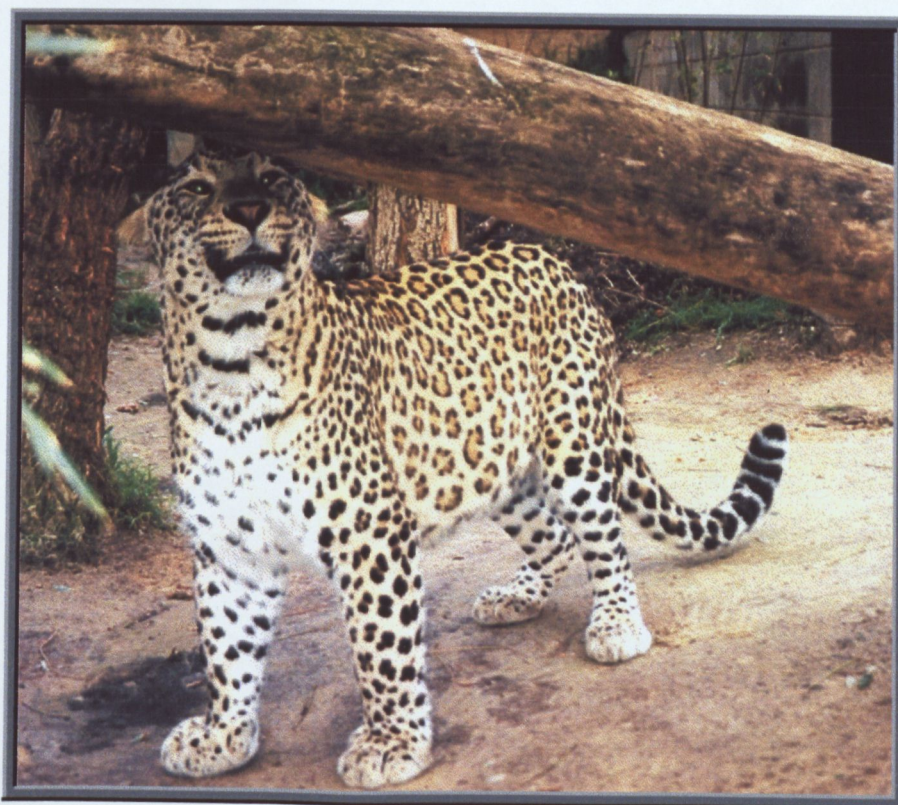


**Applying Ecological Learning  
Theory to the Conservation of  
Behaviour in Species Housed  
in a Zoo Environment: An  
Empirical Examination**



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## *Abstract*

Over recent decades, there has been increasing emphasis on the behaviour of zoo-housed animals. The research reported in this thesis concerned methods of conserving species-typical behaviour. The general aim was to contribute to a formal model of behavioural conservation. A related aim was to expand upon ecological learning research. Previous laboratory research has suggested that *species* and *stimulus* type both have strong effects on responding.

The experimental component attempted to create conditions where captive predators could perform simulated hunting behaviour. Predictions were generated using the *behaviour systems* model. Subject species were African wild dogs (*Lycaon pictus*), caracals (*Caracal caracal*), and Persian leopards (*Panthera pardus saxicolor*). Because of difficulties in existing husbandry methods, the Persian leopards were only used during the first experimental phase.

Subjects were initially tested on several conditioning procedures, using a moving object as the CS. In the second experimental phase, an auditory and a visual stimulus signalled the moving object. During the final experimental phase, subjects were tested on three schedules of reinforcement. All procedures used a repeated measures methodology, and data were presented in graphical format showing individual results across conditions.

As predicted, there were species differences in response topography across the experimental procedures. In addition, in all three phases, the closer the manipulations came to reproducing species-typical feeding methods, the higher the level of naturalistic behaviour. Increases in natural behaviour were also associated with substantial reductions in stereotypic responses. As was also predicted, differences in *search state* during the conditioning phase were related to the temporal organisation of the procedure. During the signalling phase, predicted differences in relation to stimulus type were observed within and between species. In addition, triggering predatory behaviour before the presentation of the moving stimulus resulted in a higher level of responding. Also in line with predictions, responding during the schedules phase was found to be related to species-typical success rate and feeding time. Overall, data analyses suggested that behaviour was related to species-specific predatory systems.

Discussion focused on the implications of the data for the discipline of Animal Behaviour, and for captive management techniques. It was concluded that the behaviour systems model provides a viable method of managing the behaviour of captive animals, and for examining the ecological characteristics of learning. It was also concluded that implementing the behaviour systems model into zoo management strategies will substantially improve animal welfare, and will assist in the conservation of endangered species. Consideration was also given to further applications of the approach using different species and a broader range of behaviour than was dealt with in the current experimental work.



*Statement*

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 give consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

Signed \_\_\_\_\_

Vanessa Mills

October, 1998

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\*\*\*\*\*

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