRAPHY**

- Abelson, P. (1987) *Privatisation: An Australian Perspective*, Australian Professional Publications: Sydney.
- Albrow, M. (1970) *Bureaucracy*, Praeger Publishing: New York.
- Allen, K. (1995) "Putting the Spin on Animal Ethics: Ethical Parameters for Marketing and Public Relations", in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC .
- Althaus, R.R. & Yarwood, D.L. (1993) "Organisational Domain Overlap with Cooperative Outcomes: The Departments of Agriculture and State and International Agricultural Policy During the Carter Administration", *Public Administration Review*, Vol. 53, No. 4, pp. 357-367.
- Ames, A. (1993) "Environmental Enrichment for Captive Polar Bears", *Biologist*, Vol. 40, No. 3, pp. 130-131.
- ANCA (1994a) *Endangered Species Protection Act 1992: An Outline*, Australian Nature Conservation Agency: Canberra.
- ANCA (1994b) *Recovery Plan and Funding Proposal Guidelines: For Endangered and Vulnerable Species and Ecological Communities*, Endangered Species Unit, Australian Nature Conservation Agency: Canberra.
- Anderson, J.E. (1984) *Public Policy Making*, Holt Rinehart Winston: New York.
- Argyris, C. & Schon, D. (1978) *Organisational Learning: A Theory of Action Perspective*, Addison-Wesley: Reading, Mass.
- Argyris, C. (1993) *Knowledge for Action: A Guide to Overcoming Barriers to Organisational Change*, Jossey-Bass Publishers: San Francisco.
- Arnott, J. & Dickenson, S. (1996) "Supporting Conservation Goals Through Environmental Horticulture", Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference Proceedings, 3-7 April, 1995, Perth, Western Australia, pp. 139-143.
- Asis, K. & Stahl, E. (1991) "The Ethics of Disclosure", in Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference, 15-19 September, San Diego, pp. 176-181.
- ASMP (1993) *Australasian Species Management Program Annual Report*, Australasian Regional Association of Zoological Parks and Aquaria: Sydney.
- ASMP (1994) *Regional Census and Plan*, Australasian Species Management Program, Australasian Regional Association of Zoological Parks and Aquaria: Sydney.
- ASMP (1996) *Regional Census and Plan*, Australasian Species Management Program, Australasian Regional Association of Zoological Parks and Aquaria: Sydney.
- Atkinson, M.M. & Coleman, W. D. (1992) "Policy Networks, Policy Communities and the Problems of Governance", *Governance: An International Journal of Policy and Administration*, Vol. 5, No. 2, pp. 154-180.
- Auckland Zoo (1994) *Draft Strategic Implementation Plan 1995/6*, Auckland Zoo: New Zealand
- Australian Bureau of Statistics (1991) *Census Counts for Small Areas: NSW. Catalogue # 2730.1*

- Australian Bureau of Statistics (1991) Census Counts for Small Areas: QLD. Catalogue # 2730.3.
- Australian Bureau of Statistics (1991) Census Counts for Small Areas: South Australia. Catalogue # 2710.4
- Australian Bureau of Statistics (1991) Census Counts for Small Areas: Victoria. Catalogue # 2730.2.
- Australian Bureau of Statistics (1991) Population Growth and Distribution in Australia: 1991 Census. Catalogue # 2822.0.
- Babbie, E. (1989) *The Practice of Social Research*, Wadsworth Publishing Company: California.
- Baker, R.M. & George, G.G. (1988) "Species Management Programmes in Australia and New Zealand", *International Zoo Yearbook*, Vol. 27, pp. 19-26.
- Banks, C. (1992) "The Striped Legless Lizard Working Group - an Interagency Initiative to Save an Endangered Reptile", in *Saving Wildlife Zoological Conference Proceedings*, 4-10 April, 1992, Currumbin Sanctuary, QLD, pp. 45-48.
- Bartos, J. (1993) "Benchmarking, Best Practices in Australasian Zoos", in *Zoos Enriching Environments: Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 29 March-2 April, 1993, Adelaide, pp. 51-59.
- Bates, G.M. (1995) *Environmental Law in Australia*, Butterworths: Sydney.
- Beck, B. (1995) "Reintroduction, Zoos, Conservation, and Animal Welfare", pp. 155-163 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Beder, S. (1993) *The Nature of Sustainable Development*, Scribe Publications: Newham, Victoria.
- ✓ Bell, G. (1990) "Are Zoos for Animals or People?", *The Bulletin*, September, pp. 44-52.
- Bell, J. (1993) "Zoos: Modern Arks or Prisons by Another Name", *Animal Liberation Magazine*, January-March, pp. 14-15.
- Bell, M. (1996) "New Zealand Fauna Taxon Advisory Group", pp. 27-28 in *ASMP Regional Census and Plan*, 6th Edition, ARAZPA: Sydney.
- Benson, J.K. (1975) "The Interorganisational Network as a Political Economy", *Administrative Science Quarterly*, Vol. 20, pp. 229-249.
- Benzon, T.A. & Smith, R.F. (1974) "Male Dominance Hierarchies and Their Possible Effects Upon Breeding in Cheetahs", *International Zoo Yearbook*, Vol. 14, pp. 174-178.
- Berg, B.L. (1989) *Qualitative Research Methods for the Social Sciences*, Allyn & Bacon: Boston.
- Berger, P.L. (1979) *Invitation to Sociology*, Penguin Books: Harmondsworth.
- Bessant, B. (1995) "Corporate Management & Its Penetration of University Administration and Government", *Australian Universities' Review*, Vol. 38, No. 1, pp. 59-62.
- ✓ Bierlein, J. (1991) "Interpretation and the Zoo Renaissance", *Legacy*, Vol. 2, No. 2, pp. 12-15.

- Biological Diversity Advisory Committee (1992) *A National Strategy for the Conservation of Australia's Biological Diversity*, Department of the Arts, Sport, the Environment and Territories: Canberra
- Birney, B. (1988) "Brookfield Zoo's 'Flying Walk' Exhibit: Formative Evaluation Aids in the Development of an Interactive Exhibit in an Informal Learning Setting", *Environment and Behaviour*, Vol. 20, No. 4, July, pp. 416-434.
- ✗ Bitgood, S., Patterson, D. & Benefield, A. (1988) "Exhibit Design and Visitor Behaviour", *Environment and Behaviour*, Vol. 20, No. 4, July, pp. 474-491.
- ✗ Bitgood, S.C. (1987) *Understanding the Public's Attitudes Toward and Behaviour in Museums, Parks and Zoos*. Technical Report No. 87-30, Centre for Social Design: Jacksonville, Alabama.
- Blau, P.M. (1963) *The Dynamics of Bureaucracy: A Study of Interpersonal Relations in Two Government Agencies*, University of Chicago Press: Chicago.
- Blau, P.M. & Meyer, M.W. (1987) *Bureaucracy in Modern Society*, Random House: New York.
- Block, R. (1988) "Conservation in Zoos: Myth or Reality", in *Proceedings of the American Association of Zoological Parks and Aquaria Central Regional Conference*, 10-12 April, Topeka, Kansas, pp. 378-382.
- ✗ Block, R. (1991) "Conservation Education in Zoos", *Journal of Museum Education*, Vol. 16, No. 2, pp. 6-7.
- Bostock, S.C. (1993) *Zoos and Animal Rights*, Routledge: London.
- Bozeman, B. & Straussman, J.D. (1983) "Publicness and Resource Management Strategies", pp. 75-92 in R.H. Hall and R.E. Quinn (eds) *Organisational Theory and Public Policy*, Sage Publications: Beverly Hills.
- Brambell, M. (1980) "The Evolution of the Modern Zoo", *International Zoo News*, Vol. 40, No. 7, pp. 27-34.
- Brewer, G.D. & deLeon, P. (1983) *The Foundations of Policy Analysis*, The Dorsey Press: Homewood, IL.
- Bridgewater, P. & Walton, D.W. (1994) "The Species Triage: Are We Trying to Retrieve the Man Overboard While the Ship Sinks", pp. ix-xii in M. Serena (ed) *Reintroduction Biology of Australian and New Zealand Fauna*, Surrey Beatty & Sons: Chipping Norton.
- Broido, J. (1979) *Interdisciplinarity: Reflections on Methodology*, pp. 244-305 in J.J. Kockelmans (ed) *Interdisciplinarity and Higher Education*, Pennsylvania State Press: University Park.
- Brown, L. (1987) *Conservation and Practical Morality*, MacMillan Press: London.
- Brunning, D. (1990) "How Do We Select Species for Conservation and Breeding Programs", in *Proceedings of the American Association of Zoological Parks and Aquaria Annual Conference*.
- Bryman, A. (1989) *Research Methods and Organisation Studies*, Unwin Hyman: London.
- Bullis, C.A. & Kennedy, J.J. (1991) "Value Conflicts & Policy Interpretation: Changes in the Case of Fisheries and Wildlife Managers in Multiple Use Agencies", *Policy Studies Journal*, Vol. 19, No. 3/4, pp. 542-552.
- Burrell, G., Morgan, G. (1979) *Sociological Paradigms and Organisational Analysis: Elements of the Sociology of Corporate Life*, Heinemann: London.

- Caldwell, L.K. (1993) "Environmental Policy as a Political Problem", *Policy Studies Review*, Vol. 12, No.3/4, pp. 105-117.
- Calicott, J.B. (1986) "On the Intrinsic Value of Nonhuman Species", pp. 138-172 in B.G. Norton (ed) *The Preservation of Species*, Princeton University Press: Princeton
- Cameron, M. (1996) *Are Positivist Methodologies the Only or Even the Most Appropriate Methodologies on Which to Base Research in Environmental Studies?* Course materials for Environmental Politics, Philosophy and Ethics, Mawson Graduate Centre for Environmental Studies, University of Adelaide: Adelaide.
- Captive Breeding Specialist Group and the World Zoo Organisation (1993) *The World Zoo Conservation Strategy*, Chicago Zoological Society: Chicago.
- Carroll, J. (1992) *Economic Rationalism and Its Consequences*, pp. 7- 14 in J. Carroll & R. Manne (eds) *Shutdown: The Failure of Economic Rationalism and How to Rescue Australia*, Text Publ. Co: East Melbourne.
- Carson, R. (1965) *Silent Spring*, Penguin Books: Harmondsworth.
- Cawson, A. (1987) "Corporations" pp. 104-106 in D. Miller (ed) *The Blackwell Encyclopedia of Political Thought*, Blackwell: Oxford.
- Chaplin, R.E. (1975) "The Wildlife Education and Conservation Programme at Edinburgh Zoo", *International Zoo Yearbook*, Vol. 15, pp. 308-310.
- Cherfas, J. (1984) *Zoo 2000*, British Broadcasting Corporation: London.
- Chiszar, D., Murphy, J.B. & Iliff, W. (1990) "For Zoos", *The Psychological Record*, Vol. 40, pp. 3-13.
- Churchman, D. (1987) *The Educational Role of Zoos: A Synthesis of the Literature (1928-1987)*, California State University: Dominguez Hills.
- Clark, D.F. & Ackoff, R.L. (1959) "A Report on Some Organisational Experiments", *Operations Research*, Vol. 7, May/June, pp. 279-293.
- Clark, T. W. & Kellert, S.R. (1989) *The Theory and Application of a Wildlife Policy Framework*, in W.R. Mangun (ed), *Public Policy Issues in Wildlife Management*, Greenwood Press: New York.
- Clark, T.W. (1992) "Practicing Natural Resource Management with a Policy Orientation", *Environmental Management*, Vol. 16, No. 4, pp. 423-433.
- Clark, T.W. (1993) "Creating and Using Knowledge for Species and Ecosystem Conservation: Science, Organisations, and Policy", *Perspectives in Biology and Medicine*, Vol. 36, No.3, Spring, pp. 497-525.
- Clark, T.W. (1996) "Learning As A Strategy For Improving Endangered Species Conservation", *Endangered Species UPDATE* Vol. 13, No. 1/2, pp. 22-24.
- Clark, T.W. (In Press) "Appraising Threatened Species Recovery Processes: Pragmatic Recommendations For Improvements", *Back from the Brink: Refining the Threatened Species Recovery Process*, 12-14 December, 1995, Sydney, Australian Nature Conservation Agency: Canberra.
- Clark, T.W., Crete, R. & Cada, J. (1989) "Designing and Managing Successful Endangered Species Recovery Programs", *Environmental Management*, Vol. 13, No. 2, pp. 159-170.
- Clark, T.W., Reading, R.P. & Clarke, A.L. (1994) *Endangered Species Recovery: Finding the Lessons, Improving the Process*, Island Press: Washington, DC.

Commonwealth of Australia (1995) Wildlife Protection (Regulation of Exports and Imports)  
Amendment Bill 1995, Explanatory Memorandum, Catalogue # 9546758.

- X Coe, J.C. (1985) "Design and Perception: Making the Zoo Experience Real", *Zoo Biology*, Vol. 4, pp. 197-208.
- Conners, J. (1993) "Let's Make This Relationship Work - Keeping and Education Staff Working Together", in *Saving Wildlife Zoological Conference*, 4 -10 April, Currumbin Sanctuary, QLD, pp. 147-148.
- Considine, M. (1988) "The Corporate Management Framework as Administrative Science: A Critique", *Australian Journal of Public Administration*, Vol. XLVII, No. 1, pp. 4-18.
- Conway, W.G. (1978) "The Zoo Story", *Natural History*, Vol. 77, No. 10, pp. 30-37.
- Conway, W.G. (1986) "The Practical Difficulties and Financial Implications of Endangered Species Breeding Programs", *International Zoo Yearbook*, Vol. 24/25, pp. 210-219.
- Conway, W.G. (1995) "Zoo Conservation and Ethical Paradoxes", pp. 1-9 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Cotgrove, S. & Duff, A. (1980) "Environmentalism, Middle-Class Radicalism and Politics", *Sociological Review*, Vol. 28, No. 2, pp. 333-351.
- Coughlan, S. (1994) "Endangered Liaisons", *Times Educational Supplement*, No. 4068, 17 June, pp. 16-17.
- Cox, E. (1995) *A Truly Civil Society: 1995 Boyer Lectures*, Australian Broadcasting Corporation: Sydney.
- Craig, M. (1996) "The Hooded Plover: A Partnership with Adelaide Zoo", in *Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference Proceedings*, 3-7 April, 1995, Perth, pp.1-3.
- Crosby, T. (1979) "The Early Years: Evolution of the Zoo", pp. 30-37 in A. Meyer (ed) *A Zoo For All Seasons: The Smithsonian Animal World*, Smithsonian Exposition Books: Washington DC.
- Crowley, M.G. (1991) "Prioritising the Sponsorship Audience", *European Journal of Marketing*, Vol. 25, No. 11, pp. 11-21.
- Cunningham, G. (1963) "Policy and Practice", *Public Administration*, Vol. 41, pp. 229-238.
- Curry-Lindahl, K. (1965) "Conservation of Nature - A Duty for Zoological Gardens", *International Zoo Yearbook*, Vol. 5, pp. 100-102.
- Curtis, L. (1978) "400 Centuries of Zoo Milestones", in *Proceedings of the American Association of Zoological Parks and Aquarium 1977/78 Regional Workshop*, pp. 336 - 343.
- Cutler, M.R. (1982) "What Kind of Wildlifers Will Be Needed in the 1980s?" *Wildlife Society Bulletin*, Vol. 10, pp. 571-579.
- Davidson, D.K. (1990) "Straws in the Wind: the Nature of Corporate Commitment to Environmental Issues", in W.M. Hoffman, R. Frederick & E.S. Petry (eds) *Business, Ethics and the Environment*, Quorum Books: London.
- Davis, B.W. (1985) "Federalism and Environmental Politics: An Australian Overview", *The Environmentalist*, Vol. 5, No. 4, pp. 269-278.
- Davis, M.B. (1993) "Do Zoos Compete With Habitat?", *Wild Earth*, Vol. 3, No. 1, pp. 48-51.
- de Vaus, D.A. (1990) *Surveys in Social Research*, Allen & Unwin: Sydney.



- DeJose, J.(1993) "The World Zoo Conservation Strategy: Will We Follow It or Lead With It?" paper presented to the Saving Wildlife Zoological Conference", 4 -10 April, Currumbin Sanctuary, QLD.
- deLeon, P. (1994) "Reinventing the Policy Sciences: Three Steps Back to the Future", Policy Sciences, Vol. 27, pp. 77-95.
- Derwin, C.W. & Piper, J.B. (1988) "The African Rock Kopje Exhibit: Evaluation and Interpretive Elements", Environment and Behaviour, Vol. 20, No. 4, July, pp. 435-451.
- DiMaggio, P. (1983) "State Expansion and Organisational Fields", pp. 147-162 in R.H. Hall and R.E. Quinn (eds) Organisational Theory and Public Policy, Sage Publications: Beverly Hills.
- Dixon, N. (1994) "Protection of Endangered Species - How Will Australia Cope?", Environmental Planning & Law Journal, Vol. 11, No. 1, pp. 6-30.
- Dixon, A.F. (1982) "Some Observations on the Reproductive Physiology and Behaviour of the Owl Monkey *Astus trivirgatus* in Captivity", International Zoo Yearbook, Vol. 22, pp. 115-118.
- Dornstein, M. (1988) Boards of Directors Under Public Ownership: a Comparative Perspective, Walter deGruyter: Berlin.
- Doyle, T. (1986) "The 'Structure' of the Conservation Movement in Queensland", Social Alternatives, Vol. 5, No. 2, pp. 27-32.
- Doyle, T. & Kellow, A. (1995) Environmental Politics and Policy Making in Australia, Macmillan: South Melbourne.
- Doyle, T.J., Walker, K.J. (In Press) "Death by Digestion: How Environmental Studies is Being Absorbed by Minor Imperialisms", paper presented to the Social Sciences and the Environment Conference, University of New England, October 1996.
- Dror, Y. (1971) Design for Policy Sciences, Elsevier: New York.
- Dryzek, J.S. (1987a) "Complexity and Rationality in Public Life", Political Studies, Vol. 35, pp. 424-442.
- Dryzek, J.S. (1987b) Rational Ecology: Environmental and Political Economy, Oxford: New York.
- Duncan, I. & Bollard, A. (1992) Corporatisation and Privatisation: Lessons From New Zealand, Oxford University Press: Auckland.
- Duplaix, N. & Grady, L. (1980) "Is the International Trade Convention For or Against Wildlife?" International Zoo Yearbook, Vol. 20, pp. 171-176.
- Dyer, K. & Gunnell, P. (1993) "Humans and Nature: A Spectrum Not a Dichotomy", Australian Journal of Environmental Education, Vol. 9, September, pp. 53-70.
- Easton, D. (1953) The Political System, Knopf: New York.
- Eckersley, R. (1993) "Rationalising the Environment: How Much Am I Bid?" in S. Rees, G. Rodley, F. Stilwell (eds.) Beyond the Market: Alternatives to Economic Rationalism, Pluto Press: Leichhardt, NSW.
- Edelman, M. (1971) Politics as Symbolic Action, Markham: Chicago.
- Edelman, M. (1988) Constructing the Political Spectacle, University of Chicago Press: Chicago.

Ehrenfeld, D. (1995) "Foreword", in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.

Ehrlich, P. & Ehrlich, A. (1981) *Extinction: The Causes and Consequences of the Disappearance of Species*, Random House: New York.

Embury, A.S. (1993) "Royal Melbourne Zoological Gardens - Implementation and Development of the Master Plan", in *Saving Wildlife Zoological Conference*, 4 -10 April, Currumbin Sanctuary, QLD, pp. 91-93.

Embury, A.S. (1995) "Telling a Story: Developing Interpretive Messages for Melbourne Zoo", in *Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 17-22 April, 1994, Darwin, pp.27-33.

Emy, H. & Hughes, O.E. (1991) *Australian Politics: Realities in Conflict*, MacMillan: South Melbourne.

Endangered Species Advisory Committee (1992) *An Australian National Strategy for the Conservation of Australian Species and Communities Threatened with Extinction*, Australian National Parks and Wildlife Service: Canberra.

ESAC (date unknown) *Policy for Translocations of Vertebrate Animals in Australia*, document for consideration by the Australia and New Zealand, Endangered Species Advisory Committee: Canberra.

Eudy, A. (1995) "To Procure or Not to Procure", pp. 146-152 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.

Evernden, N. (1992) *The Social Creation of Nature*, John Hopkins University Press: Baltimore.

Evernden, N. (1993) *The Natural Alien: Humankind and Environment*, University of Toronto Press: Toronto.

Fabricius, C. (1994) *Guide to Environmental Legislation in Australia and New Zealand*, Commonwealth of Australia: Canberra.

Farrar, J. & McCabe, B. (1995) "Corporatisation, Corporate Governance and the Deregulation of the Public Sector Economy", *Public Law Review*, Vol. 6, March, pp. 25-43.

Fay, B. (1975) *Social Theory and Political Practice*, George Allen & Unwin: London.

Fiedler, P.L., Leidy, R.A., Laven, R.D., Gershenz, N. & Saul, L. (1993) "The Contemporary Paradigm in Ecology and its Implications for Endangered Species Conservation", *Endangered Species Update*, Vol. 10, No. 3/4, pp. 7-12.

Finlay, T., Jaes, L.R. & Maple, T.L. (1988) "People's Perceptions of Animals: The Influence of the Zoo Environment", *Environment and Behaviour*, Vol. 20, No. 4, July, pp. 508-528.

Finnie, E. P. (1987) "Zoos - A Role in Conservation?", *The Conservation of Threatened Species and Their Habitats*, IUCN Australia Committee Occasional Paper #2, pp. 235-237.

Foose, T.J. (1986) "Riders of the Lost Ark: The Role of Captive Breeding in Conservation Strategies", pp. 142-165 in L. Kaufman & K. Mallory (eds) *The Last Extinction*, MIT Press: Cambridge, Mass.

Foose, T.J. & Ballou, J.D. (1988) "Management of Small Populations", *International Zoo Yearbook*, Vol. 27, pp. 26-41.

- ✓ Ford, J. (1996) "Visitor Perceptions of Zoo Animals and the Roles of Zoos", in Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference Proceedings, 3-7 April, 1995, Perth, pp.110-113.
- Fowler, F.J. (1984) Survey Research Methods, Sage Publishers: Beverly Hills.
- Fox, W. (1990) Towards a Transpersonal Ecology, Shambala: Boston.
- Frankfort-Nachmias, C. & Nachmias, D. (1992) Research Methods in the Social Sciences, St. Martins Press: New York.
- Frawley, K. (1994) "Evolving Visions: Environmental Management and Nature Conservation in Australia", pp. 216-234 in Dovers, S. (ed) Australian Environmental History, Oxford University Press: Melbourne.
- Frazer, M., Dunstan, J. & Creed, P. (1985) Perspectives on Organisational Change, Longmann-Cheshire: Sydney.
- Freas, K. (1987) "Conservation: Historical, Biological and Cultural Considerations", in Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference, pp. 170-178.
- Fry, G. (1996) "A Question of Zoos - an Essay on Their Role, " Zoos: Evolution or Extinction: 1996 Australasian Regional Association of Regional Parks and Aquaria/Australasian Society of Zoo Keepers Annual Conference, Healesville, Victoria, 15-19 April.
- Galligan, B. (1989) Australian Federalism, Longman-Cheshire: Melbourne.
- Gardner, A. (1994) "Federal Intergovernmental Cooperation on Environmental Management: A Comparison of Developments in Australia and Canada", Environmental Planning & Law Journal, Vol. 11, pp. 104-136.
- Garland, P. (1993) "Moves Towards Accreditation and the Benefits of Self Regulation", in Saving Wildlife Zoological Conference Proceedings, 4-10 April, 1992, Currumbin Sanctuary, QLD, pp. 25-28.
- Garner, R. (1994) "Wildlife Conservation and the Moral Status of Animals", Environmental Politics, Vol. 3, No.1, pp. 114-129.
- Gascoigne, J. (1994) Joseph Banks and the English Enlightenment: Useful Knowledge and Polite Culture, Cambridge University Press: Cambridge.
- Gatland, A., Munro, L. & Emerson, D. (1994) "The Great Auckland Zoo Debate: Part III", Metro, pp. 96-101.
- ✗ Gershenz, N. & Saul, L. (1993) "The Ecosystem Survival Plan: Zoo Visitors Save Wild Places", Endangered Species Update, Vol. 10, Nos. 3/4, pp. 61-62.
- ✗ Gerth, H. & Wright Mills, C. (1953) Character and Social Structure: the Psychology of Social Institutions, Harcourt Brace: New York.
- Giles, J.R., Kelly, J.D. (1992) "Conservation and Research Programmes: Proposals by the Zoological Parks Board of New South Wales", International Zoo Yearbook, Vol. 31, pp. 1-4.
- Glacken, C.J. (1967) Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the 18th Century, University of California Press: Berkeley.

- Goodpaster, K.E. (1990) "Can a Corporation Have an Environmental Conscience", pp. 25-38 in W.M. Hoffman, R. Frederick & E.S. Petry (eds) *Business, Ethics, and the Environment*, Quorum Books: London.
- Grandy, J.W. (1992) "Zoos: A Critical Reevaluation", *HSUS News*, Summer, pp. 12 - 14.
- Gray, T.I. (1994) "The Cultural Diversity Performance Paradigm - Building High Performance Zoos and Aquariums", in *Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference*, 18-22 September, Zoo Atlanta, Georgia, pp. 398-403.
- Greene, M. (1987) "No Rms, Jungle Vu", *The Atlantic Monthly*, December, pp. 62-78.
- Griffen, D. (1993) "Between Museum Research and the Public", paper presented at the National Museum of Natural Science, Taichung, Taiwan, 10-17 December.
- Groombridge, B. (1992) *Global Biodiversity: Status of the Earth's Living Resources: A Report Compiled by the World Conservation Monitoring Centre, Natural History Museum of London, and the IUCN*, Chapman Hall: London.
- Grzimek, B.(1977) (ed) *Grzimek's Encyclopedia of Ethology*, Van Nostrand Reinhold Co: New York.
- Gummesson, E. (1991) *Qualitative Methods in Management Research*, Sage Publications: Newbury Park, California.
- Habermas, J. (1978) *Knowledge and Human Interests*, J.J. Shapiro(ed), Heinemann Educational: London.
- Hadley, R. (1987) "Publish and Be Ignored; Proselytise and Be Damned", pp. 98-109 in G.C. Wenger (ed) *The Research Relationship: Practice and Politics in Social Policy Research*, Allen & Unwin: London.
- Hagenbeck, C. (1909) *Beasts and Men*, Longmans, Green, and Co: London.
- Hahn, E. (1968) *Zoos*, Secker & Warburg: London.
- Hall, G. (1995) "Genome Research Banking: Is There a Role for ARAZPA Institutions", in *Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 17-22 April, 1994, Darwin, pp.118-120.
- Hall, R.H. & Quinn, R.E. (1983) *Organisational Theory and Public Policy*, Sage Publications: Beverly Hills.
- Ham, C. & Hill, M. (1993) *The Policy Process in the Modern Capitalist State*, Harvester Wheatsheaf: London.
- Hamer, M. (1991) "Crisis Talks Could Spell Extinction for London's Zoo", *New Scientist*, Vol. 130, No. 1774, p. 14.
- Hamilton, G. (1993) "Zoos and Education: It's Time (to put the words into action)", in *Saving Wildlife Zoological Conference Proceedings*, 4-10 April, 1992, Currumbin Sanctuary, QLD, pp. 22-24.
- Hamilton, G. (1995) "Address to Conference Delegates", in *Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 17-22 April, 1994, Darwin, p. 4.
- Hancocks, D. (1971) *Animals and Architecture*, Praeger Publishers: New York.

- Hancocks, D. (1995a) "Lions and Tigers and Bears, Oh No!", pp. 31-37 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Hancocks, D. (1995b) "An Introduction to Reintroduction", in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Hargrove, E. (1995) *The Role of Zoos in the Twenty-First Century*, pp. 181-186 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Hatley, J., King, J. (1993) "The Birth and Growth of the IZE", *Journal of the International Association of Zoo Educators*, No. 29, pp. 204-208.
- Hausman, G.R. (1979) "Introduction: Disciplinary or Interdisciplinarity?" pp. 1-10 in J.J. Kockelmans (ed) *Interdisciplinarity and Higher Education*, Pennsylvania State University Press: University Park.
- Healesville Sanctuary Staff (1996) Briefing notes to conference delegates, *Zoos: Evolution or Extinction: 1996 Australasian Regional Association of Regional Parks and Aquaria/Australasian Society of Zoo Keepers Annual Conference*, Healesville, Victoria, 15-19 April.
- Hearn, J.P. (1986) "Artificial Manipulation of Reproduction: Priorities and Practicalities in the Next Decade", *International Zoo Yearbook*, Vol. 24.25, pp. 148-156.
- Heberlein, T.A. (1989) "Attitudes and Environmental Management", *Journal of Social Issues*, Vol. 45, No. 1, pp. 37-58.
- Hecllo, H. (1972) "Review Article: Policy Analysis", *British Journal of Political Science*, Vol. 2, pp. 83-108.
- Hediger, H. (1950) *Wild Animals in Captivity*, Butterworths Scientific Publications, London.
- Hediger, H. (1970) *Man and Animal in the Zoo*, Routledge & Kegan Paul: London.
- Hellreigel, D. & Slocum, J.W. (1976) *Organisational Behaviour: Contingency Views*, West Publishers: St. Paul.
- Hogwood, B.W., Gunn, L.A. (1984) *Policy Analysis for the Real World*, Harvester Wheatsheaf: Hemel Hempstead.
- Hogwood, B.W. & Peters, B.G. (1985) *The Pathology of Public Policy*, Clarendon Press: Oxford.
- Hohn, T.C. (1988) "Zoo Horticulture: An Introduction and Overview", *International Zoo Yearbook*, Vol. 27, pp. 233-237.
- Holmes, S. (1993) "The Emerging Corporate Culture in Schools", *The Practising Administrator*, Vol. 15, No. 4, pp. 28-31.
- Huff, D.L., McGuire, J.W. (1965) "The Interdisciplinary Approach to the Study of Business", in W.T. Greenwood (ed) *Management and Organisational Behaviour: An Interdisciplinary Approach*, Southwest Publishers: Chicago.
- Hughes, O. (1992) "Public Management or Public Administration", *Australian Journal of Public Administration*, Vol. 51, No. 3, pp. 286-298.
- Hume, S. (1991) "McDonalds", *Advertising Age*, Vol. 62, No. 5, 25 January, p. 32.

- Hunt, G. (1993) "Environmental Education and Zoos", *Journal of the International Association of Zoo Educators*, Vol. 29, pp. 74-77.
- Hunter, S. (1993) "ASZK President's Address", in *Saving Wildlife Zoological Conference Proceedings*, 4-10 April, 1992, Currumbin Sanctuary, QLD, pp. 5.
- Hutchins, M. (1988) "On the Design of Zoo Research Programmes", *International Zoo Yearbook*, Vol. 27, pp. 9-19.
- Hutchins, M. & Conway, W.G. (1995) "Beyond Noah's Ark: the Evolving Role of Modern Zoological Parks and Aquariums in Field Conservation", *International Zoo Yearbook*, Vol. 34, pp. 117-130.
- Hutchins, M., Dresser, B. & Wemmer, O. (1995) "Ethical Considerations in Zoo and Aquarium Research", in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Hutchins, M. & Wemmer, C. (1991) "In Defence of Captive Breeding", *Endangered Species UPDATE*, July/August, Vol. 8, No. 9/10, pp. 5-6.
- Hutto, R.L., Reel, S. & Landres, P.B. (1987) "A Critical Evaluation of the Species Approach to Biological Conservation", *Endangered Species UPDATE*, Vol. 4, No. 12, pp. 1-4.
- Impact (1993) "Natural Resources Package Promotes Environmental Disputes", *Impact: Newsletter on Public Interest Environmental Law*, No. 28, pp. 5-6, Environmental Defenders Office: Sydney.
- IUCN (1994) *IUCN Red List of Threatened Animals*, IUCN Conservation Monitoring Centre: Gland, Switzerland.
- Jackson, J. & Morgan, C. (1982) *Organisational Theory: A Macro Perspective*, Prentice Hall Inc.
- Jacoby, H. (1973) *The Bureaucratization of the World*, University of California Press: Berkley.
- Jaensch, D. (1992) *The Politics of Australia*, MacMillan Education Australia: South Melbourne.
- Jakob-Hoff, R. (1992) "Recent Developments in the Australasian Species Management Program", *International Zoo Yearbook*, Vol. 31: 12-19.
- Jakob-Hoff, R. (1994) "Accreditation - A Credit for Us All", in *Zoos Enriching Environments: Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 29 March-2 April, 1993, Adelaide, pp. 1-15.
- Jamieson, D. (1985) "Against Zoos", in P. Singer (ed) *In Defence of Animals*, Basil Blackwell: Oxford.
- Jamieson, D. (1995) "Zoos Revisited", in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Jarvis, C. (1965) "Zoos and Conservation Symposium", *International Zoo Yearbook*, Vol. 5, pp. 97-100.
- Jenkins, C.F.H. (1977) *The Noah's Ark Syndrome: 100 Years of Acclimatisation and Zoo Development in Australia*, Zoological Gardens Board of Western Australia: Perth.
- Jordon, B. & Ormrod, S. (1978) *The Last Great Wild Beast Show*, Constable: London.
- Jurkovich, R. & Paelinck, J.H.P (eds)(1984) *Problems in Interdisciplinary Studies*, Erasmus University: Rotterdam.

- Kawata, K. (1991) "Hediger Who? A Plea for Historical Perspective", *International Zoo News*, Vol. 38/4, No. 229, pp. 5-9.
- Kellert, S.R. (1979) "Zoological Parks in American Society", in *Proceedings of the American Association of Zoological Parks and Aquaria Annual Conference*, 30 September - 4 October, St. Louis, Missouri, pp. 88-94.
- Kellert, S.R. (1987) "The Educational Potential of the Zoo and Its Visitor", *Philadelphia Zoo Review*, Vol. 3, No. 1, Philadelphia Zoological Gardens: Philadelphia.
- Kellert, S.R., Dunlap, J. (1989) *Informal Learning at the Zoo: A Study of Attitude and Knowledge Impacts*, report to the Zoological Society of Philadelphia.
- Kelly, J.D. (1989) "Zoos: From a Modern Perspective", *Australian Natural History*, Vol.23, No.2, pp. 140-147.
- Kelsey, E. (1991) "Conceptual Change and Killer Whales: Constructing Ecological Values for Animals at the Vancouver Aquarium", *International Journal of Science Education*, Vol. 13, No. 5, pp. 551-559.
- Kennedy, J.J. (1985) "Viewing Wildlife Managers as a Unique Professional Culture", *Wildlife Society Bulletin*, Vol. 13, pp. 571-579.
- Kennedy, M. (1990) *Australia's Endangered Species*, Simon & Schuster: Sydney.
- Kennedy, M. (1992) *Australasian Marsupials and Monotremes: An Action Plan for their Conservation*, International Union for Conservation of Nature and Natural Resources: Gland, Switzerland.
- Kidder, L.H. & Judd, C.M. (1986) *Research Methods in Social Relations*, CBS Publishing Japan Ltd: New York.
- X Kirchshofer, R. (1981) "Graphic Design as a Teaching Aid in Zoos", *International Zoo Yearbook*, Vol. 21, pp. 29-35.
- Kleinman, D.G. (1989) "Reintroduction of Captive Animals for Conservation", *Bioscience*, Vol. 39, pp. 152-161.
- Kleinman, D.G., Beck, B.B., Dietz, J.M. & Dietz, L.A. (1991) "Costs Of Reintroduction And Criteria For Success: Accounting And Accountability In The Golden Lion Tamarin Conservation Program", pp. 125-144 in J.H.W. Gipps (ed) *Beyond Captive Breeding: Reintroducing Endangered Mammals to the Wild*, *Proceedings of a Symposium held at Zoological Society of London*, 24-25 November, 1989. Claren Press, Oxford.
- Kocklemans, J.J. (1979) *Interdisciplinarity and Higher Education*, Pennsylvania State University Press: University Park.
- La Rue, R. (1992) "Working Together to Resolve the Historic Conflict Between Curators and Veterinarians", in *Proceedings of the American Association of Zoological Parks and Aquariums/Canadian Association of Zoos and Aquaria Annual Conference*, 13-17 September, Toronto, pp.162-169.
- Lammers, C.J. & Hickson, D.J. (1979) *Organisations Alike and Unlike*, Routledge & Kegan Paul: London.
- Larcombe, C. (1995) "Sustainable Development of Zoological Parks and Aquaria", in *ARAZPA/ASZK Annual Conference Proceedings*, 17-22 April; Territory Wildlife Park, Darwin, pp. 121-128.
- Lasswell, H.D. (1951) "The Policy Orientation", in D. Lerner & H.D. Laswell (eds) *The Policy Sciences*, Stanford University Press: Stanford.

- Laughlin, R.C. (1991) "Environmental Disturbances and Organisational Transitions and Transformations: Some Alternative Models", *Organisation Studies*, Vol. 12, No. 2.
- Lee, C. (1981) "Articulating the Value of Zoos", in *Proceedings of the American Association of Zoological Parks and Aquaria Western Regional Conference*, 5-7 April, Salt Lake City, Utah, pp. 156-164.
- Lefwitch, A. (1983) *Redefining Politics: People, Resources, and Power*, Methuen: London.
- Leitzell, T.L. (1986) "Species Protection and Management Decisions in an Uncertain World", pp. 243-254 in B.G. Norton (ed) *The Preservation of Species: The Value of Biological Diversity*, Princeton University Press: Princeton
- Lerner, A.W. (1976) *The Politics of Decision-Making*, Sage Publications: London.
- Ley, J.F. (1992) *Australia's Protection and Conservation of Wildlife: Report on the Review of the Wildlife Protection (Regulation of Exports & Imports) Act 1982 and Regulations*, AGPS: Canberra.
- Lindblom, C.E. (1959) "The Science of Muddling Through", *Public Administration Review*, Vol. 19, Spring.
- Loftin, R. (1995) "Captive Breeding of Endangered Species", in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Lothian, J.A. (1994) "Attitudes of Australians Towards the Environment: 1975 to 1994", *Australian Journal of Environmental Management*, Vol. 1, pp. 78-99.
- Lovejoy, T. (1980) "Tomorrow's Ark: By Invitation Only", *International Zoo Yearbook*, Vol. 20, pp. 181-182.
- Lukes, S. (1986) *Power*, Basil Blackwell: Oxford.
- Luoma, J.R. (1987) *A Crowded Ark: The Role of Zoos in Wildlife Conservation*, Houghton Mifflin: Boston.
- Mace, G.M. & Lande, R. (1991) "Assessing Extinction Threats: Toward a Reevaluation of IUCN Threatened Species Categories", *Conservation Biology*, Vol. 5, No. 2, pp.148-157.
- MacKinnon, K., MacKinnon, J. (1991) "Habitat Protection and Reintroduction Programs", pp. 173-200 in J.H.W. Gipps (ed) *Beyond Captive Breeding: Reintroducing Endangered Mammals to the Wild*, Proceedings of a Symposium held at Zoological Society of London, 24-25 November, 1989. Clarendon Press: Oxford.
- Magin, C.D., Johnson, T.H., Groombridge, Jenkins, B., Smith, M. (1994) "Species Extinctions, Endangerment and Captive Breeding", pp. 3-31 in P.J.S. Olney, G.M.Mace & A.T.C. Feisner (eds.) *Creative Conservation: Interactive Management of Wild and Captive animals*, Chapman & Hall: London.
- Maguire, P. (1987) *Doing Participatory Research: A Feminist Approach*, Centre for International Education, School of Education, University of Massachusetts: Amherst.
- Mallinson, J.J.C. (1980) "National and International Zoo Cooperation: an Example from the Jersey Wildlife Preservation Trust", *International Zoo Yearbook*, Vol. 20, pp. 179-181.
- Mallinson, J.J.C. (1994) "The Lion Tamarins of Brazil Fund: with Reference to the International Management Committees for *Leontopithecus*", *Neotropical Primates*, Vol.2 (supplement), December, pp. 4-5.



- Mangun, W.R. & Mangun, J.C. (1993) "An Ecological Approach to Decision Making in Renewable Resource Management", *Policy Studies Review*, Vol. 12, No. 3/4, pp. 104-117.
- Maple, T. (1995) "Towards a Responsible Zoo Agenda", pp. 20-30 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Maple, T., McManamon, R. & Stevens, E. (1995) "Defining the Good Zoo: Animal Care, Maintenance, and Welfare", pp. 219-234 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- ✕ Markell, K. (1993) "An Interpretation Planning Model for Use in Zoos", *Journal of the International Association of Zoo Educators*, No. 29, pp. 38-45.
- Markowitz, H. (1982) *Behavioural Enrichment in the Zoo*, NY: Van Nostrand Reinhold.
- Martin, A.A. (1986) "Are Zoos Ethical?", in *Bioethics: A Symposium of Biology in Australia, The Third Annual Meeting of The Institute of Biology in Australia*, University of Melbourne, pp. 3-8.
- Martin, R.D. (1975) *Breeding Endangered Species in Captivity*, Academic Press: London.
- Mazur, N. (1991) *A Study of Attitudes Towards the Role of City Zoos in Conservation: Case Study of the Adelaide Zoo*, unpublished Masters of Environmental Studies thesis, University of Adelaide, South Australia.
- Mazur, N. (1996a) "Perceptions of the Role of Zoos in Conservation", in *Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference Proceedings*, 3-7 April, 1995, Perth, pp. 102-109.
- Mazur, N. (1996b) "Zoos, Conservation Groups, and Government Wildlife Agencies: Partners, Colleagues, or Adversaries", pp. 460-466 in D.A. Saunders, J.L. Craig, and E.M. Matiske (eds) *Nature Conservation: The Role of Networks*, Surrey Beatty and Sons: Chipping Norton.
- Mazur, N. & Clark, T.W. (1996) "Zoos' Conservation Role: Increasing Effectiveness by Improving Policy and Organisational Processes", in *Zoos: Evolution or Extinction: 1996 Australasian Regional Association of Regional Parks and Aquaria/Australasian Society of Zoo Keepers Annual Conference*, Healesville, Victoria, 15-19 April.
- Mazur, N. & Clark, T.W. (In Review) "Are Zoos Sustainable: Clarifying, Analysing, and Addressing Policy Problems", *Conservation Biology*.
- McAdam, R. (1996) "This Week's Special - Elephants Just \$4.50", in *ARAZPA/ASZK Conference Proceedings*, 3-7 April, Perth, pp. 135-139.
- McDonald, C. (1991) "Sponsorship and the Image of the Sponsor", *European Journal of Marketing*, Vol. 25, No. 11, pp. 31-38.
- McDonough, D. (1991) "Developing an Employee-Driven Mission Statement", in *Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference*, 15-19 September, San Diego, pp. 362-369.
- McEachern, D. (1993) "Environmental Policy in Australia 1981-91: A Form of Corporatism", *Australian Journal of Public Administration*, Vol. 52, No. 2, pp. 173-185.
- McGinnis, M.V. (1994) "Myth, Nature, and the Bureaucratic Experience," *Environmental Ethics*, Vol. 16, No. 4, pp. 425-436.

- McHarg, J.L. (1973) "The Place of Nature in the City of Man", pp. 171-186 in I.G. Barbour (ed) *Western Man and Environmental Ethics*, Addison & Wesley Publishing: Reading, Mass.
- McIntyre, S., Barrett, G.W., Kitchling, R.L. & Recher, H.F. (1992) "Species Triage - Seeing Beyond Wounded Rhinos", *Conservation Biology*, Vol. 6, No. 4, pp. 604-606.
- McKenna, V., Travers, W. & Wray, J. (eds) (1987) *Beyond The Bars: The Zoo Dilemma*, Thorsons Publishing Group: Wellingborough.
- McLaren, R.I. (1982) *Organisational Dilemmas*, Wiley: New York.
- McLean, I.G., Lundie-Jenkins, G., Jarman, P.J. (1994) "Training Captive Rufous Hare-wallabies to recognise predators", pp. 177-182 in M. Serena (ed) *Reintroduction Biology of Australian and New Zealand Fauna*, Surrey Beating & Sons: Chipping Norton.
- McNeeley, J.A., Miller, K.R., Reid, W.V., Mittermeir, R.A. & Werner, T.B. (1990) *Conserving the World's Biological Diversity*, IUCN, World Resources Institute, Conservation International, World Wildlife Fund-US, The World Bank: Gland, Switzerland.
- Meenaghan, T. (1991) "Sponsorship - Legitimising the Medium", *European Journal of Marketing*, Vol. 25, No. 11, pp. 5-10.
- Meinig, D.W. (1979) "The Beholding Eye: Ten Versions of the Same Scene", pp. 33-48 in D.W. Meinig (ed) *The Interpretation of Ordinary Landscapes*, Oxford University Press: New York.
- Merchant, C. (1992) *Radical Ecology: the Search for a Liveable World*, Routledge: New York.
- Merilan, C.P., Read, B.W. & Boever, W.J. (1982) "Semen Collection Procedures for Captive Wild Animals", *International Zoo Yearbook*, Vol. 22, pp. 241-243.
- Miller, B., Biggins, C., Wemmer, C., Powell, R., Calvo, L., Hanebury, L. & Wharton, T. (1990) "Development of Survival Skills in Captive-raised Siberian polecats (*Mustela eversmanni*) II: predator avoidance", *Journal of Ethology*, Vol. 8, pp. 95-104.
- Milward, H.B. (1982) "Interorganisational Policy Systems and Research on Public Organisations", *Administration and Society*, Vol. 13, No. 4, pp. 457-478.
- Minta, S.C. & Kareiva, P.M. (1994) "A Conservation Science Perspective", pp. 275-304 in T.W. Clark, R.P. Reading & A.L. Clarke (eds), *Endangered Species Recovery: Finding the Lessons, Improving the Process*, Island Press: Washington DC.
- Mintzberg, H. (1983) *Power in and Around Organisations*, Prentice-Hall: Englewood Cliffs, New Jersey.
- Mitchell, G. (1991) "Conserving Biological Diversity: a View From the Zoo", *Today's Life Science*, October, pp. 10-18.
- Mitchell, G. (1993) "Zoos and Conservation: Do the Actions Match the Messages?" in *Saving Wildlife Zoological Conference*, 4 -10 April, Currumbin Sanctuary, QLD, pp. 1 -4.
- Mitchell, G. (1994) "A Perspective on Zoos in a Changing Environment", *Australian Academy of Technological Sciences and Engineering - Focus*, No. 81, March/April, pp. 23-25.
- Mitchell, G. F. & Embury, A.S. (1992) "Research and Australian Zoos", *Australian Council for the Care of Animals in Research and Training News*, Vol. 5, No. 3, pp. 1-2.
- Molloy, M. (1993) "Enviro-Link - Perth Zoo's Environmental Information Service", *Journal of the International Association of Zoo Educators*, No. 29, pp. 191-194.

- Morgan, G. (1986) *Images of Organisation*, Sage Publications: Beverly Hills.
- Mullan, B. & Marvin, G. (1987) *Zoo Culture*, Weidenfled & Nicholson: London.
- Mumaw, L. (1992) "ARAZPA: Developing the Australasian Zoo Industry as a Conservation Resource", *International Zoo Yearbook*, Vol. 31, pp. 9-12.
- Nakamura, R.J. & Silkwood, F. (1980) *The Politics of Policy Implementation*, St. Martins Press: New York.
- Nature (1992) "A Zoo with Animals", *Nature*, Vol. 355, No. 6357, p. 188.
- Neilson, D. (1989) "SOE Privatisation: The Next Logical Step", pp. 55-91 in *Private Power or Public Interest: Widening the Debate on Privatisation*, Conference on Privatisation, New Zealand Public Service Association: Wellington.
- Neuwirth, G.B. (1987) "The Public and the Press: How Do They View Your Zoo", in *Proceedings of the American Association of Zoological Parks and Aquaria Regional Conference*, 20-24 September, Portland, Oregon, pp. 461-464.
- New Scientist (1991) "Time for Change at the Zoo", *New Scientist*, Vol. 131, No. 1787, p. 13.
- Nordlinger, E.A. (1981) *On the Autonomy of the Democratic State*, Harvard University Press: Cambridge.
- Norton, B. G. (1986) "Conservation and Preservation: A Conceptual Rehabilitation", *Environmental Ethics*, Vol. 8, No. 3, pp. 195-213.
- Norton, B.G. (1987) *Why Preserve Natural Variety?* Princeton University Press: Princeton.
- Norton, B.G., Hutchins, M., Stevens, E.F. & Maple, T.L. (1995) (eds) *Ethics on the Ark: Zoos, Animal Welfare, and Wildlife Conservation*, Smithsonian Institution Press: Washington DC.
- O'Riordan, T. (1981) *Environmentalism*, Pion: London.
- ✗ Ogdan, J.J., Lindburg, D.G. (1991) "Do You Hear What I Hear? The Effect of Auditory Enrichment on Zoo Animals and Visitors", in *Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference*, 15-19 September, San Diego, pp. 428-433.
- ✗ Ollason, R.J. (1993) "Getting the Message Across", *Journal of the International Association of Zoo Educators*, No. 29, pp. 186-190.
- Ormrod, S. (1994) "Showboat as Ark", *BBC Wildlife*, Vol. 12, No. 7, pp. 40-44.
- Paehlke, R., Torgerson, D. (1990) *Managing Leviathan: Environmental Politics and the Administrative State*, Broadview Press: Peterborough.
- Page, J. (1990) *Smithsonian's New Zoo*, Smithsonian Institution Press: Washington DC.
- Painter, M. (1988) "Public Management: Fad or Fallacy", *Australian Journal of Public Administration*, Vol. XLVII, No. 1, pp. 1-3.
- Parsons, T. (1978) "Three Levels in the Hierarchical Structure of Organisations", pp. 69-77 in W.M. Evan (ed) *Interorganisational Relations*, University of Chicago Press: Chicago.
- Patton, M.Q. (1980) *Qualitative Evaluatoin and Research Methods*, Sage Publications: London.
- Patton, M.Q. (1990) *Qualitative Evaluation and Research Methods*, Sage Publications: California.

- Pepper, D. (1986) *The Roots of Modern Environmentalism*, Routledge: London.
- Perth Zoo (1994) 98th Annual Report, 30 June, Perth Zoo, Western Australia.
- Perth Zoo (1995) 99th Annual Report, 30 June, Perth Zoo, Western Australia.
- Peters, B.G. (1976) *The Politics of Bureaucracy*, Longmann: New York.
- Pfeffer, J. (1981) *Power in Organisations*, Ballinger: Marshfield, Mass.
- Pollitt, C. (1993) *Managerialism and the Public Services: Cuts or Cultural Change in the 1990s?*, Blackwell Business: Oxford.
- Primack, R.B. (1993) *Essentials of Conservation Biology*, Sinauer Associates: Cumberland, Mass.
- ✓ Pullyblank, S. (1996) "Keepers and Teachers: A Potent Team", in Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference Proceedings, 3-7 April, 1995, Perth, pp. 85-90.
- Pusey, M. (1991) *Economic Rationalism in Canberra: A Nation-building State Changes its Mind*, Cambridge University Press: Cambridge.
- Pusey, M. (1992) *Canberra Changes Its Mind: The New Mandarins*, pp. 38-48 in J. Carroll & R. Manne (eds) *Shutdown: The Failure of Economic Rationalism and How to Rescue Australia*, Text Publishing Co: East Melbourne.
- Rabb, G. (1994) "The Changing Role of Zoological Parks in Conserving Biological Diversity", *American Zoologist*, No. 34, pp. 159-164.
- Rabinowitz, A. (1995) "Helping a Species Go Extinct: The Sumatran Rhino in Borneo", *Conservation Biology*, Vol. 9, No. 3, pp. 482-488.
- Rahn, P., Markowitz, H., Schmidt, M.J. & Moody, A. (1978) "Behavioural Engineering and Animal Health in the Zoo", *International Zoo Yearbook*, Vol. 18, pp. 187-189.
- ✓ Ralls, K. & Ballou, J. (1983) "Extinction: Lessons from Zoos", pp. 164-184 in C.M. Schonewald-Cox (ed) *Genetics and Conservation: A Reference for Managing Wild Animal and Plant Populations*, Benjamin/Cummings: Menlo Park, Calif.
- Reason, P. & Rowan, J. (1981) *Human Inquiry: A Sourcebook of New Paradigm Research*, J.Wiley & Sons: New York.
- Recher, H.F. (1994) "Why Conservation Biology? An Australian Perspective", pp. 1-15 in C. Moritz & J. Kikkawa (eds), *Conservation Biology in Australia and Oceania*, Surrey Beatty & Sons: Chipping Norton.
- Rees, S. (1994) "Economic Rationalism: An Ideology of Exclusion", *Australian Journal of Social Issues*, Vol. 29, No. 2, May, pp. 171- 185.
- Rees, S. (1995) "The Fraud and the Fiction", pp. 15-28 in S. Rees & G. Rodlely (eds) *The Human Costs of Managerialism*, Pluto Press Australia Ltd: Leichhardt, NSW.
- Regan, T. (1988) *The Case for Animal Rights*, Routledge: London.
- Rein, M. (1976) *Social Sciences and Public Policy*, Penguin Books: New York.
- ✓ Rhoads, D.L. & Goldsworthy, R.J. (1979) "The Effects of Zoo Environments on Public Attitudes Toward Endangered Wildlife", *International Journal of Environmental Studies*, Vol. 13, pp. 283-287.

- Rhodes, R. (1996) "Looking Beyond Managerialism", *Australian Journal of Public Administration*, Vol. 55, No. 2, pp. 106-109.
- X Ritvo, H. (1987) *The Animal Estate: the English and Other Creatures in the Victorian Age*, Harvard University Press: Cambridge, Mass.
- Rix, C. (1978) *The Royal Zoological Association of South Australia: 1878-1978*, Royal Zoological Association of South Australia: Adelaide.
- Robinson, M.H. (1988) "The Once and Future Zoo", in *Proceedings of the American Association of Zoological Parks and Aquaria Regional Conference*, pp. 315-321.
- Robinson, M.H. (1993) "Biodiversity, Bioparks, and Saving Ecosystems", *Endangered Species Update*, Vol. 10, No. 3/4.
- Rodgers, P. (1993) "Report on the Progress of the National Core Curriculum Steering Committee", in *Saving Wildlife Zoological Conference*, 4 -10 April, Currumbin Sanctuary, QLD, pp. 149-157.
- Rojas, M. (1992) "The Species Problem and Conservation: What are We Protecting?", *Conservation Biology*, Vol. 6, No. 2, pp. 170-178.
- Roper, B.B. & Kennedy, J.J. (1989) *Career Development of Experienced Wildlife/Fisheries Managers in the USDA-Forest Service*, Utah State University Press: Logan.
- Rothmann, J. Erlich, J.L. & Teresa, J.G. (1981) *Changing Organisations and Community Programs*, Sage Publications: Beverly Hills.
- Royal Melbourne Zoo (1995) *Education Strategy*, Royal Melbourne Zoological Gardens: Melbourne.
- Royal Society for the Prevention of Cruelty to Animals (1994) "Zoos' Conservation Claims Misleading", *RSPCA National News*, Vol. 1, No. 1, pp. 4.
- Ryder, R.D. (1989) *Animal Revolution: Changing Attitudes Towards Speciesism*, Basil Blackwell: Oxford.
- Sabag-Montefiore, H. (1993) "Who's Who at the Zoo", *Management Today*, July, pp. 48-51.
- Sackmann, S.A. (1991) *Cultural Knowledge in Organisations: Exploring the Collective Mind*, Sage Publications: Newbury Park.
- Sathe, V. (1983) "Implications of Corporate Culture: A Manager's Guide to Action", *Organisational Dynamics*, Vol. 12, No. 2, pp. 5 - 22.
- Sawer, G. (1985) "Federalism, Legal and Political", pp. 83-86 in D. Woodward, A. Parkin, J. Summers (eds) *Government, Politics, and Power in Australia*, 3rd Ed, Longman Cheshire: Melbourne.
- Scanlon, J.E.L. (1995) *The Need for a Legislative Framework to Transform the Concept of Sustainable Development into a Reality: New Zealand Legislates - Australia Procrastinates*, Unpublished Master of Laws (environmental) dissertation, University of Adelaide, Adelaide, South Australia.
- Schaller, G. (1993) *The Last Panda*, University of Chicago Press: Chicago.
- Schein, E.H. (1990) "Organisational Culture", *American Psychologist*, Vol. 45, No. 2, pp. 109-119.
- Schmitt, E.C. (1988) "Effect of Conservation Legislation on the Professional Development of Zoos", *International Zoo Yearbook*, Vol. 27, pp. 3-9.

- Schon, D. (1983) *The Reflective Practitioner: How Professionals Think in Action*, Basic Books Inc: New York.
- Seal, U.S. (1986) "Goals of Captive Propagation Programs for the Conservation of Endangered Species", *International Zoo Yearbook*, Vol. 24/25: 174-179.
- Seal, U.S. (1991) "Life after Extinction", pp. 39-53 in J.H.W. Gipps (ed) *Beyond Captive Breeding: Reintroducing Endangered Mammals to the Wild*, Proceedings of a Symposium held at Zoological Society of London, 24-25 November, 1989. Clarendon Press: Oxford.
- ✗ Seidman, M. (1993) "Zoos and the Psychology of Extinction", *Wild Earth*, Vol. 2, No. 4, pp. 64-69.
- ✗ Senge, P.M. (1990) *The Fifth Discipline: The Art and Practice of the Learning Organisation*, Century Business: London.
- ✗ Serrell, B. (1988) "The Evolution of Educational Graphics in Zoos", *Environment and Behaviour*, Vol. 20, No.4, pp. 396-415.
- ✗ Sher, K.C. (1991) "How Animals Are Portrayed in Institutional PR and Advertising", in Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference, 15-19 September, San Diego, pp. 171-172.
- Sherif, M. & Sherif, K. (1969) *Interdisciplinary Relationships in the Social Sciences*, Aldine Publishers: Chicago.
- ✗ Shettel-Neuber, J. (1988) "Second and Third Generation Zoo Exhibits: A Comparison of Visitor, Staff, and Animal Responses", *Environment and Behaviour*, Vol. 20, No. 4, July, pp. 452-473.
- Short, J., Bradshaw, S.D., Giles, J., Prince, R.I.T. & Wilson, G.R. (1992) "Reintroduction of Macropods (Marsupialia: Macropodoidea) in Australia - A Review", *Biological Conservation*, Vol. 62, pp. 189-204.
- Siebert, C. (1993) "Fear of Zoos", *The New York Times*, 2 September.
- Sinclair, A. (1989) "Public Sector Culture: Managerialism or Multiculturalism", *Australian Journal of Public Administration*, Vol. 48, No. 4, pp. 382 - 397.
- Singer, P. (1975) *Animal Liberation: A New Ethics for Our Treatment of Animals*, Avon Books: New York.
- Singer, P. (1977) *Animal Liberation: Towards an End to Man's Inhumanity to Animals*, Paladin: London.
- Singer, P. (1985) *In Defense of Animals*, Blackwell: New York.
- Slater, G. (1996) "Monotreme and Marsupial Taxon Advisory Group: Progress Reports", pp. 50-53 in *ASMP Regional Census and Plan*, 6th Edition, ARAZPA: Sydney.
- Sloan, L. (1991) "Dumbo the Elephant: What's in a Name", in Proceedings of the American Association of Zoological Parks and Aquariums Annual Conference, 15-19 September, San Diego, pp. 182-186.
- Slobodkin, L.B. (1986) "On the Susceptibility of Different Species to Extinction: Elementary Instructions for Owners of a World", pp. 226-242 in B.G. Norton (ed) *The Preservation of Species: The Value of Biological Diversity*, Princeton University Press: Princeton.
- Smith, G. (1988) *Bureaucracy and Political Power*, Harvester Wheatsheaf: Hemel Hempstead.

- Smith, G., Denney, I. & Bartos, J. (1993) "Toward International Best Practice in the Zoo Industry", in Proceedings of the 48th Annual Conference of the International Union of Directors of Zoological Gardens, Antwerp, pp. 15-24.
- Smith, R. (1993) "Power", pp. 16-29 in R. Smith (ed) Politics in Australia, Allen & Unwin: St. Leonards, NSW.
- Snyder, N.F.R., Derrickson, S.R., Beissinger, S.R., Wiley, J.W., Smith, T.B., Toone, W.D. & Miller, B. (1996) "Limitations of Captive Breeding in Endangered Species Recovery", Conservation Biology, pp. 338-348.
- Soderquist, T.R. (1995) "The Importance of Hypothesis Testing in Reintroduction Biology: Examples From the Reintroduction of the Carnivorous Marsupial *Phascogale tapoatafa*", pp. 159-64 in M. Serena (ed) Reintroduction Biology of Australian and New Zealand Fauna, Surrey Beating & Sons: Chipping Norton.
- Southgate, R. (1994) "Why Reintroduce the Bilby", pp. 165-170 in M. Serena (ed) Reintroduction Biology of Australian and New Zealand Fauna, Surrey & Beatty & Sons: Chipping Norton.
- Stanley-Price, M.R. (1991) "A Review of Mammal Reintroductions and the Role of the Reintroduction Specialist Group of IUCN/SSC", pp. 9-23 in J.H.W. Gipps (ed) Beyond Captive Breeding: Reintroducing Endangered Mammals to the Wild, Proceedings of a Symposium held at Zoological Society of London, 24-25 November, 1989. Clarendon Press: Oxford.
- Stein, H.F. (1990) "Adapting to Doom: The Group Psychology of an Organisation Threatened with Cultural Extinction", Political Psychology, Vol. 11, No. 1, pp. 113-145.
- Stewart, R.G. (1985) "The Politics of the Accord: Does Corporatism Explain It", Politics, Vol. 20, No. 1, pp. 26-35.
- Stone, E.F. (1978) Research Methods in Organisational Behaviour, Goodyear Publishers: Santa Monica.
- Strahan, R. (1974) "Australian Faunal Import and Export Regulations", International Zoo Yearbook, Vol. 14, pp. 21-23.
- Stratford, E. (1995) Construction Sites: Creating the Feminine, the Home and Nature in Australian Discourses on Health, Doctor of Philosophy dissertation, University of Adelaide, South Australia.
- Strauss, A. & Corbin, J. (1990) Basics of Qualitative Research, Sage Publications: Newbury Park.
- Street, P. (1953) Whipsnade, University of London Press Ltd: London.
- Stretton, H. (1991) "The New Right's Fifth Column in Canberra", The Weekend Australian, 7-8 September, p. 29.
- + Stroud, P. (1996) "Organisational Change and Organisational Learning in the Zoo", Unpublished paper submitted for course requirements: Environmental Policy, Royal Melbourne Institute for Technology, Melbourne.
- Studdart-Kennedy, G. (1975) "Introduction", Case-studies in Interdisciplinarity: Integrated Social Sciences, Vol. 3, Group for Research and Innovation in Higher Education, Nuffield Foundation: London.
- Sunquist, F. (1993) "Should We Put Them All Back?", International Wildlife, Vol. 22, pp. 35-40.
- X Sussman, L. (1991) "Zoo Illogical", Green Magazine, February, pp. 49-53.

- Swanson, L. (1993) "Can Zoos Save the Earth's Endangered Wildlife?", *Alternatives*, Vol. 19, No. 3, pp. 42-43.
- Tangley, L. (1984) "The Zoo Ark - Charting a New Course", *BioScience*, Vol. 34, No. 10, pp. 606-612.
- Taylor, S.H. (1991) "The Zoo's Mission Statement -- So What!" in *Proceedings of the American Association of Zoological Parks and Aquarium Annual Conference*, 15-19 September, San Diego, pp. 370-375.
- Thomas, K. (1983) *Man and the Natural World: Changing Attitudes in England, 1500-1800*, Allen Lane: London.
- Thynne, I. (1996) "Public Administration in Troubled Waters: Organisations, Management, and 'A New Oceania'", *Australian Journal of Public Administration*, Vol. 55, No. 2, pp. 47-53.
- Tighe, P., Taplin, R. (1990) "Australian Environmental Politics: An Analysis of Past and Present Issues", in K. Dyer & J. Young (eds) *Changing Directions: The Proceedings of Ecopolitics IV*, 21-24 September, 1989, University of Adelaide, pp. 102-116.
- Torgerson, D. (1985) "Contextual Orientation in Policy Analysis: The Contribution of Harold D. Lasswell", *Policy Sciences*, Vol. 18, pp. 241-261.
- Tribe, A. (1994) "The Frozen Ark: the Marsupial Deck", in *Zoos Enriching Environments: Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 29 March-2 April, 1993, Adelaide, pp. 239-243.
- Trist, E. (1977) "A Concept of Organisational Ecology", *Australian Journal of Management*, Vol. 2, No. 2, pp. 161-175.
- ✕ Tudge, C. (1992a) *Last Animals at the Zoo*, Island Press: Washington DC.
- ✓ Tudge, C. (1992b) "A Wild Time at the Zoo", *New Scientist*, 5 January, pp. 18-22
- ✕ Tunicliffe, S. (1992) "Zoo Education", *International Zoo News*, Vol. 39/3, No. 236, pp. 15-22.
- United Nations Environment Program (1992) *The Convention on Biological Diversity*, 5 June.
- Van Dam, D. & deBoer, L.E.M. (1980) "Endangered Species and Breeding Consortia", *International Zoo Yearbook*, Vol. 20, pp. 177-179.
- Van De Ven, A.H. (1983) "Three Rs of Administrative Behaviour: Rational, Random & Reasonable (And the Greatest of These is Reason)", pp. 23-36 in R.H. Hall & R.E. Quinn (eds) *Organisational Theory and Public Policy*, Sage Publications: Beverly Hills.
- Vrijenhoek, R. (1995) "Natural Processes, Individuals, and Units of Conservation", pp. 74-92 in B.G. Norton, M. Hutchins, E.F. Stevens & T.L. Maple (eds) *Ethics on the Ark*, Smithsonian Institution Press: Washington DC.
- Wanna, J. (1994) "Public Sector Management", pp. 61-79 in A. Parkin, J. Summers & D. Woodward (eds) *Government, Politics, Power and Policy in Australia*, Longman-Cheshire Pty Ltd.
- Warwick, D. (1975) *A Theory of Public Bureaucracy, Politics, Permitting, and Organisation in the State Department*, Harvard University Press: Cambridge.
- ✕ Weigel, J. (1992) "The Conservation Role of Private Zoos in Australia: the Australian Reptile Park Experience", *International Zoo Yearbook*, Vol. 31, pp. 24-29.



- Weintraub, B. (1993) Organisations Functioning as Organisations - What's in a Name?: The Mission of the New York Zoological Society, unpublished paper, Yale University School of Forestry and Environmental Studies.
- Wemmer, C. & Derrickson, S. (1987) "Reintroduction: the Zoobiologists Dream - Prospects and Problems of Reintroducing Captive Bred Wildlife", in Proceedings of the American Association of Zoological Parks and Aquaria Annual Conference, 20-24 September, pp. 48-58.
- The West Australian (1994) "Zoo Values Should Be Preserved", Editorial, 30 July, p. 12.
- Western, D. & Pearl, M. (1989) Conservation for the 21st Century, Oxford University Press: New York.
- Westrum, R. (1986) Management Strategies and Information Failures, NATO Advanced Research Workshop on Failure Analysis of Information Systems, Bad Winheim, Germany, August 1986.
- Wettenhall, R. (1995) "Corporations and Corporatisation: An Administrative History Perspective", Public Law Review, Vol. 6, pp. 18-23.
- Wheater, R.J. (1994) "Into the Ark", Edit, Vol. 5, University of Edinburgh, pp. 12-14.
- White, J. & Marcellini, D.L. (1986) "HERPlab: A Family Learning Centre at the National Zoological Park", International Zoo Yearbook, Vol. 24/25, pp. 340-343.
- Wiese, R.J., Willis, K., Bowdoin, J. & Hutchins, M. (eds) (1993) American Association of Zoological Parks and Aquaria Annual Report on Conservation and Science 1992/93.
- Wilcken, J., Bach, C. & Willis, K. (1995) Technical Guidelines for Developing a Captive Management Plan, Australasian Species Management Program/Australasian Regional Association of Zoological Parks & Aquaria: Sydney.
- Wildavsky, A. (1979) Speaking Truth to Power: The Art and Craft of Policy Analysis, Little Brown: Boston.
- Wildlife Protection Authority (1991) Notice to Importers and Exporters: The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Notice No. 2, October.
- Williamson, L. (1993) "External Funding of Special Programs", Journal of the International Association of Zoo Educators, No. 29, pp. 143-147.
- Williamson, L. (1995) "The World Zoo Conservation Strategy: Implications for Zoo Education", in Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference, 17-22 April, Darwin, pp. 37 - 39.
- Wilson, E.C.O. (1992) The Diversity of Life, Balkan Press: Cambridge
- X Wilson, J. (1996) "Developing a Zoo Education Master Plan", Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference, 3-7 April, Perth, pp. 202-208.
- X Wolf, R.L. & Tymitz, B.L. (1981) "Studying Visitor Perceptions of Zoo Environments: A Naturalistic View", International Zoo Yearbook, Vol. 21, pp. 49-53.
- Wondolleck, J.M., Yaffee, S.L. & Crowfoot, J.E. (1994) "A Conflict Management Perspective: Applying the Principles of Alternative Dispute Resolution", pp. 305-326 in T.W. Clark, R.P. Reading & A.L. Clarke (eds) Endangered Species Recovery: Finding the Lessons, Improving the Process, Island Press: Washington, DC.

- Wood, D. (1992) *A Tiger by the Tail: a History of Auckland Zoo 1922-1992*. Auckland City Council: Auckland, New Zealand.
- Wood, M. & Jones, E.H. (1993) "Human Resource Strategies in the Commercialisation and Corporatisation of Government Enterprises", *Australian Journal of Public Administration*, Vol. 52, No. 1, pp. 25-30.
- Woodruffe, G. (1981) *Wildlife Conservation and the Modern Zoo*, Saiga Publishing Co. Ltd: Surrey.
- ✗ Woodside, D.P. & Kelly, J.D. (1995) "The Development of Local, National and International Zoo-based Education Programmes", *International Zoo Yearbook*, Vol. 34, pp. 231-246.
- Woodward, D., Parkin, A. & J. Summers (1985) *Government, Politics, and Power in Australia*, 3rd Ed., Longman Cheshire: Melbourne.
- World Society for the Protection of Animals & The Born Free Foundation (1994) *The Zoo Inquiry*, 5 September.
- World Wide Fund for Nature (1992) *Annual Report*, Sydney.
- Wright, B. (1993) "Concrete Jungles", *The Independent Monthly*, 16 March, pp. 16-17.
- ✗ Wright, J. (1994) "Developing Guidelines for Exhibit Design: Adelaide Zoo Master Plan", in *Zoos Enriching Environments: Proceedings of the Australasian Regional Association of Zoological Parks and Aquaria/Australasian Society of Zoo Keeping Conference*, 29 March-2 April, 1993, Adelaide, pp. 66-69.
- Yaffee, S.L. (1994) *The Northern Spotted Owl: An Indicator of the Importance of Sociopolitical Context*, pp. 47-72 in T.W. Clark, R.P. Reading & A.L. Clarke (eds) *Endangered Species Recovery: Finding the Lessons, Improving the Process*, Island Press: Washington, DC.
- ✗ Yerke, R. & Burns, A. (1991) *Measuring the Impact of Animal Shows on Visitor Attitudes*, AAZPA Annual Conference Proceedings, pp. 532-539.
- Young, J. (1992) *Sustaining the Earth*, Harvard University Press: Cambridge, Mass.
- Zawacki, R.A. & Warrick, D.D. (1976) *Organisational Development: Managing Change in the Public Sector*, International Personnel Management Association: Chicago.
- Zbar, J.D. (1993) "Wildlife Takes Centre Stage as Cause-related Marketing Becomes a \$250 Million Show for Companies", *Advertising Age*, Vol. 64, No. 27, pp. 1-6.
- ZBV (1993/4) *Zoological Board of Victoria - Annual Review 1993/4*, Melbourne.
- Zifcak, S. (1994) *New Managerialism: Administrative Reform in Whitehall and Canberra*, Open University Press: Buckingham.
- Zoological Parks Board of NSW (1992) *Five Year Marketing Plan of Taronga Zoo (1992/1997)*, Commercial and Visitor Services Division, Taronga Zoo: New South Wales.
- Zoological Parks Board of NSW (1992/3) *Annual Report for Taronga Zoo and Western Plains Zoo*, New South Wales.
- Zoological Parks Board of NSW (1994/5) *Annual Report for Taronga Zoo and Western Plains Zoo*, New South Wales.
- Zuckerman, L.J. (1979) *Great Zoos of the World*, Wiedenfeld & Nicholson: London.