

27.9.72

EFFECTS OF SHEEP STOCKING ON THE POPULATION STRUCTURE  
OF ARID SHRUBLANDS  
IN  
SOUTH AUSTRALIA

by

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Thesis submitted for the degree of Doctor of Philosophy  
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PART II

Appendices, Plates, Maps

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APPENDIX 1

DATES OF CONSTRUCTION OF QUONDONG STATION DAMS	
Prior to 1901 - Quondong Vale	
Old Woolshed	1876 - no value
Long	1878
West Swamp (now Centenary?)	1878
Eighty	1878, 1880, 1881 - 2 of no value
South (now Beaver)	1879
Dick's	1879
Pinery	1879
North	1879 - no value
Boundary	1880?
Mick's Swamp	1880?
Engine Well	1880 - no value
Station	1880, 1883
East	1880
Woolshed	1881
George's	1882
Brand's	1883
Sergeant's	1883
Prior to 1901 - Drayton-Pine Valley	
Drayton Well	pre-1879 - no value
Balara (now Embankment)	1879
Drayton Catch	1879 - no value
Weary	1881
Mallee Catch	1881 - no value
Alf's	1882
Alf's Catch	1882 - no value
Drayton	1882
Red	1882
Yabba	1887
Post 1910 - Quondong	
Sixty	1910
Motor	1910
Parker's	1911
Record	1914
Sampson's	1931
Centenary	1936
Gallagher's	1959

APPENDIX 2

LIST OF SPECIES FOUND ON QUONDONG STATION <sup>†</sup> (* indicates alien species)		
Family	Latin name	Common name
7. MARSILEACEAE	<i>Marsilea drummondii</i>	Nardoo
12A. CUPRESSACEAE	<i>Callitris columellaris</i>	Murray pine
20. GRAMINAE	<i>Aristida contorta</i>	Mulga grass
	<i>Chloris acicularis</i>	Umbrella grass
	<i>Cymbopogon exaltatus</i>	Scented grass
	<i>Danthonia</i> sp.	Wallaby grass
	<i>Enneapogon avenaceus</i>	
	<i>Enneapogon cylindricus</i>	Canegrass
	<i>Eragrostis australasica</i>	Mallee love-grass
	<i>Eragrostis dielsii</i>	Woollybutt grass
	<i>Eragrostis eriopoda</i>	
	<i>Eragrostis laniflora</i>	Neverfail
	<i>Eragrostis setifolia</i>	Hairy panic
	<i>Panicum effusum</i>	
	<i>Paspalidium constrictum</i>	
	<i>Stipa elegantissima?</i>	
	<i>Stipa nitida</i>	Spear grass
	<i>Tragus australianus</i>	Small burr grass
	<i>Triodia irritans</i>	Porcupine grass
29. LILIACEAE	* <i>Asphodelus fistulosus</i>	Onion weed
33. CASUARINACEAE	<i>Casuarina cristata</i>	Black oak

Family	Latin name	Common name
36. PROTEACEAE	<i>Grevillea huegelii</i> <i>Hakea leucoptera</i>	
37. SANTALACEAE	<i>Exocarpos aphyllus</i> <i>Santalum acuminatum</i>	Quondong
39. LORANTHACEAE	<i>Amyema linophylla</i> <i>Amyema preissii</i> <i>Lysiana exocarpi</i>	Mistletoe Mistletoe Mistletoe
40. POLYGONACEAE	<i>Muehlenbeckia cunninghamii</i> * <i>Polygonum aviculare</i>	Lignum Wireweed, hogweed
41. CHENOPODIACEAE	<i>Atriplex acutibractea</i> <i>Atriplex angulata</i> <i>Atriplex eardleyae</i> <i>Atriplex limbata</i> <i>Atriplex lindleyi</i> <i>Atriplex spongiosa</i> <i>Atriplex stipitata</i> <i>Atriplex vesicaria</i> <i>Babbagia acroptera</i> <i>Bassia brachyptera</i> <i>Bassia diacantha</i> <i>Bassia divaricata</i> <i>Bassia obliquicuspis</i> <i>Bassia paradoxa</i> <i>Bassia patentiscuspis</i> <i>Bassia sclerolaenoides</i> <i>Chenopodium desertorum</i> <i>Chenopodium nitrariaceum</i>	Fan saltbush  Pop saltbush Mallee or bitter saltbush Bladder saltbush, saltbush  Bindyi Bindyi Copper burr Bindyi Cannon-ball Bindyi Bindyi  Indigo bush, nitre goosefoot

Family	Latin Name	Common Name
41. CHENOPODIACEAE (cont.)	<i>*Chenopodium murale</i> <i>Chenopodium pumilio</i> <i>Chenopodium cristatum</i> <i>Enchylaena tomentosa</i> <i>Kochia aphylla</i> <i>Kochia astrotricha</i> <i>Kochia brevifolia</i> <i>Kochia erioclada</i> <i>Kochia excavata</i> var. <i>trichoptera</i> <i>Kochia georgei</i>  <i>Kochia pyramidata</i>  <i>Kochia sedifolia</i>  <i>Kochia tomentosa</i> <i>Kochia triptera</i> <i>Pachycornia</i> sp. <i>Rhagodia spinescens</i> <i>Rhagodia spinescens</i> var. <i>deltophylla</i> <i>Rhagodia nutans</i> <i>Salsola kali</i>	 Crested goosefoot Ruby bluebush Cottonbush  Black bluebush (S.A.), bluebush (N.S.W.) Bluebush (S.A.), pearlbrush (N.S.W.)  Samphire ) ) Ruby saltbush, thorny saltbush ) Climbing saltbush Roly-poly
42. AMARANTHACEAE	<i>Ptilotus exaltatus</i> <i>Ptilotus obovatus</i> <i>Ptilotus polystachyus</i> <i>Ptilotus atriplicifolius</i>	) ) ) Pussy-tails )
43. NYCTAGINACEAE	<i>Boerhavia diffusa</i>	Tar-vine
45. AIZOACEAE	<i>Glinus lotoides</i>	

Family	Latin name	Common name
45. AIZOACEAE (cont.)	<i>Tetragonia tetragonoides</i> <i>Disphyma australe</i>	Spinach, Warrigal cabbage Pigface
46. PORTULACACEAE	<i>Portulaca oleracea</i>	Purslane
53. CRUCIFERAE	<i>Blennodia trisecta</i> * <i>Diplotaxis tenuifolia</i> <i>Alyssum linifolium</i>	Lincoln weed
58. PITTOSPORACEAE	<i>Pittosporum phylliraeoides</i>	Native willow, native apricot
60A. MIMOSACEAE	<i>Acacia aneura</i> <i>Acacia burkittii</i> <i>Acacia colletioides</i> <i>Acacia hakeoides</i> <i>Acacia oswaldii</i> <i>Acacia victoriae</i>	Mulga Wait-a-while
60B. CAESALPINIACEAE	<i>Cassia nemophila</i> <i>Cassia nemophila</i> var. <i>coriacea</i> <i>Cassia nemophila</i> var. <i>platypoda</i> <i>Cassia nemophila</i> var. <i>zygophylla</i>	Punty bush
60C. FABACEAE	<i>Swainsona viridis</i> <i>Templetonia egena</i>	
62. OXALIDACEAE	<i>Oxalis corniculata</i>	Yellow wood sorrel
64. ZYGOPHYLLACEAE	<i>Nitraria shoberi</i> <i>Tribulus terrestris</i>	Nitrebush (S.A.), dillon bush (N.S.W.) Caltrop, cat-head

Family	Latin name	Common name
64. ZYGOPHYLLACEAE (cont.)	<i>Zygophyllum apiculatum</i> <i>Zygophyllum aurantiacum</i> <i>Zygophyllum iodocarpum</i>	
68. EUPHORBIACEAE	<i>Euphorbia drummondii</i> <i>Euphorbia eremophila</i>	Flat spurge, caustic weed
71. SAPINDACEAE	<i>Dodonaea linearis</i> var. <i>attenuata</i> <i>Heterodendrum oleaeifolium</i>	Hopbush Bullock bush
74. MALVACEAE	<i>Abutilon malvifolium</i> <i>Hibiscus farragei</i> <i>Hibiscus krichauffianus</i> <i>Malvastrum spicatum</i> <i>Sida corrugata</i> <i>Sida corrugata</i> var. <i>angustifolia</i> <i>Sida intricata</i> <i>*Sida leprosa</i> var. <i>hederacea</i>	Native lucerne, Paddy's lucerne
75. STERCULIACEAE	<i>Gilesia biniflora</i>	
81. THYMELAEACEAE	<i>Pimelia microcephala</i>	
83. MYRTACEAE	<i>Eucalyptus oleosa</i> <i>Eucalyptus gracilis</i>	) Red mallee
92. GENTIANACEAE	<i>Centaurium spicatum</i>	
94. ASCLEPIADACEAE	<i>Leichardtia australis</i>	
95. CONVOLVULACEAE	<i>Convolvulus erubescens</i>	Pink bindweed



Family	Latin name	Common name
96. BORAGINACEAE	* <i>Heliotropium europaeum</i> * <i>Heliotropium supinum</i>	Heliotrope
97. VERBENACEAE	<i>Verbena officinalis</i>	
98. LABIATEAE	* <i>Salvia lanigera</i> <i>Teucrium racemosum</i>	Grey germander
99. SOLANACEAE	<i>Lycium australe</i> * <i>Nicotiana glauca</i> <i>Nicotiana goodspeedii</i> <i>Solanum coactiliferum</i> <i>Solanum esuriale</i>	Tobacco bush  Potato bush
100. SCROPHULARIACEAE	<i>Morgania glabra</i>	
106. MYOPORACEAE	<i>Eremophila glabra</i> <i>Eremophila longifolia</i> <i>Eremophila maculata</i> <i>Eremophila oppositifolia</i> <i>Eremophila scoparia</i> <i>Eremophila sturtii</i> <i>Myoporum deserti</i> <i>Myoporum platycarpum</i>	Tar bush Emu bush, native plum Native fuchsia  Turpentine bush  False sandalwood
107. PLANTAGINACEAE	<i>Plantago varia</i>	Plantain
112. CUCURBITACEAE	* <i>Citrullus lanatus</i> * <i>Cucumis myriocarpus</i>	Wild or bitter melon Paddy melon
114. GOODENIACEAE	<i>Goodenia subintegra</i>	

Family	Latin name	Common name
114. GOODENIACEAE (cont.)	<i>Scaevola spinescens</i>	
117. COMPOSITAE	<i>Brachyscome ciliaris</i> <i>Calotis hispidula</i> <i>*Centaurea melitensis</i> <i>Cratystylis conocephala</i> <i>Centipeda thespidioides</i> <i>Eriochlamys behrii</i> <i>Erediophyllum elderi</i> <i>Gnaphalium luteo-album</i> <i>Helipterum floribundum</i> <i>*Inula graveolens</i> <i>Ixiolaena leptolepis</i> <i>Minuria leptolepis</i> <i>Olearia muelleri</i> <i>Olearia pimelioides</i> <i>Pterocaulon sphacelatum</i> <i>Senecio magnificus</i> <i>Vittadinia triloba</i> <i>*Xanthium spinosum</i>	Hairy burr-daisy, Bogan-flea Maltese cockspur  Stinkwort   Bathurst burr

APPENDIX 3Pastoral lease diagrams ca. 1896 relating to the present  
Quondong Station

- Print 1 - Quondong Vale.
- Print 2 - Eastern Paddock became part of Quondong Vale in 1882.
- Print 3 - Part of the Pine Valley run became part of Quondong Station after 1900.
- Print 4 - Part of the Drayton run became part of Quondong Station after 1900.
- Print 5 - Part of the Lilydale run adjoining Big Well (Scrubby), West and South Paddocks (see Print 1) was appropriated by the Quondong lessee between about 1875 and 1890. This area was not officially part of Quondong Vale.

(reproduced by courtesy of S.A. Department of Lands)

N A B A M A

To Anabanna

In alteration in red of two dams vide off. 144 C.P.B. vide Field Diagram Lease 1833 Page 15 of 1890



O A K B A N

COUNTRY ABOUT H.S. AND LITTLE WELL Paddock: - Open country covered with various bushes and bluebush plains with a little grass greater part heavily timbered with black oak etc. fair pasture

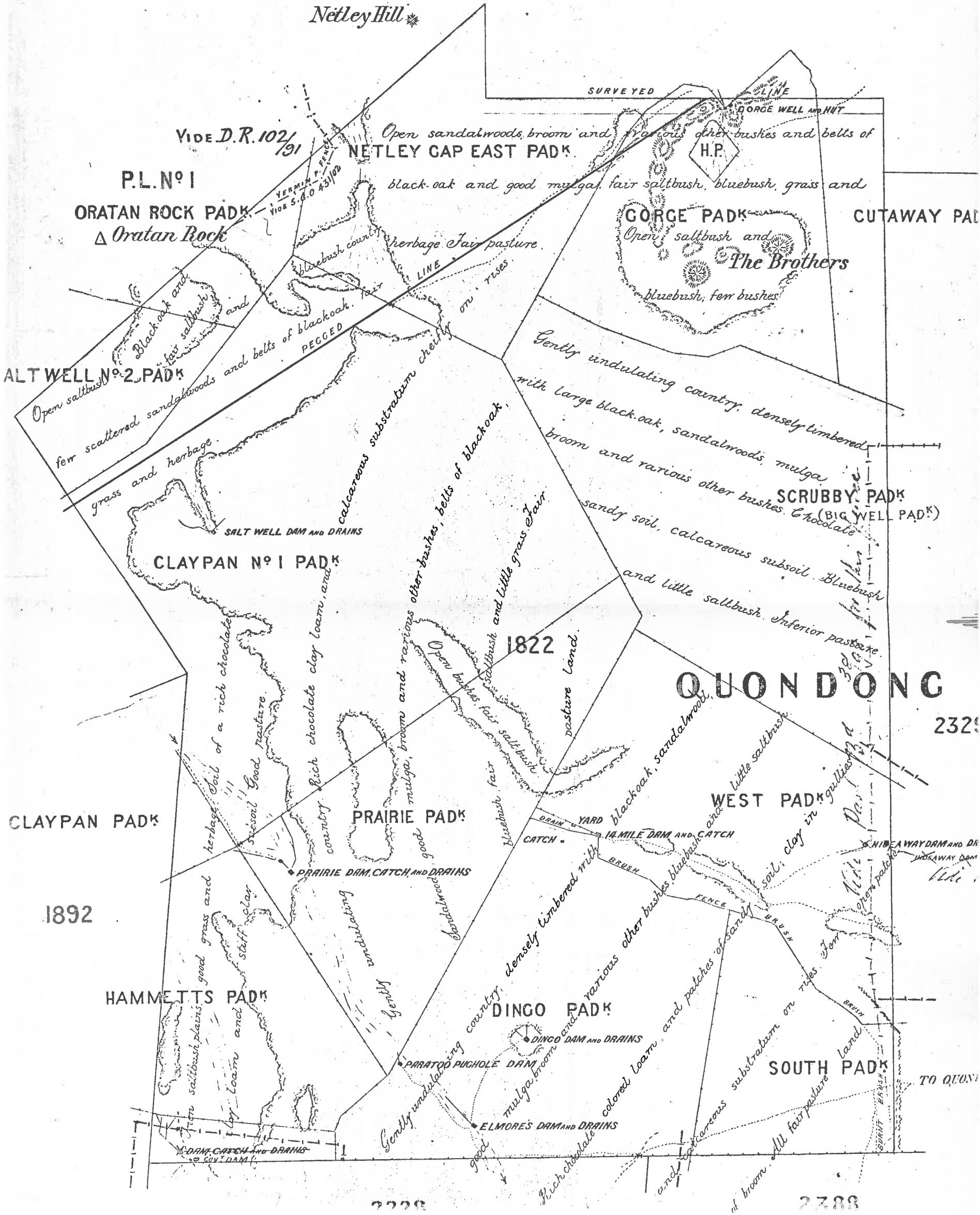
I certify that all improvements on above leases are correctly shown

F. L. G...

2388

2451

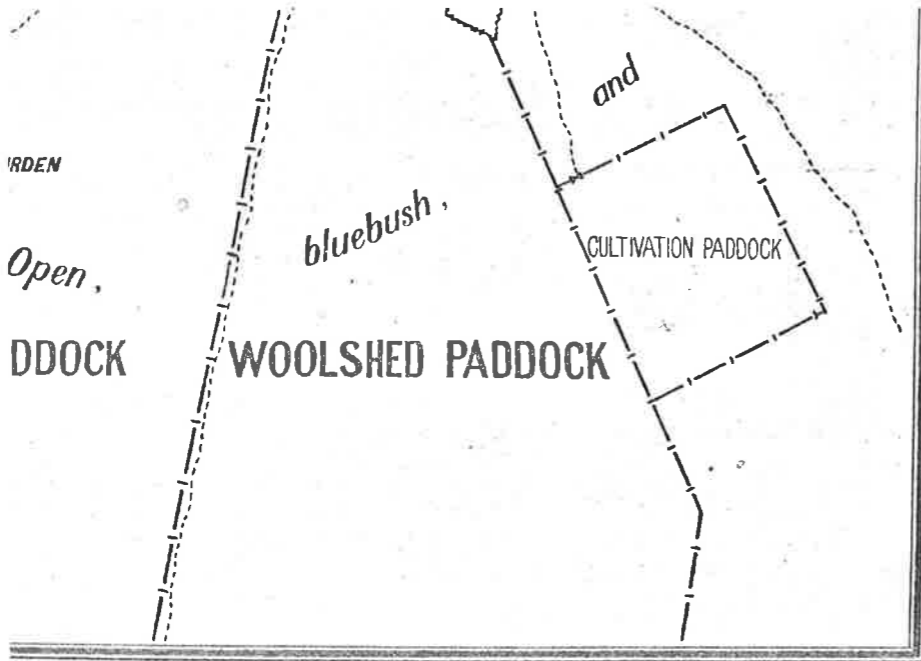
E VALLEY



RDEN

Open,

DDOCK



NORTH WEST PDK

CANE-GRASS PDK

Dense blackoak, mulga, sandalwood, cattlebush,

bluebush undergrowth, & various bushes.

2328 EXPD

227

Wrong position  
CHALKERS PDK

Light, and red loamy soil, patches of limestone rubble.

CANE-GRASS DAM

2337 EXPD

227 242

CHALKERS DAM  
Correct position  
Ide S. 9. 0 1777  
95

LUKE'S PDK

2328 EXPD

227

2554  
LUKE'S DAM & CATCH

To Oakvale

2329 EXPD

227

EASTERN PDK

2554 A

To Quondong



BOUNDARY PDK

ROCKY PDK

SCRUB PDK

Blackoak, mallee, sandalwood, mulga, and various bushes.

Light, and red sandy loam: Ridges of sand and porcupine

soil, and limestone rubble.

To Postmark

2461

2451

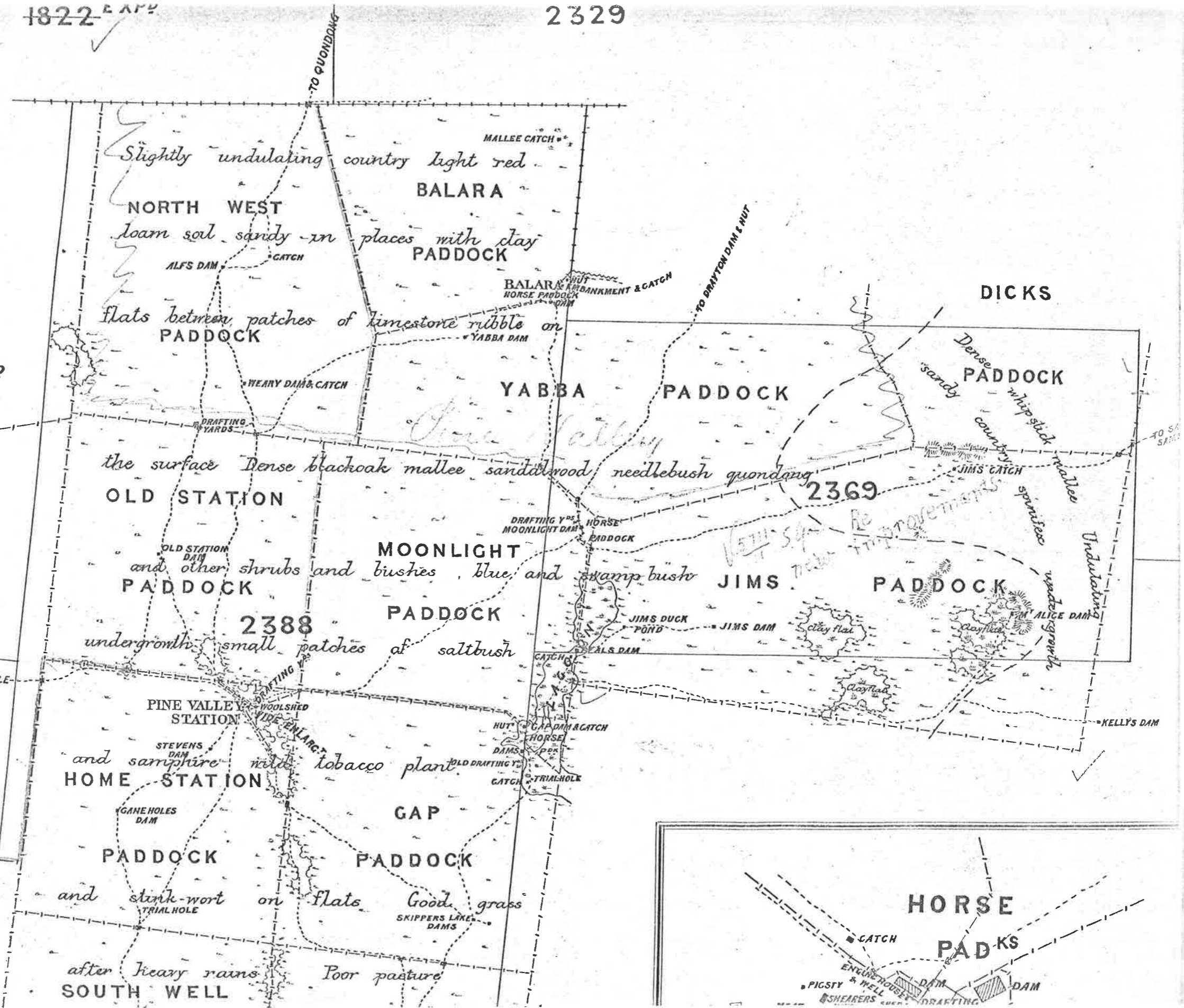
1/19/95

Exam  
Chd 28/1/95

2228 EXPD

noted in red have  
- data in F.B. 96  
v. L.P. 715  
95

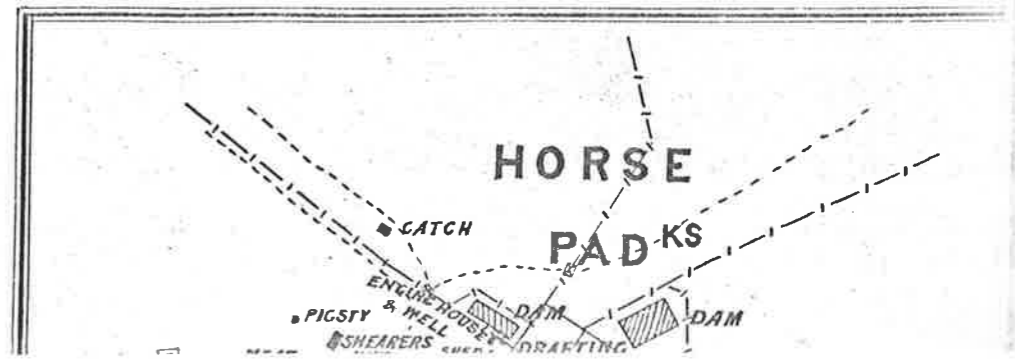
2227 EXPD



ry Bdy.

TO SA...

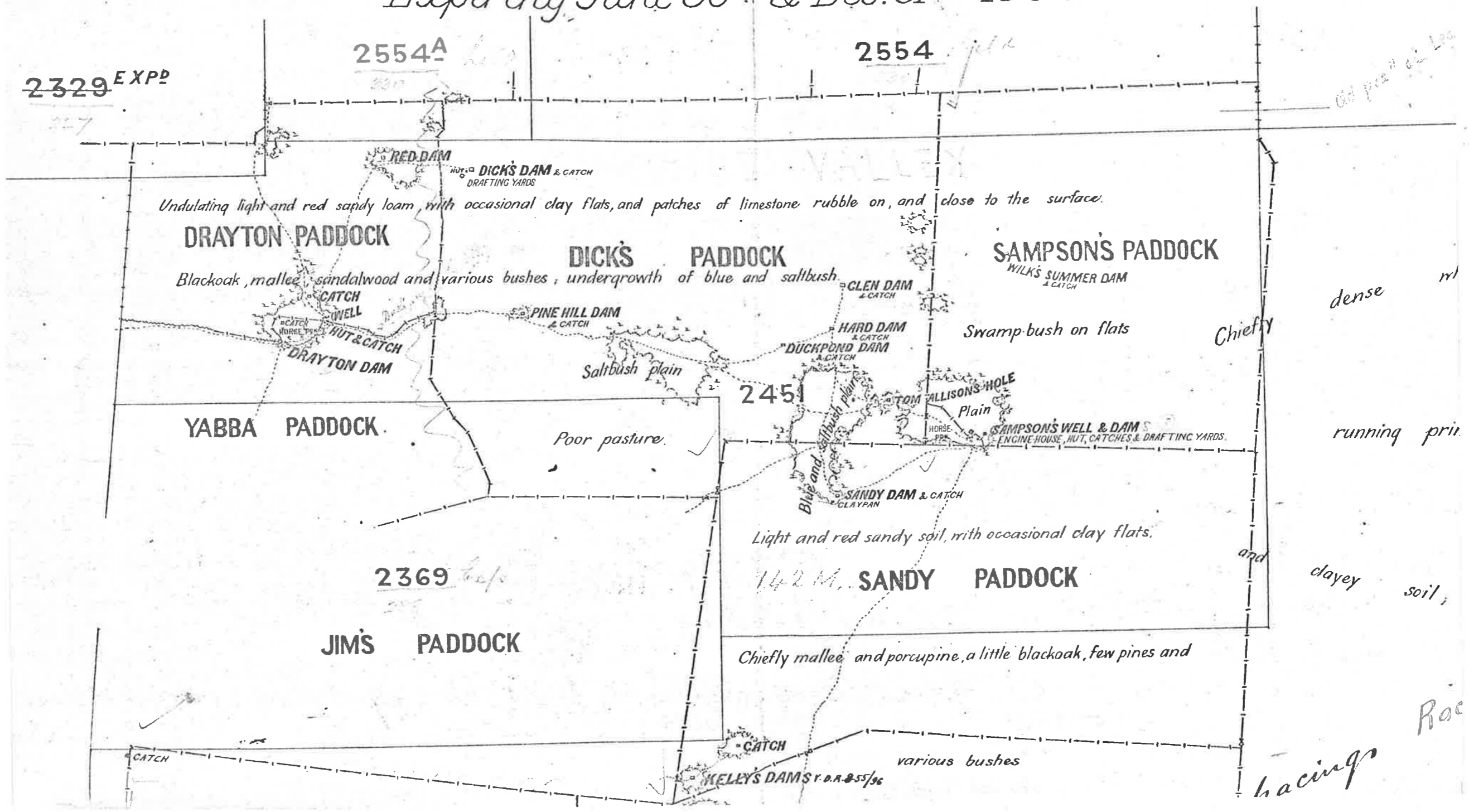
KELLY'S DAM



# PASTORAL LEASES

2451.2555

Expiring June 30<sup>th</sup> & Dec. 31<sup>st</sup> 1896





APPENDIX 4

STOCK NUMBERS IN TWO-MILE DAM - WINTER FLAT STUDY AREA SINCE 1953								
	Two-Mile Paddock		Barbers Paddock		Winter Paddock		Kirrani Paddock	
	March	Sept.	March	Sept.	March	Sept.	March	Sept.
1953		375		375		755		
1954		234		391		500		
1955		-		300		400		
1956		-						
1957		250		250				
1958	292	290	400	351		1180*		
1959	201	200	401	300		350		
1960	286	143	350	0		400		
1961					1351	1030		
1962	210	262	430	353	600	454		
1963	250	228	220	313	300	538		
1964	300	315	280	224	520	520		
1965	230	230	350	350	747	740		
1966	187	180	175	170	400	400		
1967	432?	148	264	242	525	512		
1968	200	200	200	200	563	560		
1969	237	242	220	258	240	353**	300	349
1970	369		250		423		266	

\* For 6 months only

\*\* Winter Paddock subdivided January 1969

PLATES 1a AND 1b

Cleared *Casuarina cristata* woodland in a 9.5 inch (240 mm)  
rainfall area of western New South Wales

1a - with a *Kochia sedifolia* - *Atriplex vesicaria* understorey

1b - with a *Kochia georgei* - *Kochia pyramidata* understorey



PLATE 2

Aerial photograph showing polygonal patterned ground  
discovered on Quondong Station

(reproduced by courtesy of S.A. Department of Lands)

PLATE 3

An example of the channels which delimit the  
patterned ground polygons

(scale in inches)

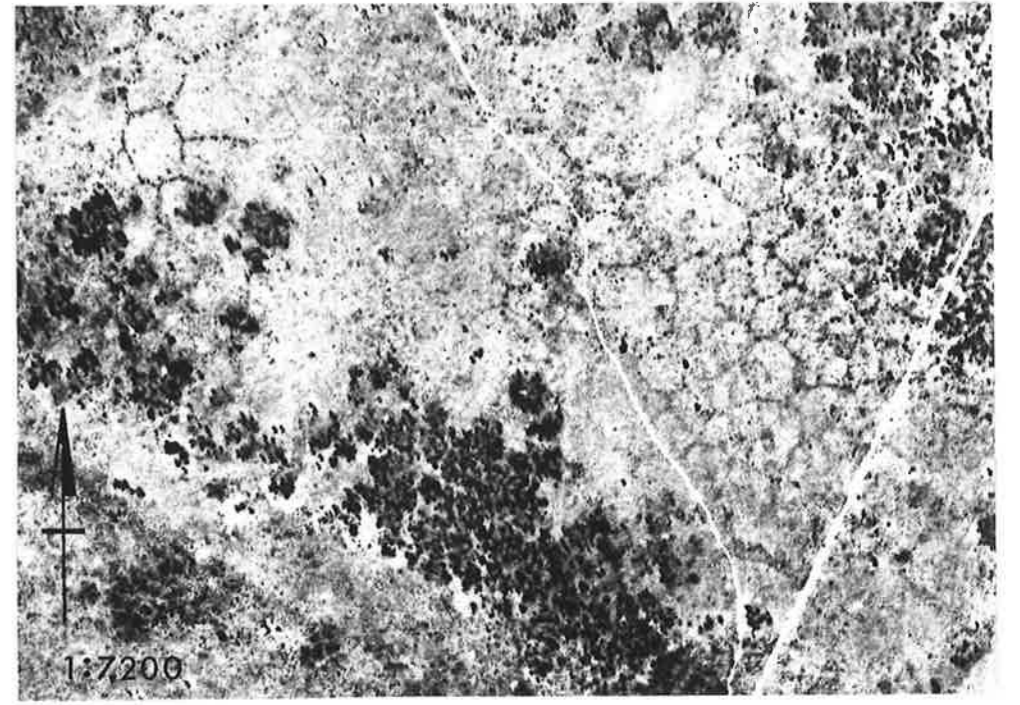


PLATE 4

Section through gutter (incipient channel) showing narrow trench infilled with darker material

The hollow below the trench is an artefact produced by water lying in the soil pit

PLATE 5

Roots of *Casuarina cristata* bridging one of the channels



PLATE 6

Gully erosion in the Ki Ki Paddock watercourse

PLATE 7

*Casuarina cristata* woodland, with *Koehia sedifolia*  
in N.W. Boundary Paddock, Quondong Station





PLATE 8

Low mallee, with *Triodia irritans* in Drayton Paddock,  
Quondong Station

PLATE 9

*Callitris columellaris* woodland, with *Hakea leucoptera* and  
*Bassia* spp., in George's Paddock, Quondong Station



PLATE 10

*Acacia eneura* woodland, with *Kochia sedifolia*, *Eragrostis* sp.  
and *Enneapogon avenaceus* in George's Paddock, Quondong Station

PLATE 11

View looking west along fence between Well Paddock (on right)  
and George's Paddock, Quondong Station

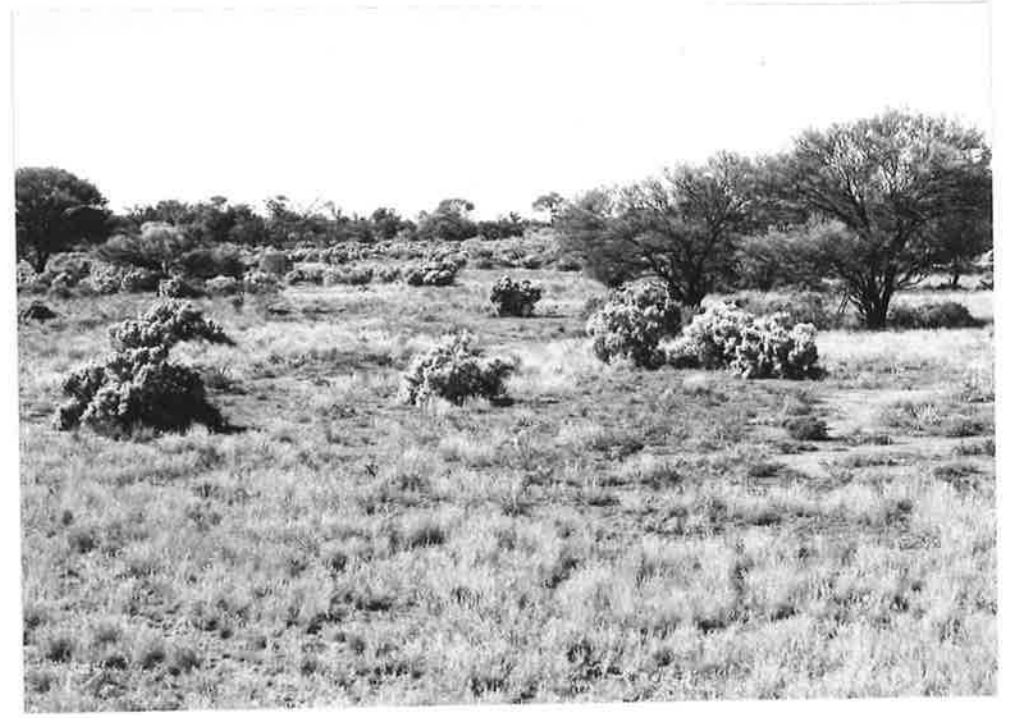


PLATE 12

Vegetation association in Weary Paddock, Quondong Station,  
showing *Casuarina cristata*, *Kochia sedifolia* and  
*Cassia nemophila* var. *nemophila*

PLATE 13

Vegetation association in Barrett's Paddock, Tregalana  
Station, looking south from the trough paddock. Trees  
present include *Myoporum platycarpum*, *Acacia sowdenii*,  
with *Kochia sedifolia* as the character shrub and *Kochia  
brevifolia* in the foreground.

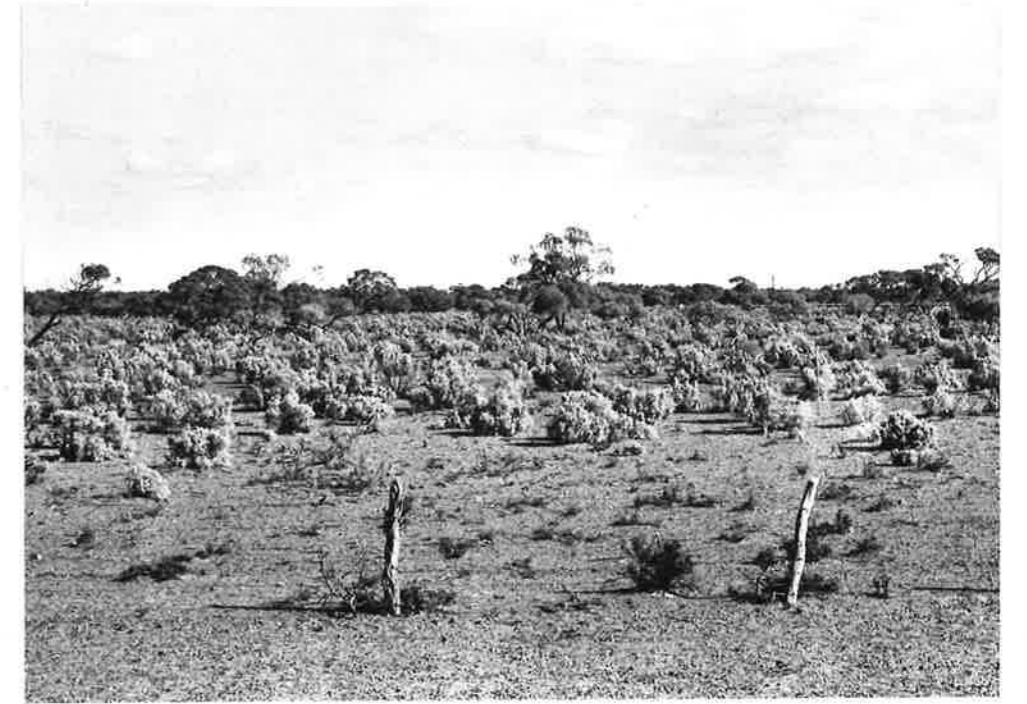


PLATE 14

Aerial photograph of vegetation in the immediate vicinity of Barrett's Trough, Tregalana Station. Trees to the north-east are *Casuarina cristata* (dying) and those to the south, *Acacia sowdenii*. The shrubs are principally *Kochia sedifolia*, with *Kochia brevifolia* near the trough paddock; X indicates the general location of the invading population of *Kochia pyramidata*.

(reproduced by courtesy of S.A. Department of Lands)





PLATE 15

Aerial mosaic of Two-Mile - Winter Flat area,  
Middleback Station

(The first east-west line south of Barber's Dam is a join  
in the photograph and not a fenceline)

(reproduced by courtesy of S.A. Department of Lands)

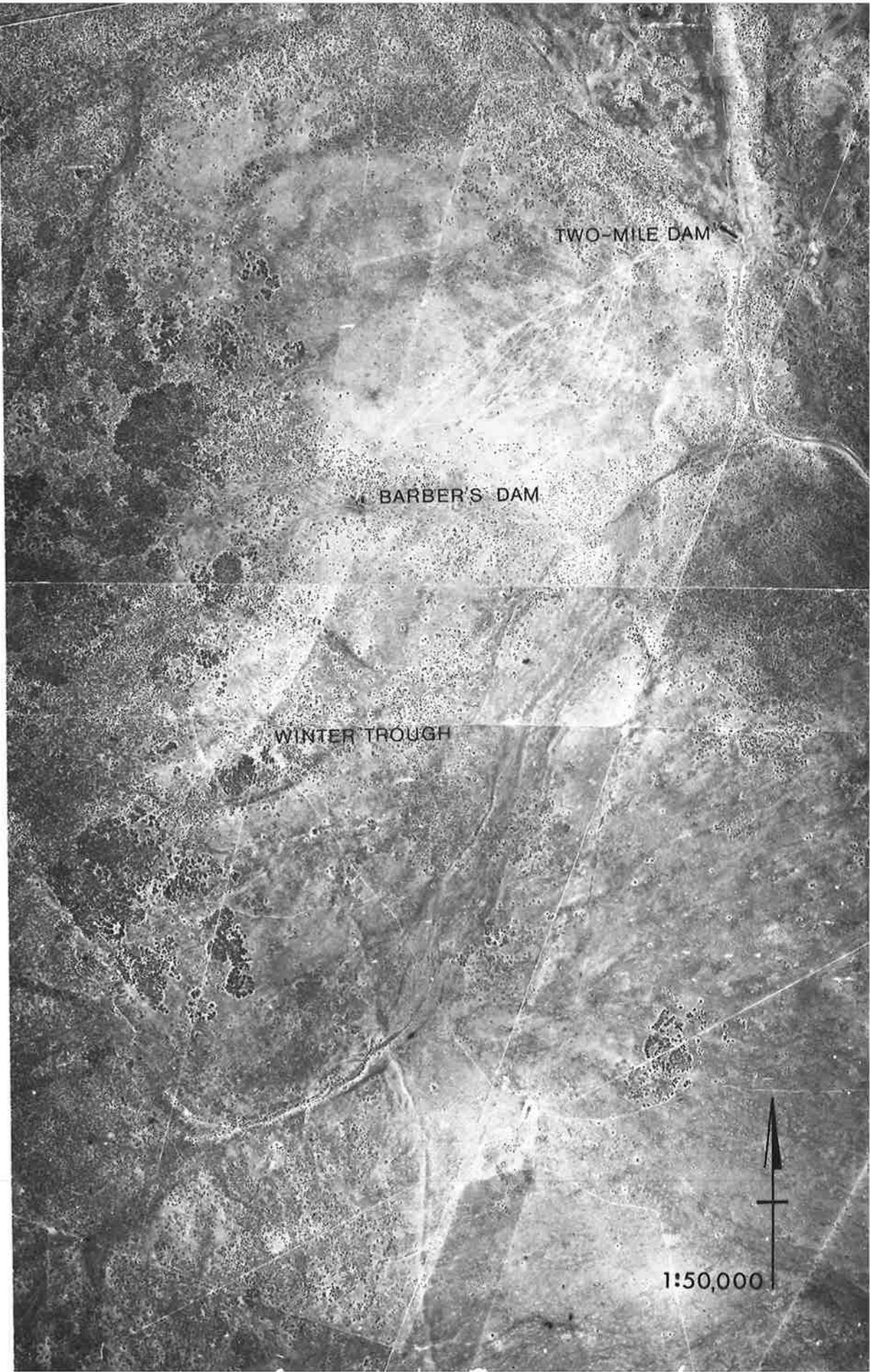


PLATE 16

Vegetation association at Two-Mile Dam, Middleback Station, looking south. *Kochia pyramidata*, with *Kochia tomentosa*, is present in the foreground; *Kochia sedifolia* is in the background with *Acacia sowdenii*.

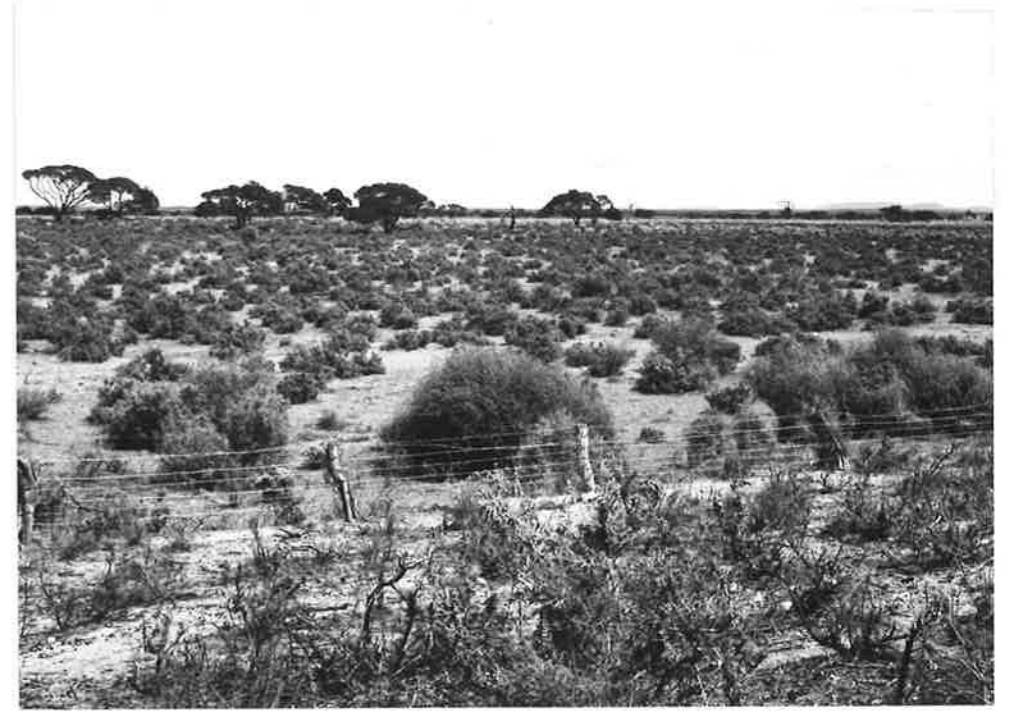


PLATE 17

Vegetation association at Barber's Dam in Two-Mile Paddock, Middleback Station, looking south. In the foreground is *Atriplex stipitata*, with *Kochia pyramidata* and some *Marrubium vulgare*. *Kochia sedifolia* and *Acacia sowdeni* are in the background. The eastern wall of the dam is to the right.

PLATE 18

Vegetation association at Barber's Dam in Barber's Paddock, Middleback Station, looking west. *Marrubium vulgare* forms a continuous sward in the foreground, with *Kochia sedifolia* on either side of the watercourse. The southern wall of the dam is to the right.

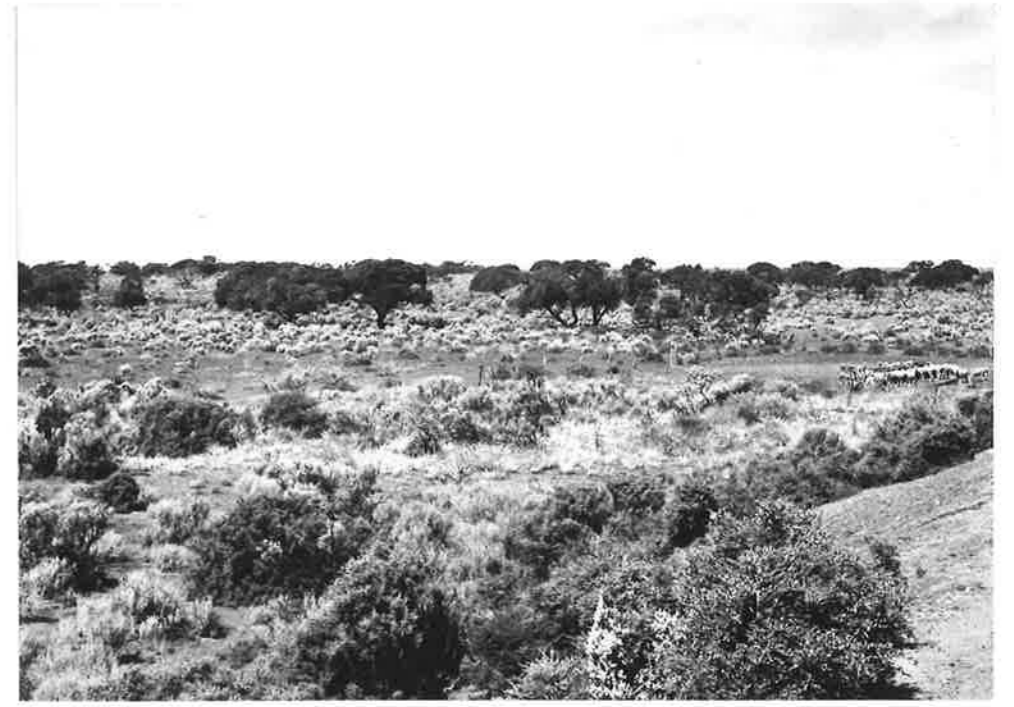


PLATE 19

Vegetation association at Winter Trough in Winter Paddock, Middleback Station, looking south from the trough paddock. Note the friable soil surface, as indicated by the tyre marks, and the stunted population of *Kochia pyramidata* in the foreground. *Kochia sedifolia* and *Acacia sowdenii* are in the background.

PLATE 20

Vegetation association at Kirrani Trough in Kirrani Paddock, Middleback Station, looking west from the trough paddock. Note bare area in the foreground with some *Kochia pyramidata*, but little *Kochia sedifolia*.





PLATE 21

Winter Paddock, Middleback Station, to one side of  
Winter Flat, looking in a southerly direction.

Note lack of vegetation in foreground.  
Photograph taken in 1953

(reproduced by courtesy of A. D. Nicolson)

PLATE 22

Same area

Note obvious regeneration which has occurred since 1953.  
Photograph taken in 1970 by the author

(identification points are arrowed)

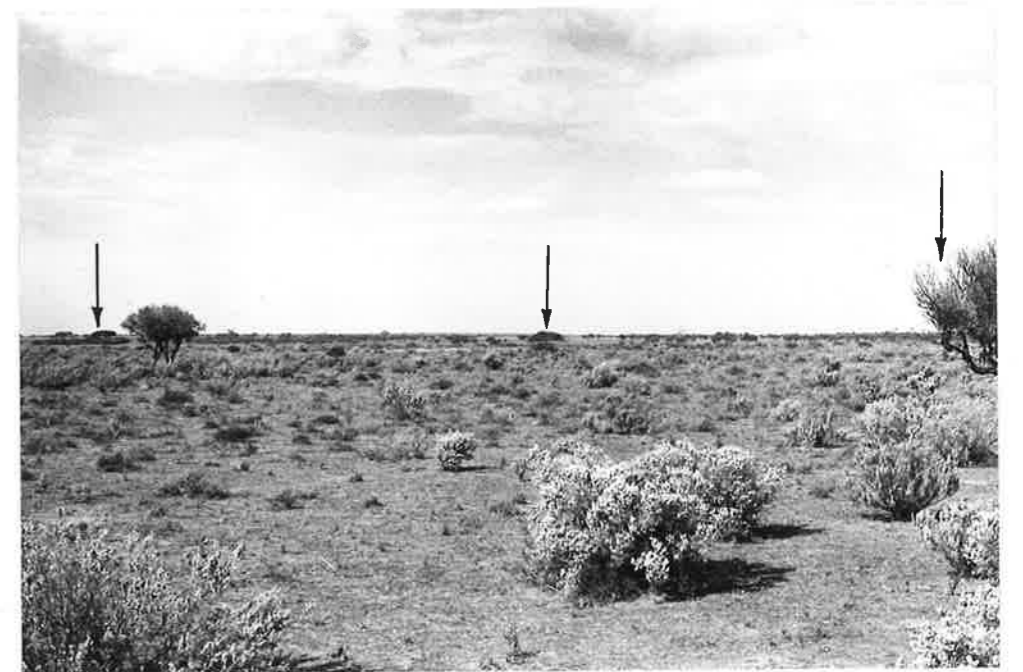
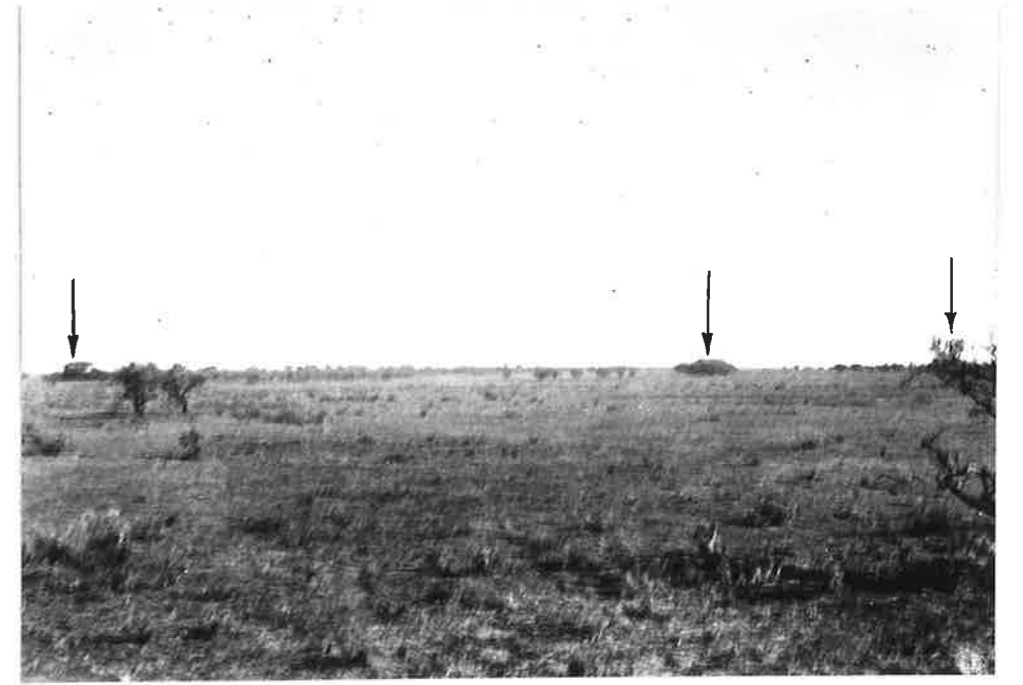


PLATE 23

Looking along vermin-proof fence between Barber's and  
Kirrani Paddocks, in a south-easterly direction.  
Photograph taken about 400 yards west of Winter Trough.

Note lack of vegetation in foreground,  
Photograph taken in 1953

(reproduced by courtesy of A. D. Nicolson)

PLATE 24

Same area

Note regeneration of *Kochia pyramidata* close to fence,  
Photograph taken in 1970 by the author

(identification points are arrowed)

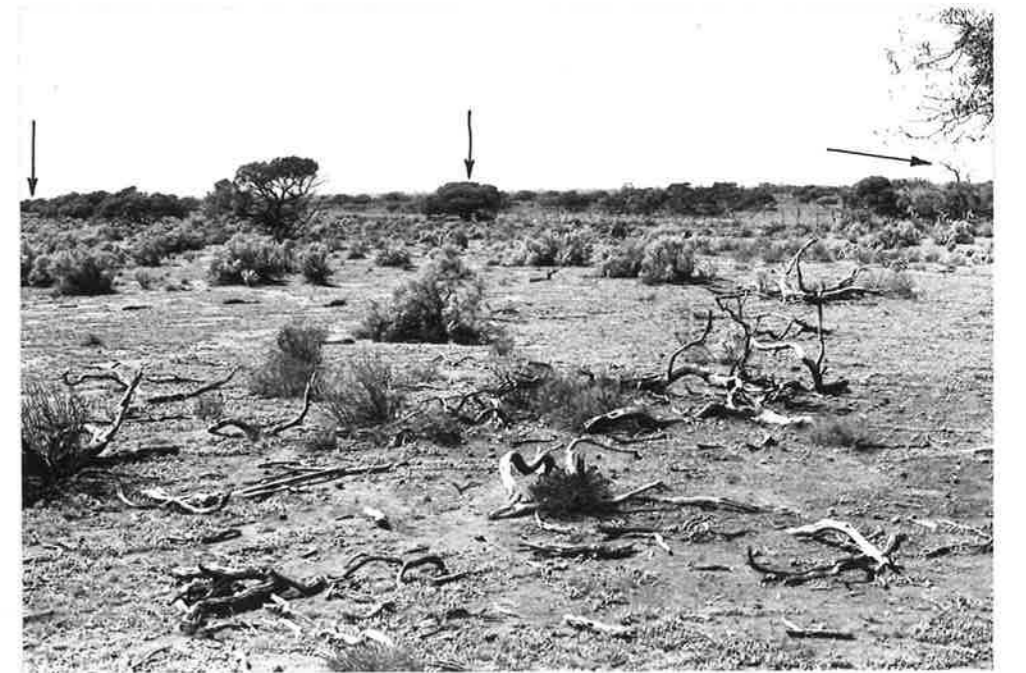
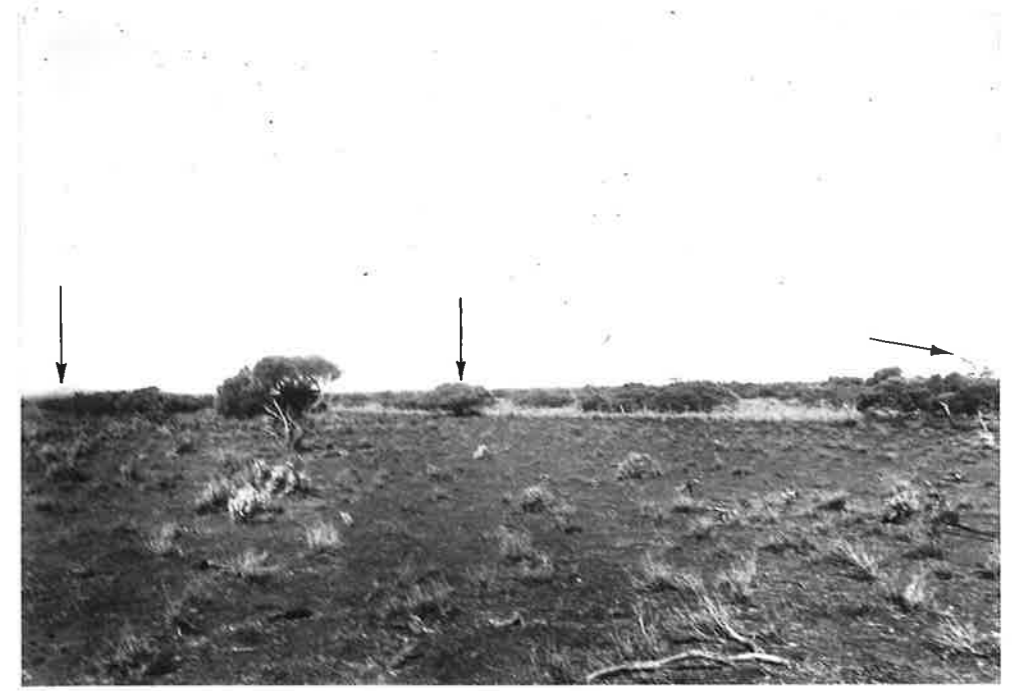


PLATE 25

General view looking south from Barber's Paddock  
into Kirrani Paddock.  
Photograph taken about 50 yards north-west of Winter Trough.

Photograph taken in 1953

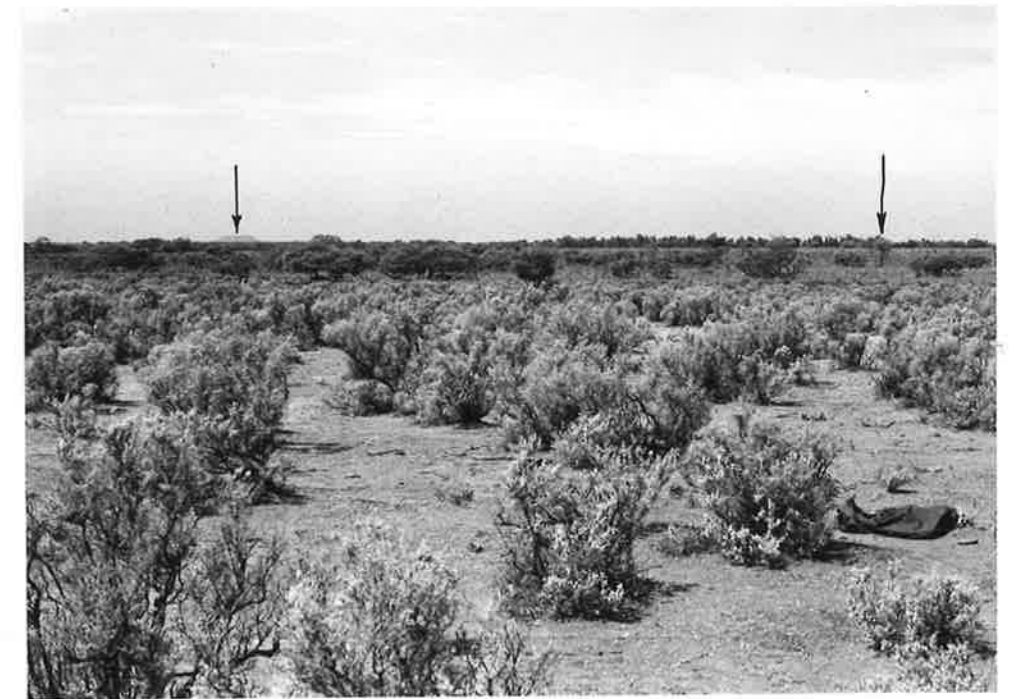
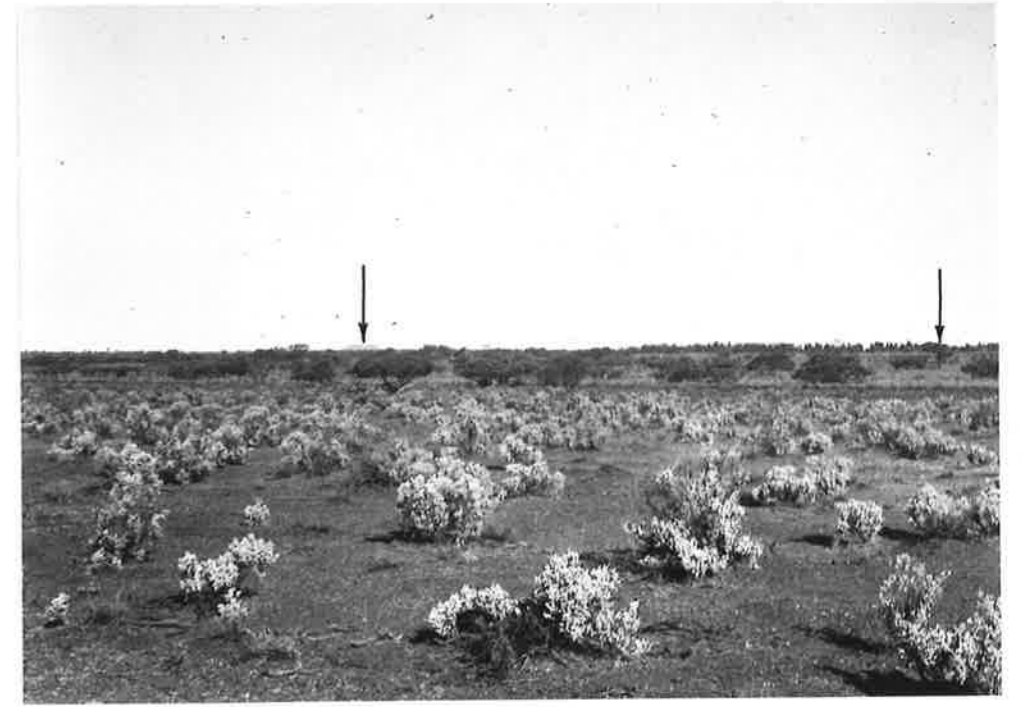
(reproduced by courtesy of A. D. Nicolson)

PLATE 26

Same area

Photograph taken in 1970 by the author

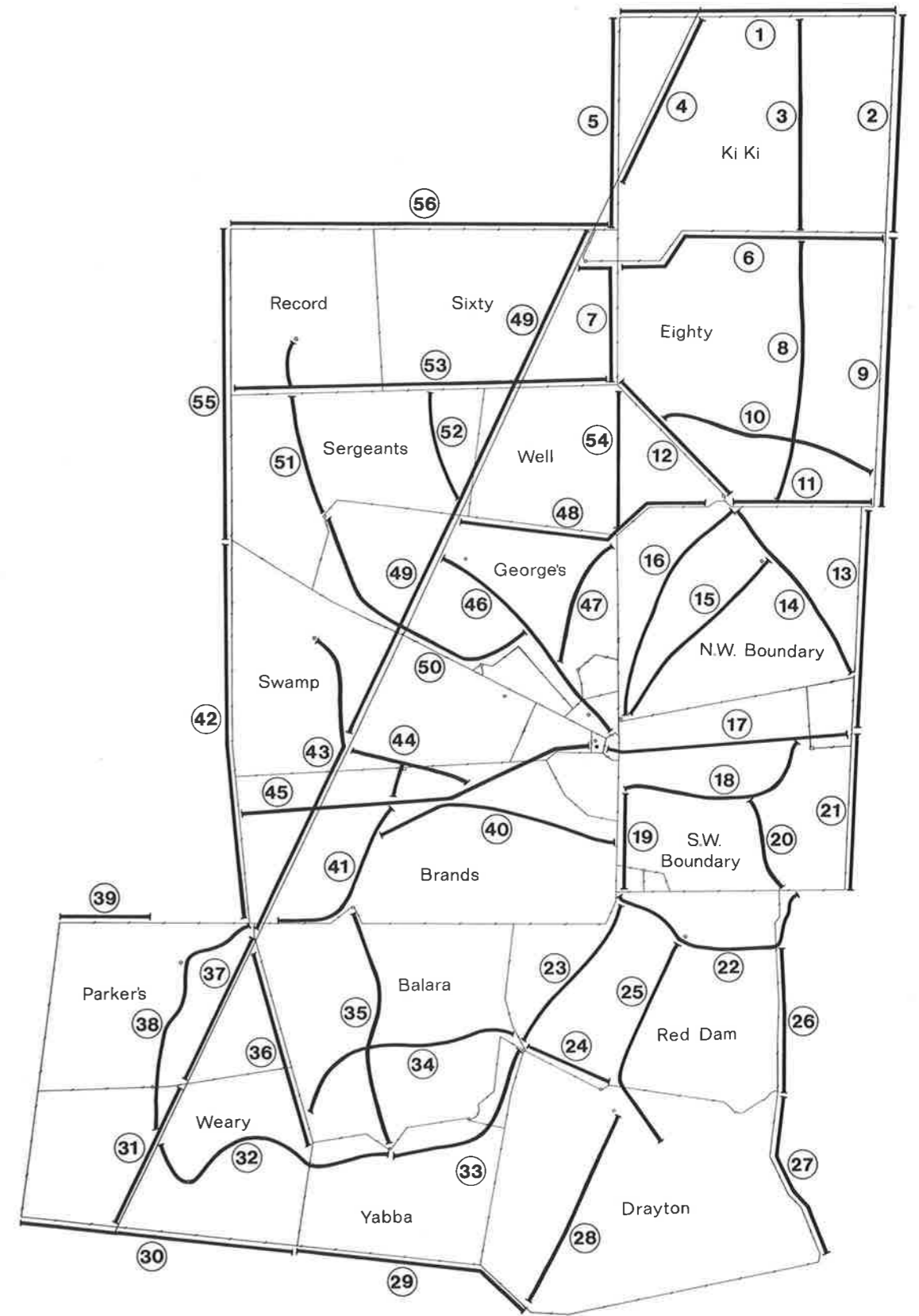
(identification points are arrowed.  
Unfortunately, this photograph point was impossible to locate  
exactly, so the foreground is not the same in both photographs)



MAP 1

Key to Quondong Station traverses






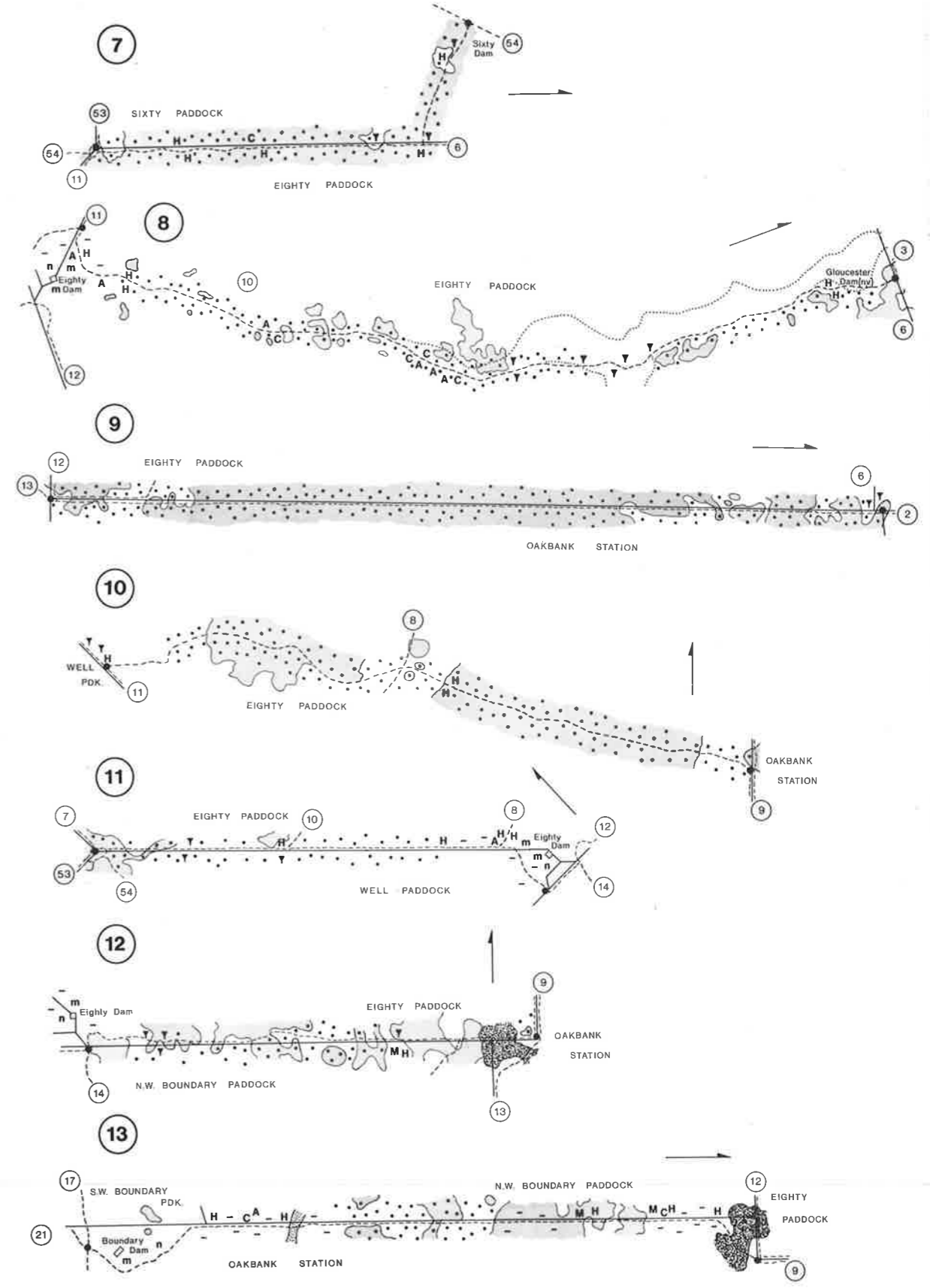
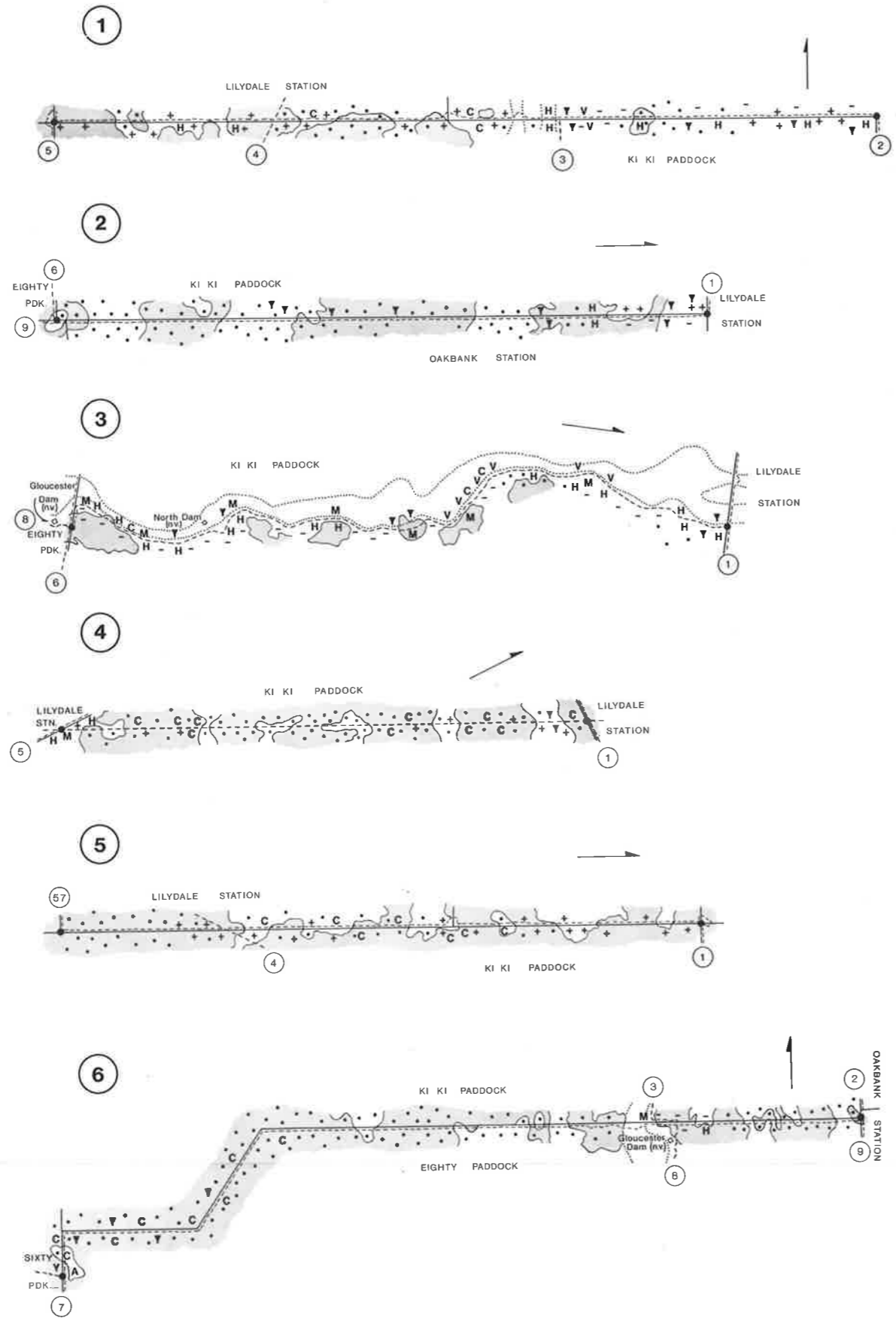


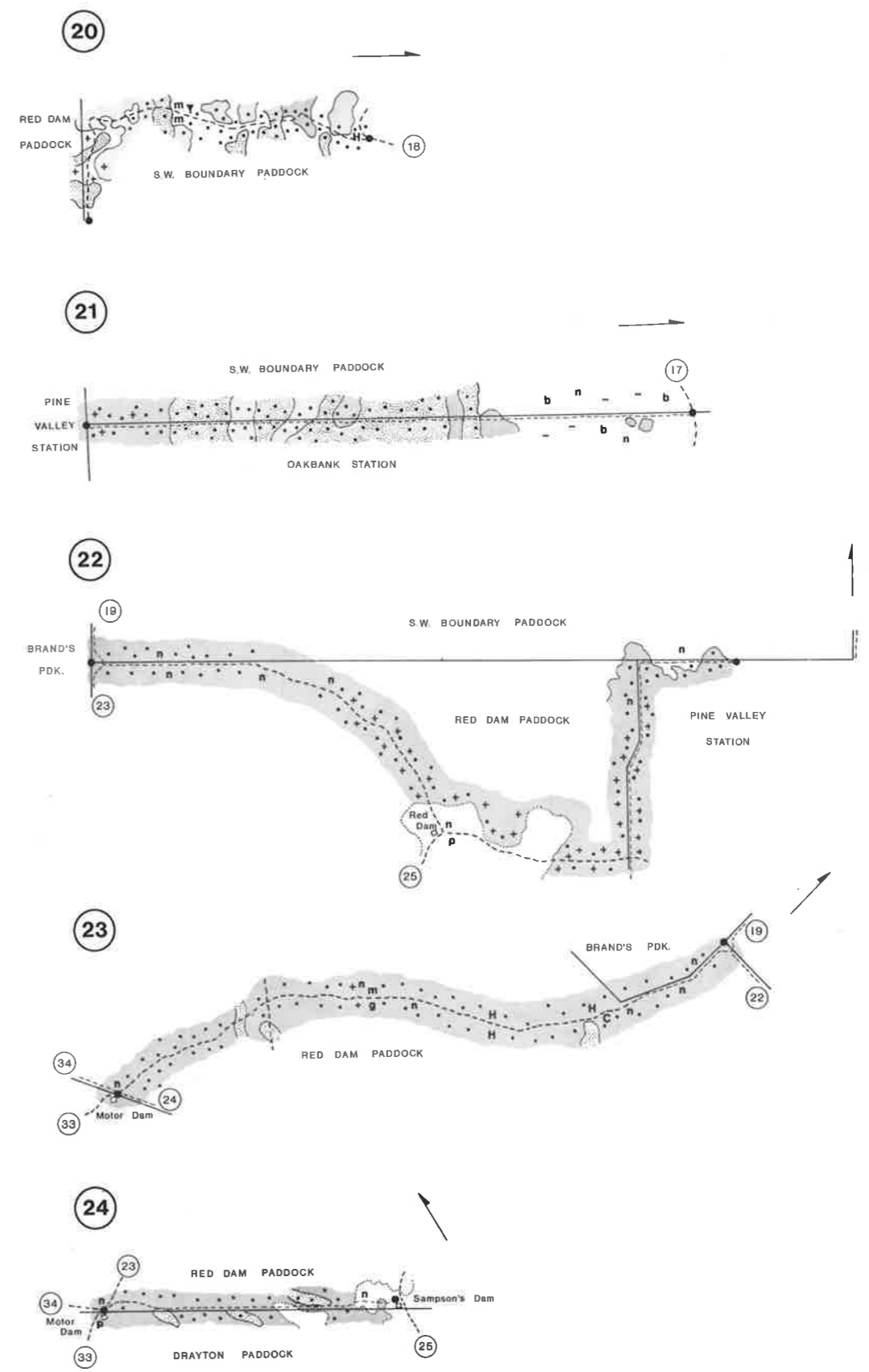
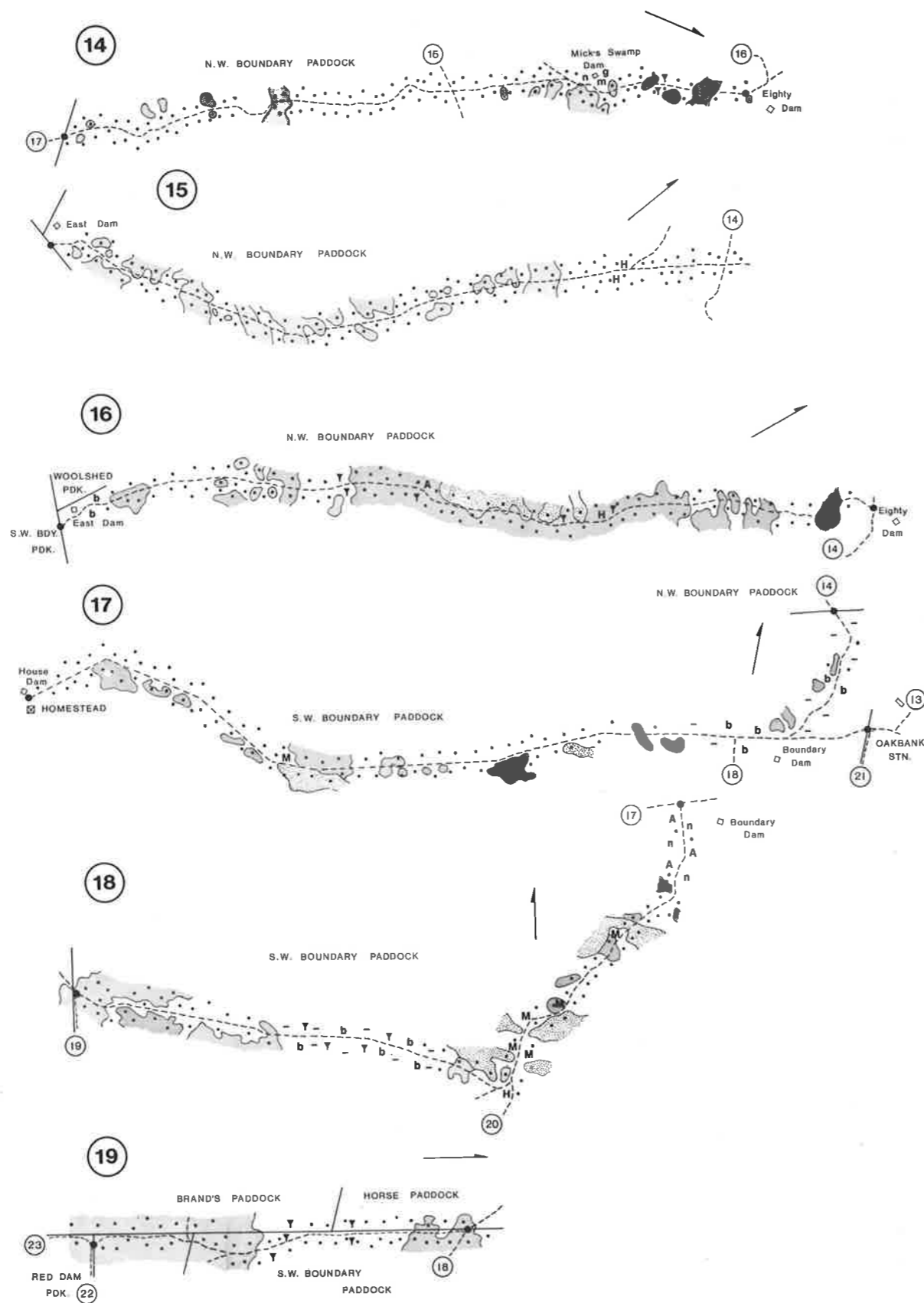
MAPS 2-6

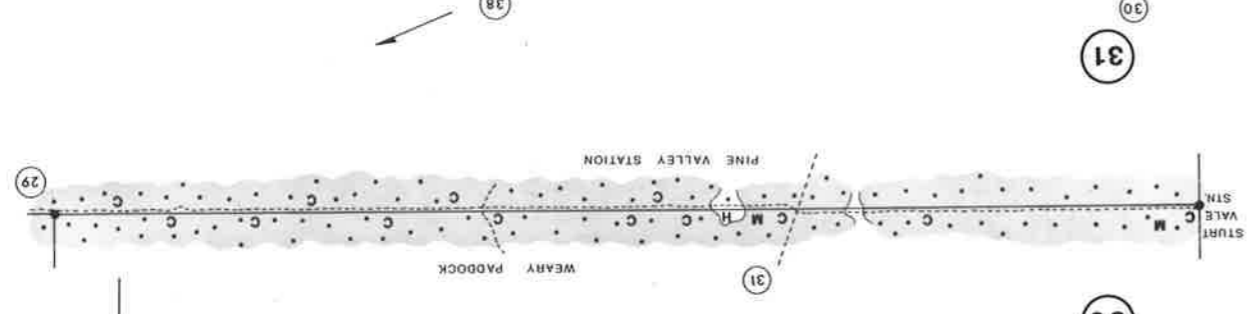
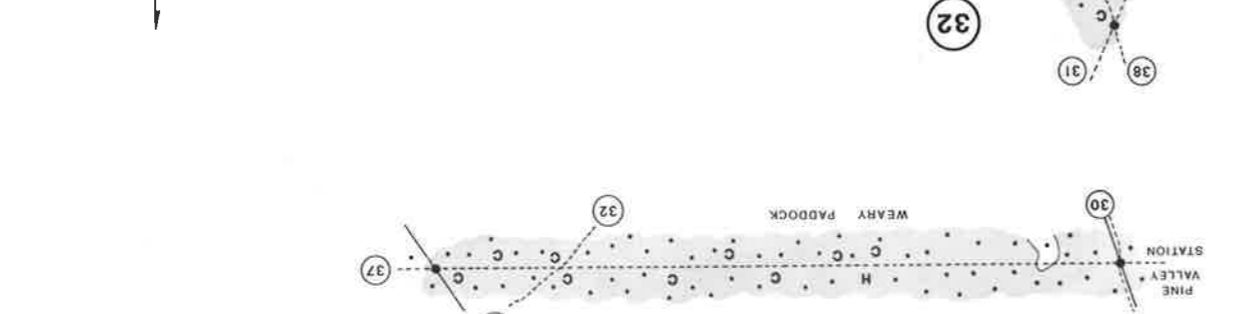
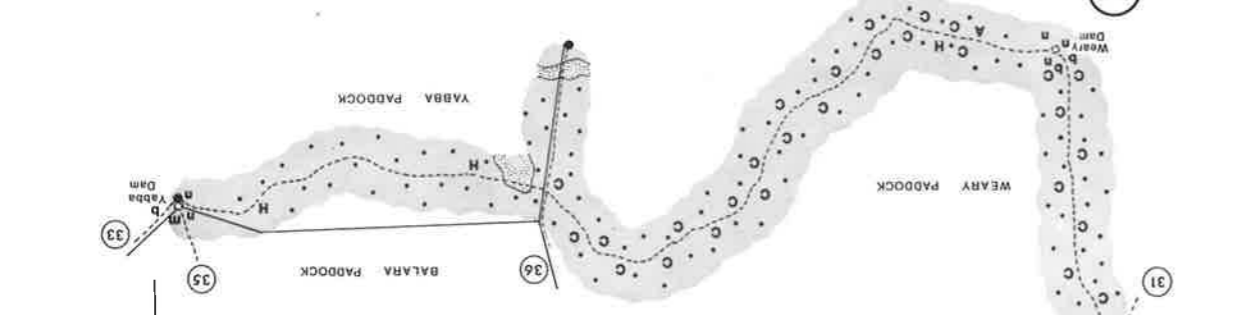
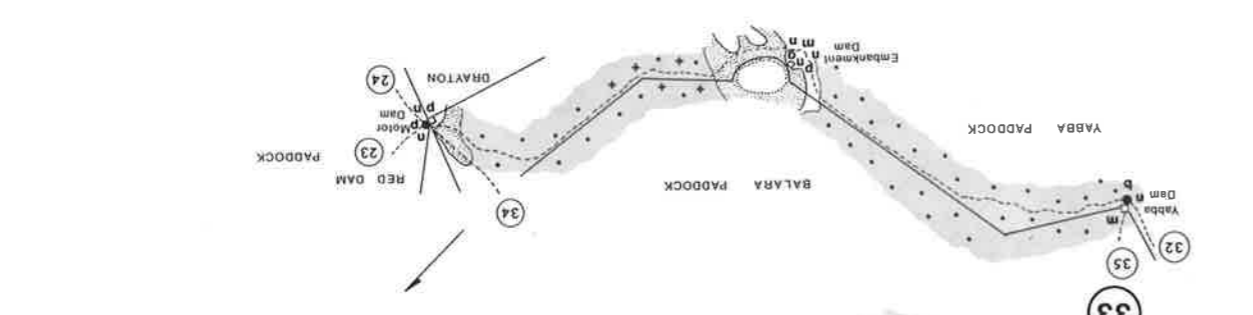
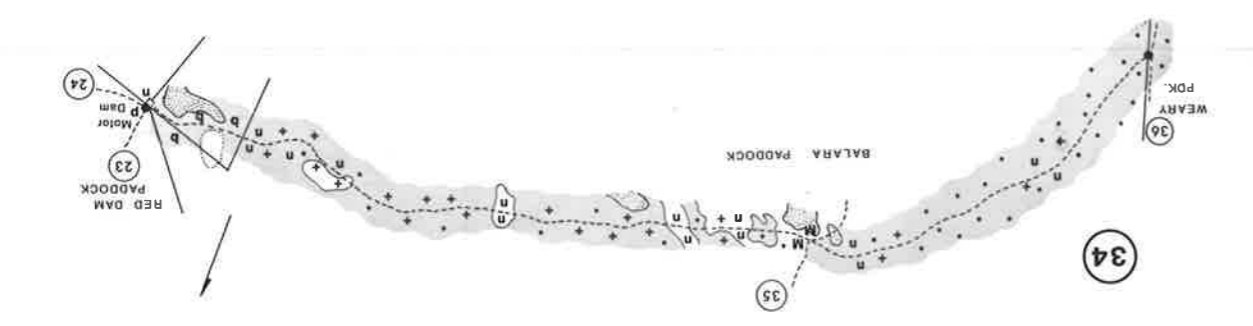
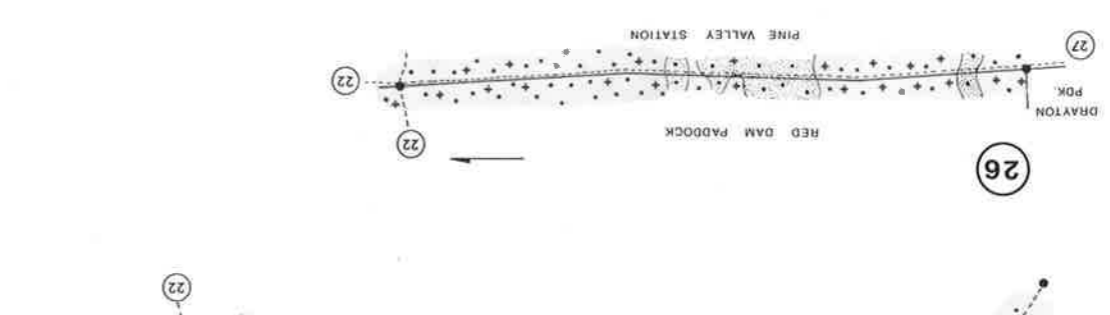
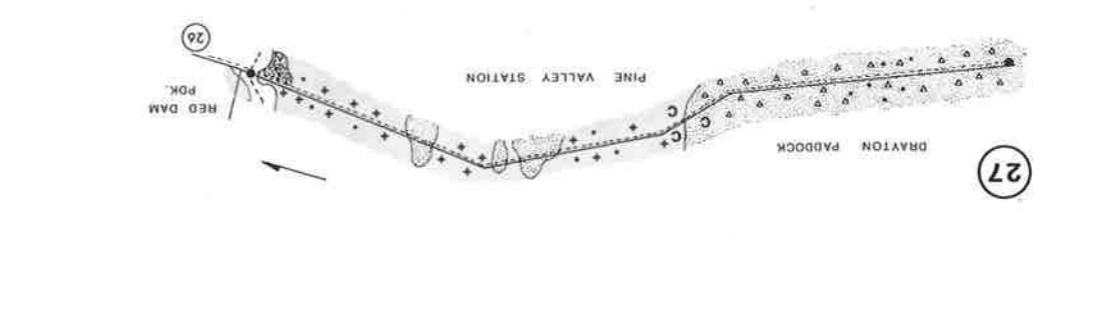
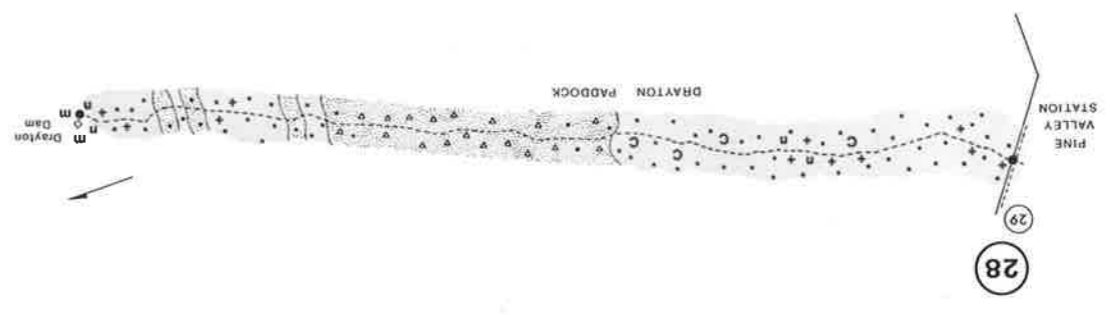
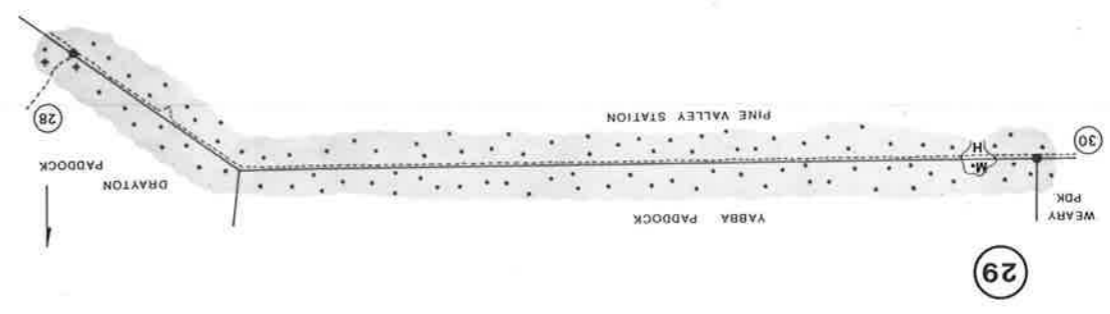
Traverses of Quondong Station

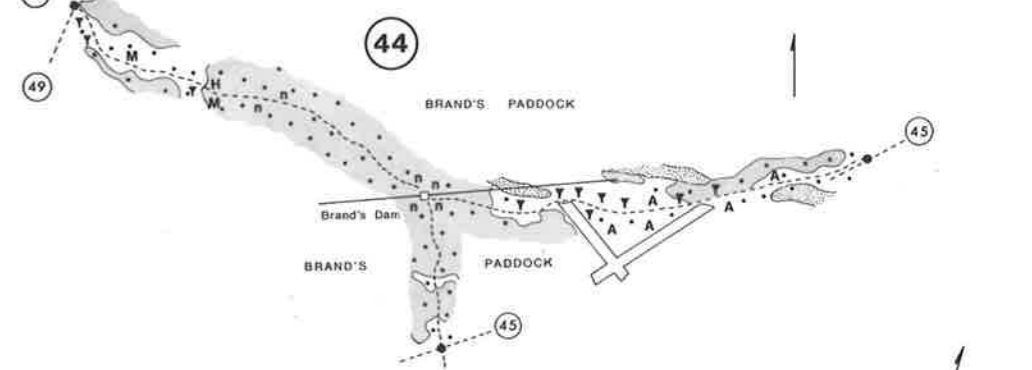
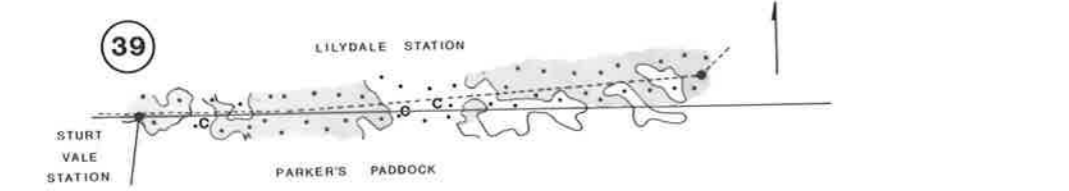
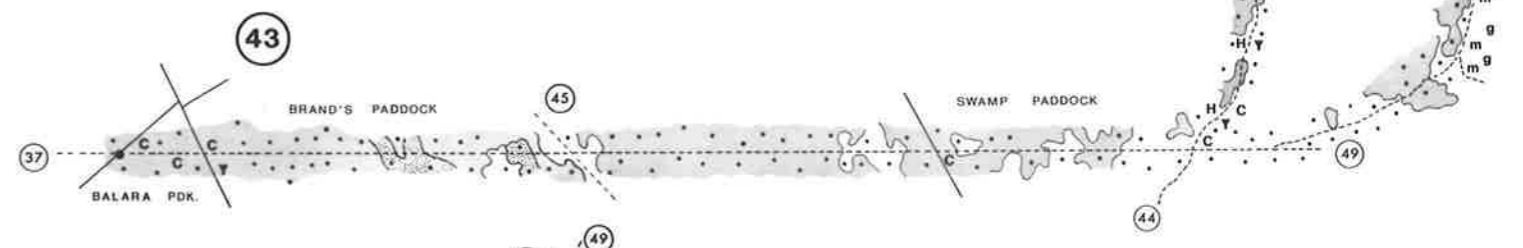
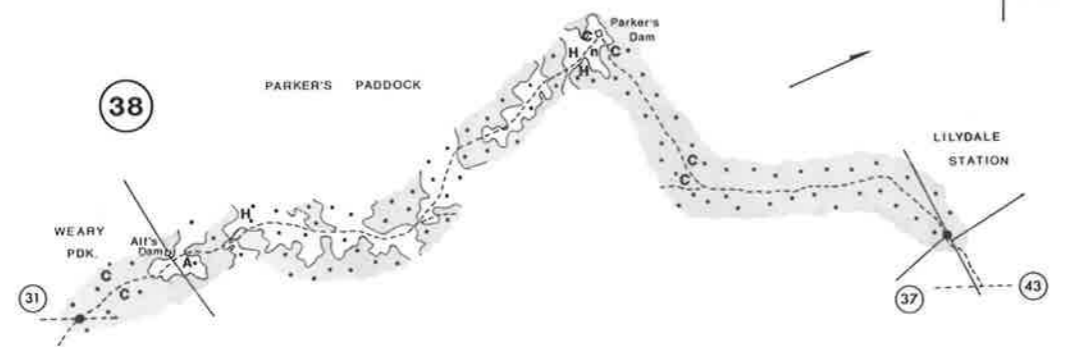
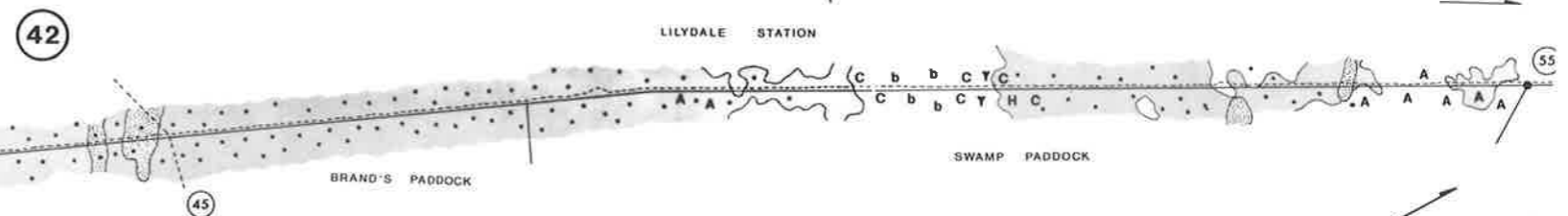
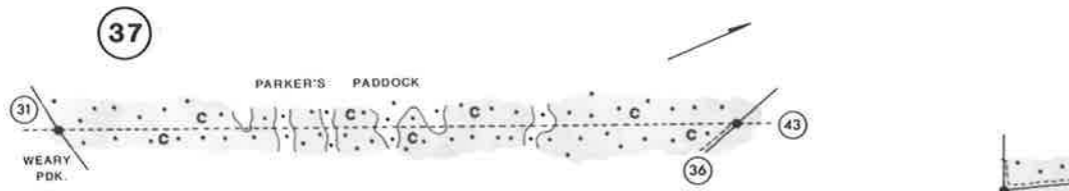
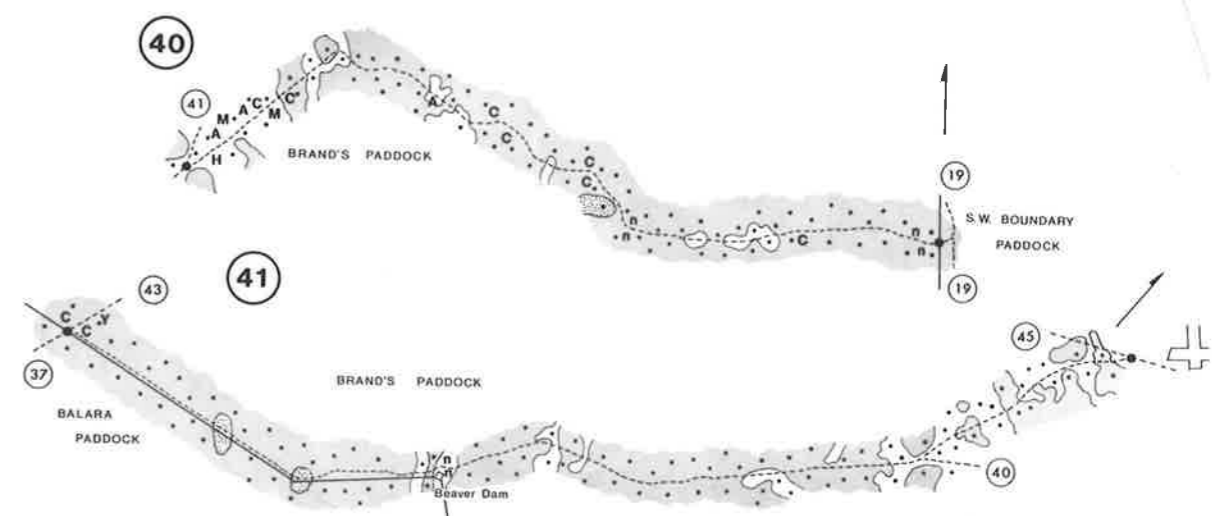
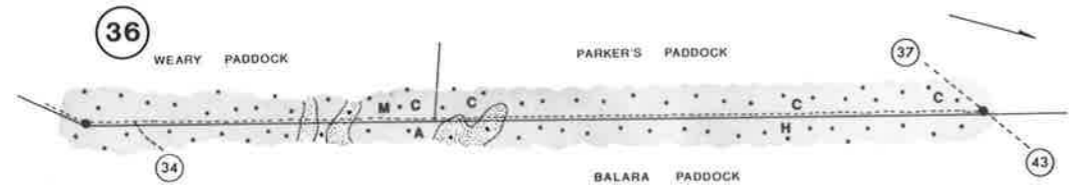
Legend

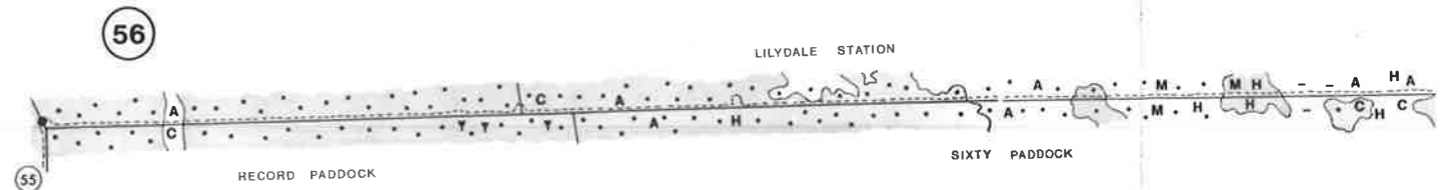
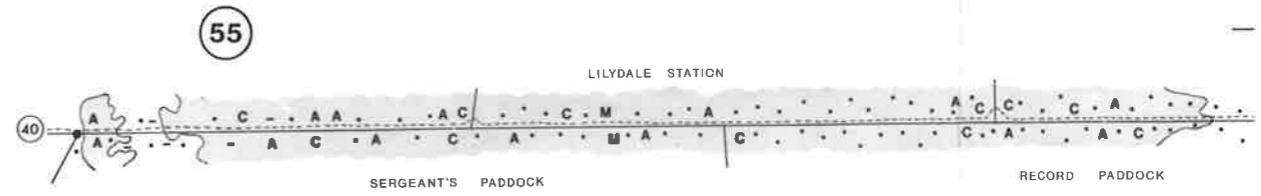
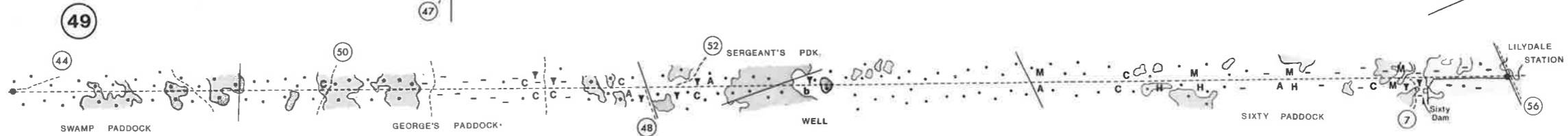
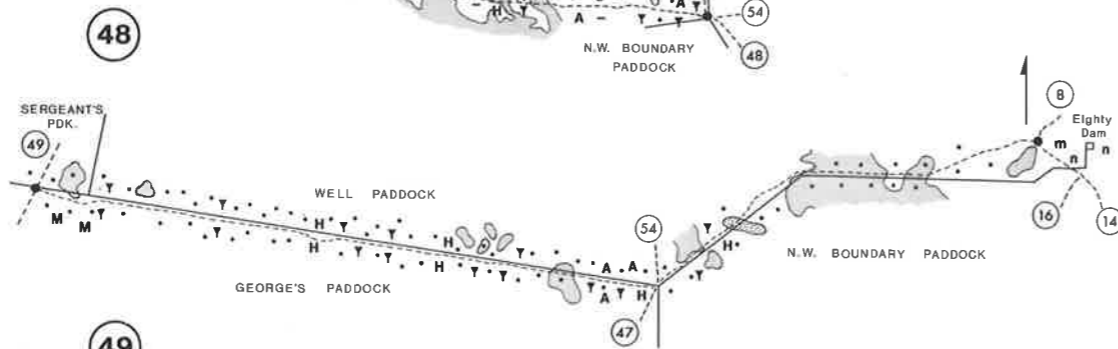
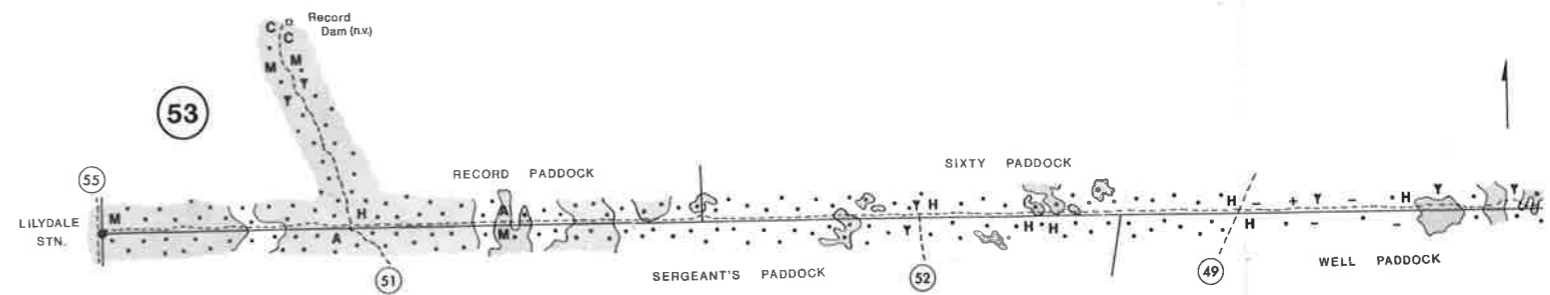
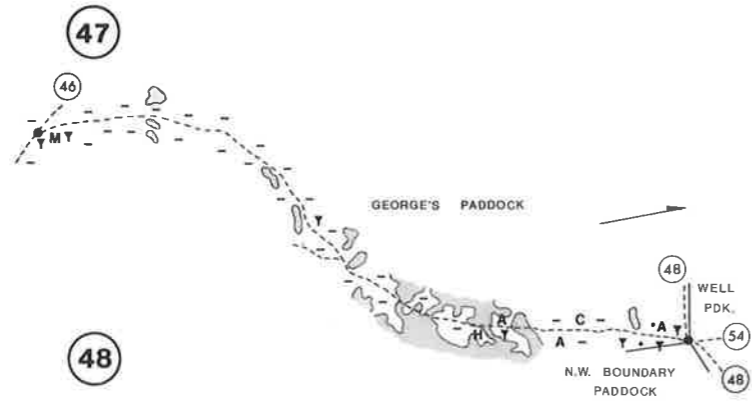
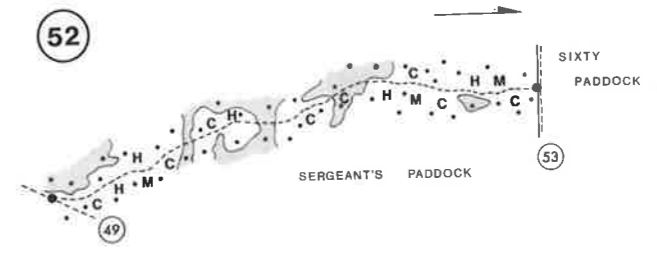
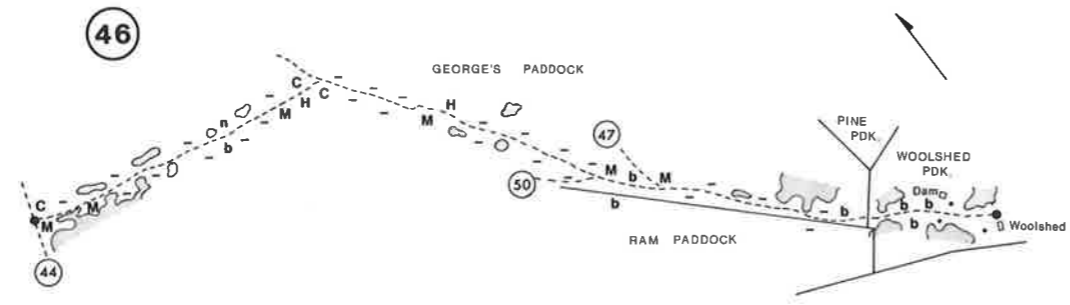
-  *Casuarina cristata*
-  *Eucalyptus* spp.
-  *Callitris columellaris*
- H *Heterodendrum oleaefolium*
- M *Myoporum platycarpum*
- v *Acacia aneura*
- A *Acacia burkittii*
- C *Cassia nemophila*
- v *Acacia victoriae*
- b *Kochia pyramidata*
- n *Nitraria schoberi*
- m *Muehlenbeckia cunninghamii*
- g *Eragrostis australiasica*
- p *Pachycornia* sp.
- . . . *Kochia sedifolia*
- \* + *Atriplex vesicaria*
- - - Ephemerals
- v v v *Triodia irritans*











MAP 7

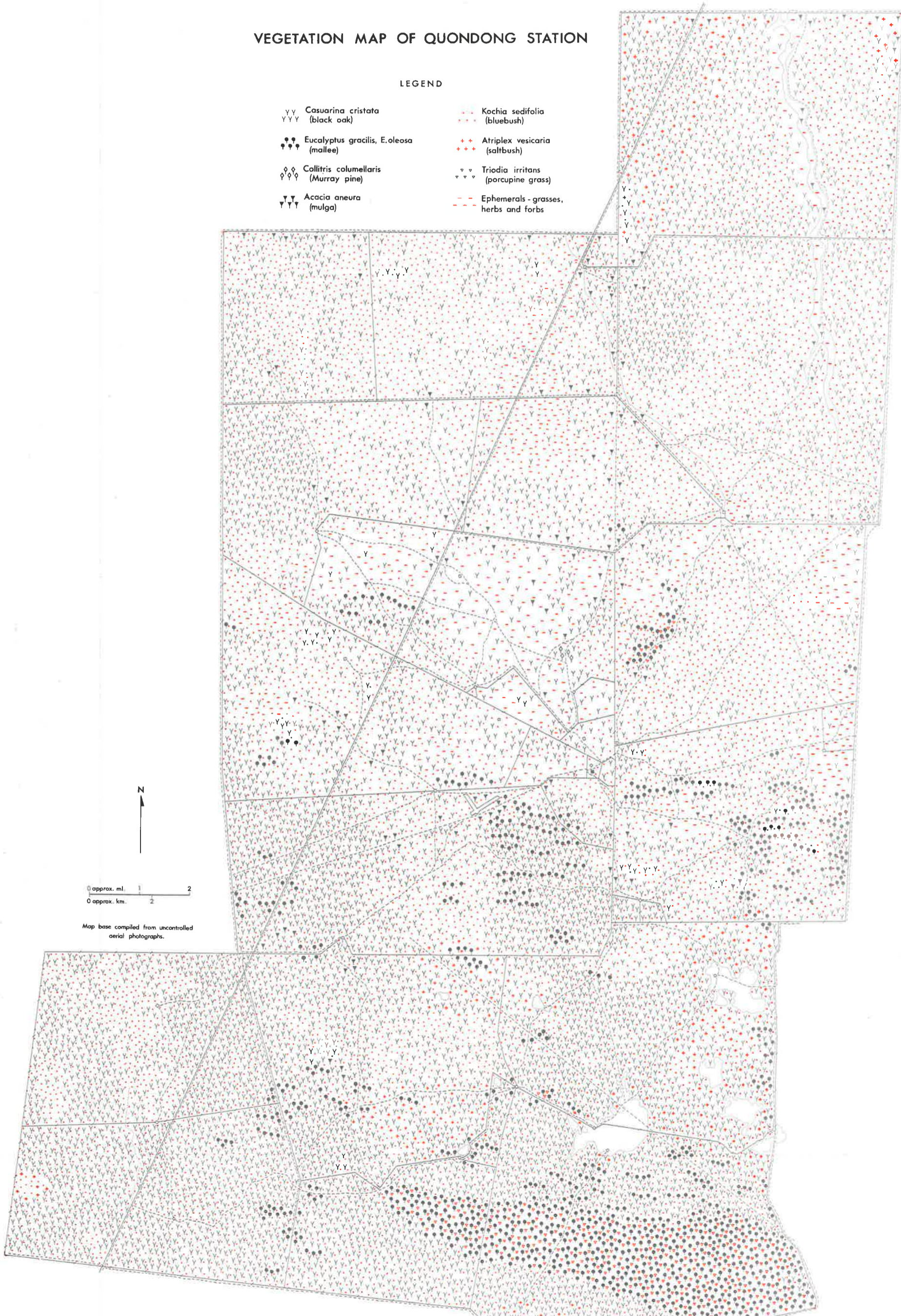
Vegetation map of Quondong Station



# VEGETATION MAP OF QUONDONG STATION

## LEGEND

- |   |  |
|---|--|
| YY Casuarina cristata<br>(black oak)          | ••• Kochia sedifolia<br>(bluebush)             |
| ••• Eucalyptus gracilis, E.oleosa<br>(mallee) | +++ Atriplex vesicaria<br>(saltbush)           |
| ◇◇◇ Coltritis columellaris<br>(Murray pine)   | ▽▽▽ Triodia irritans<br>(porcupine grass)      |
| ▽▽▽ Acacia aneura<br>(mulga)                  | - - - Ephemerals - grasses,<br>herbs and forbs |



0 approx. mi. 1 2  
0 approx. km. 1 2

Map base compiled from uncontrolled aerial photographs.

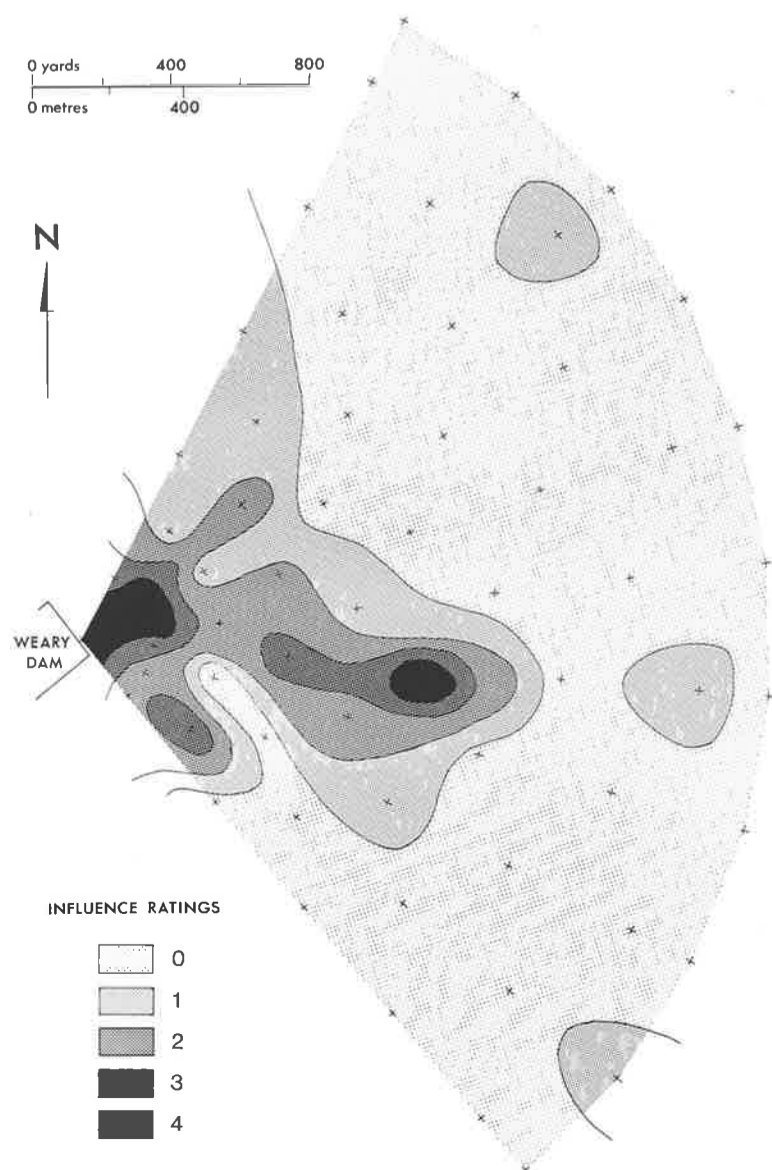
MAP 8

Weary Dam: results of influence analysis

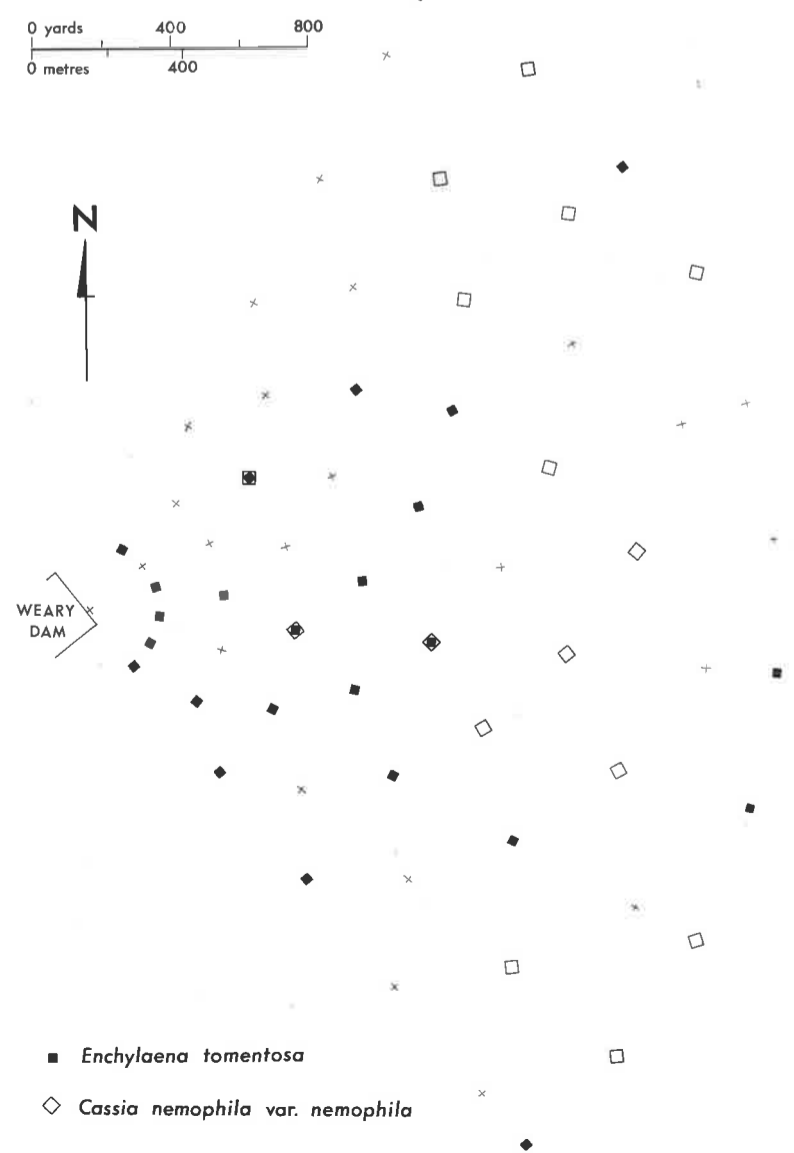
Node 1 - Isotels

Node 2 - Incidence  
of species

### NODE 1



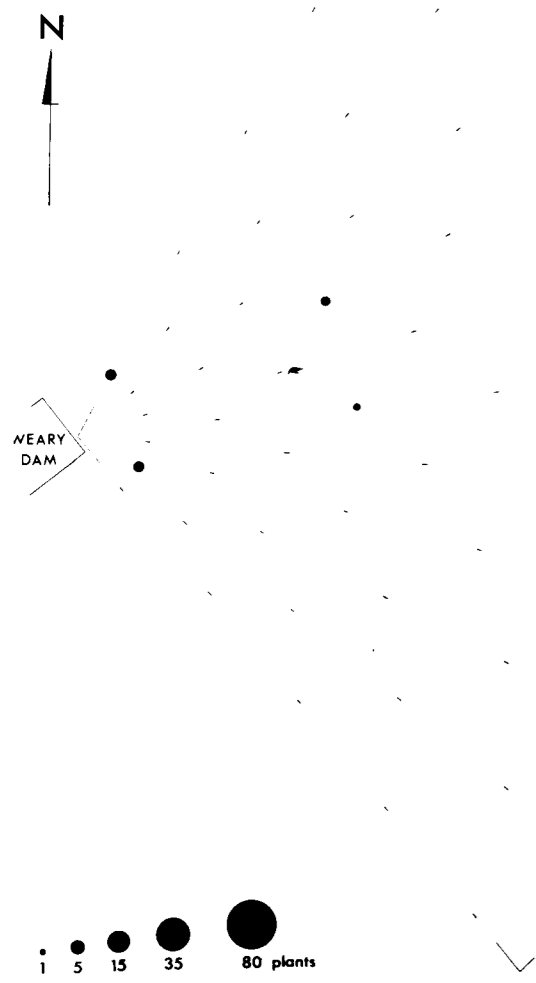
### NODE 2



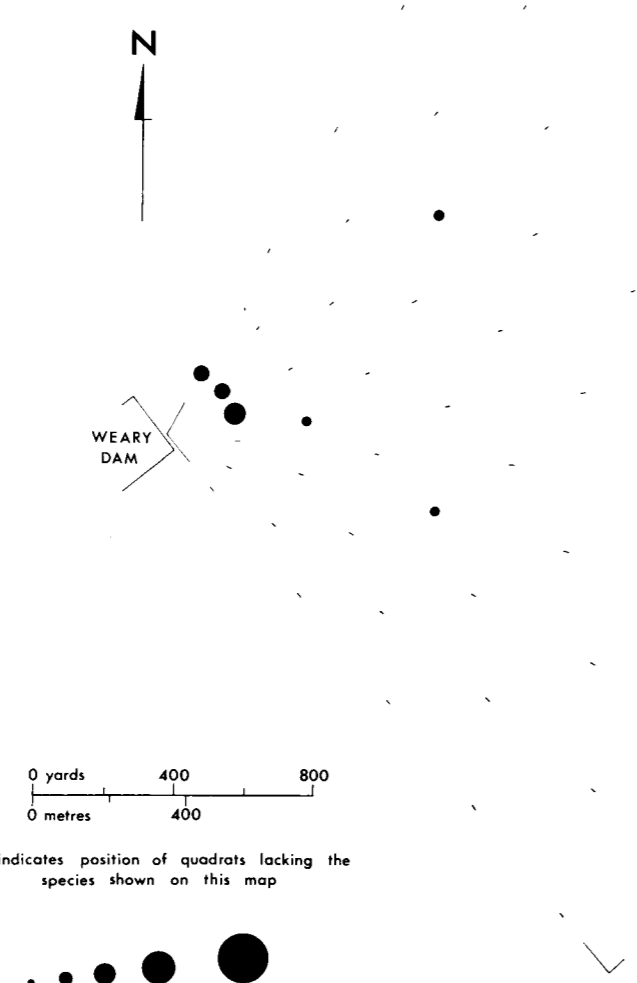
MAP 9

Weary Dam: population densities

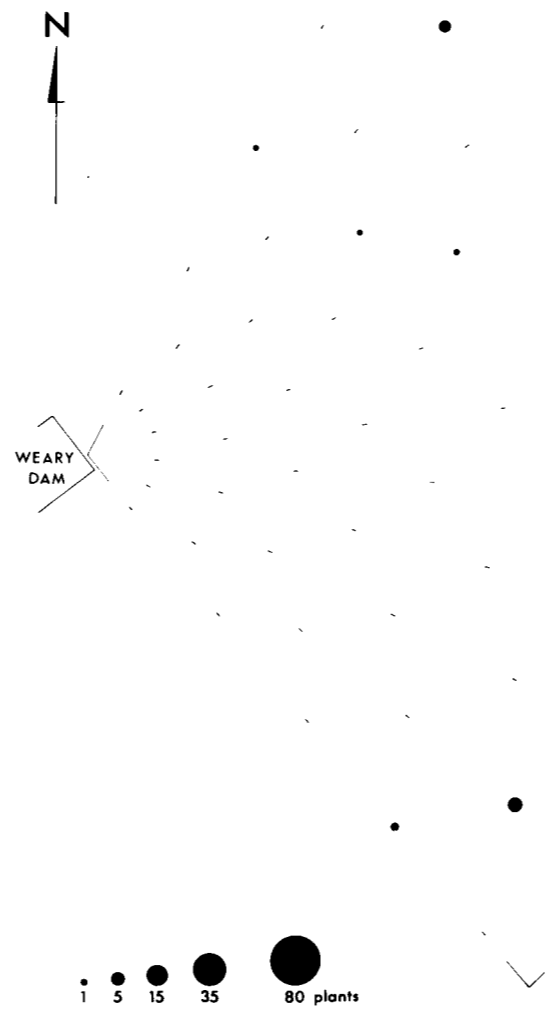
ATRIPLEX STIPITATA



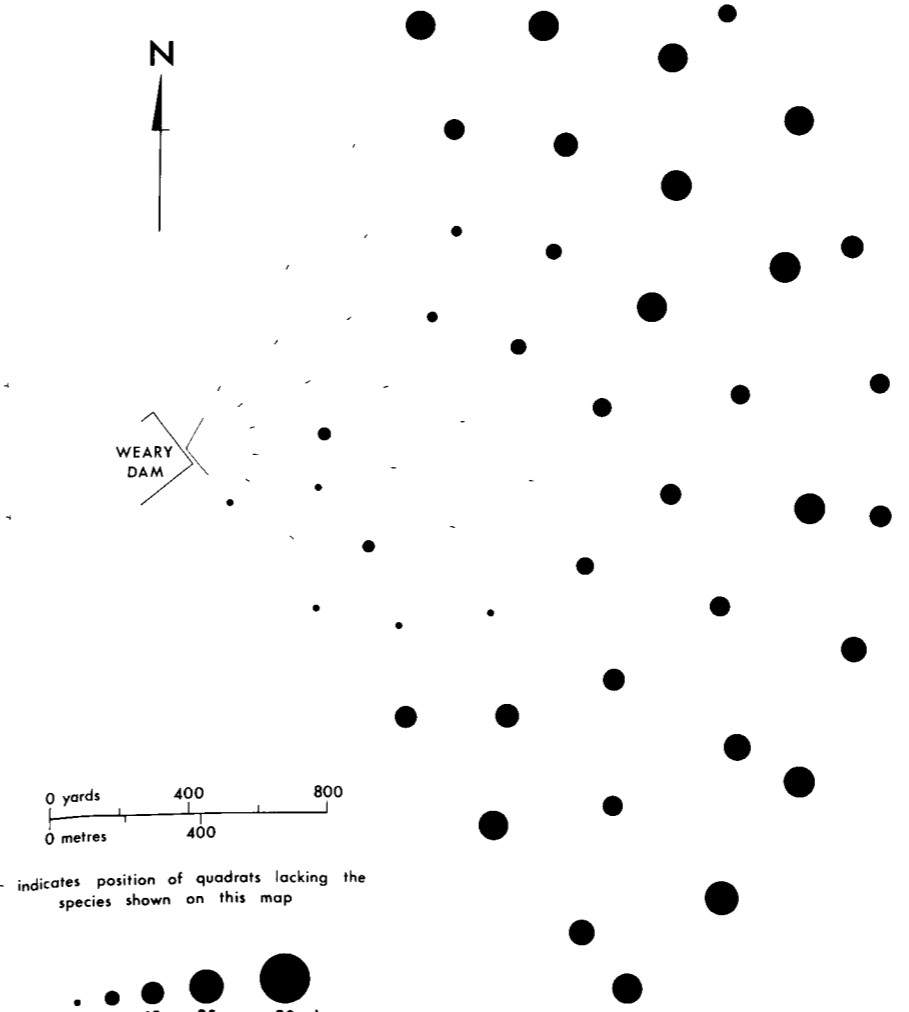
KOCHIA GEORGEI



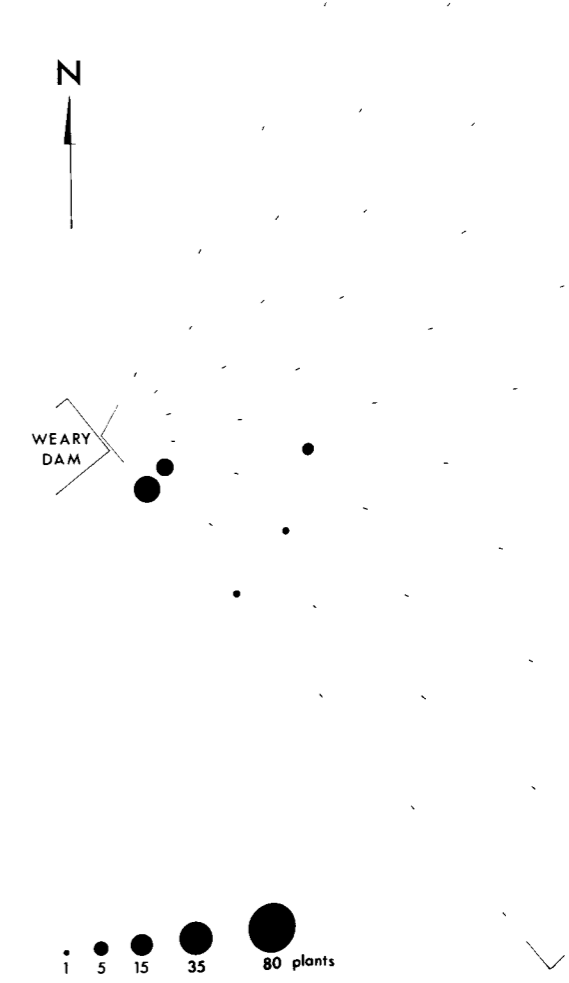
CRATYSTYLIS CONOCEPHALA



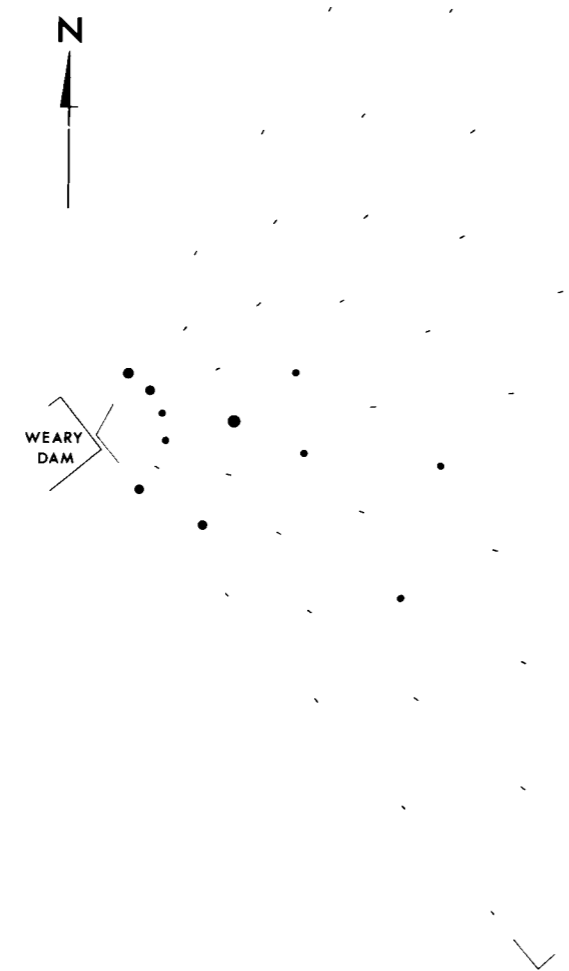
KOCHIA SEDIFOLIA



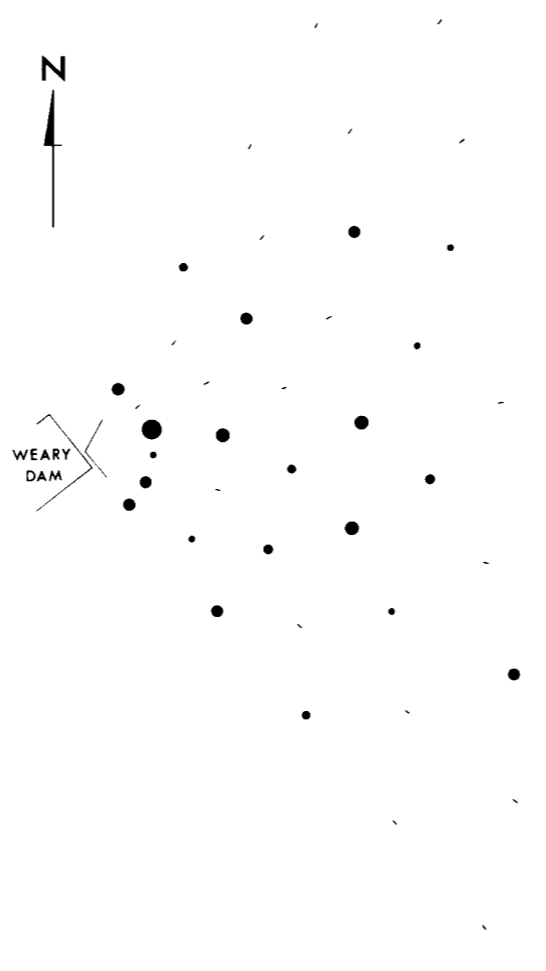
KOCHIA TRIPTERA



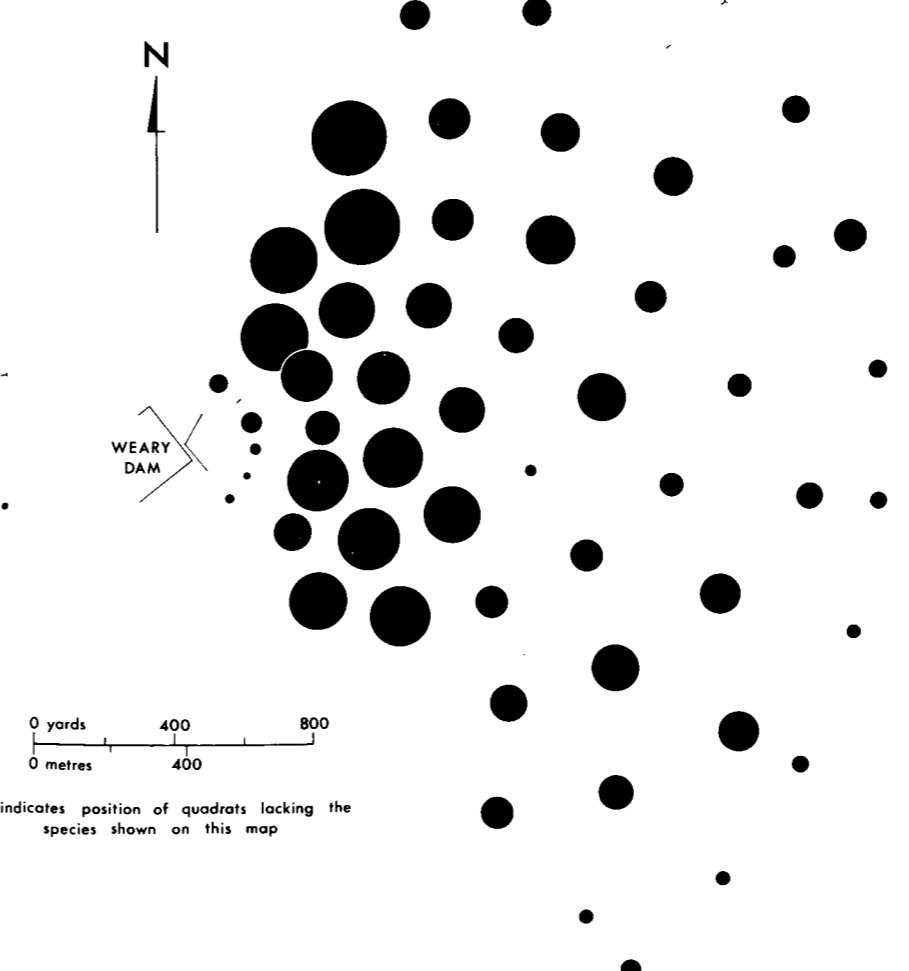
RHAGODIA SPINESCENS



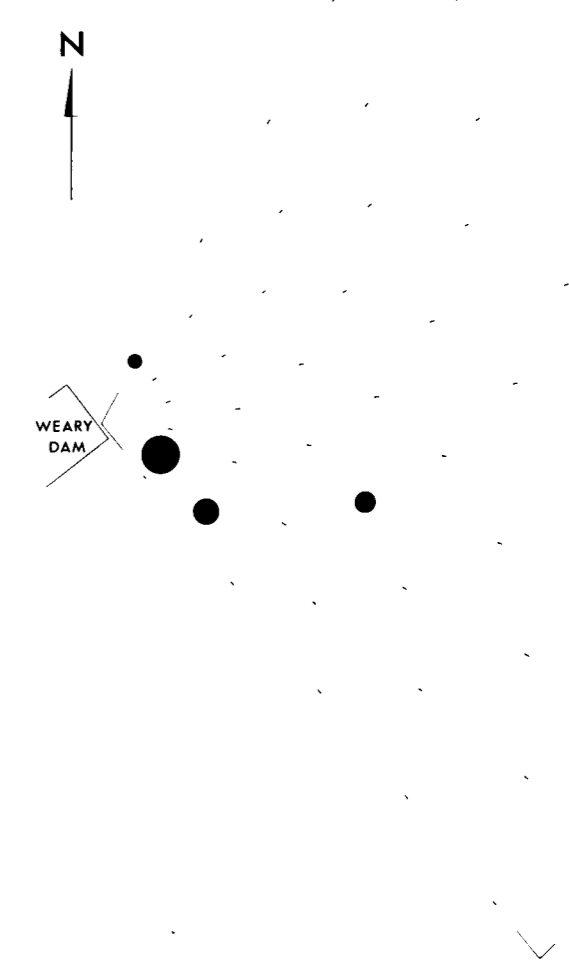
ENCHYLAENA TOMENTOSA



KOCHIA EXCAVATA



BASSIA PARADOXA



MAP 10.

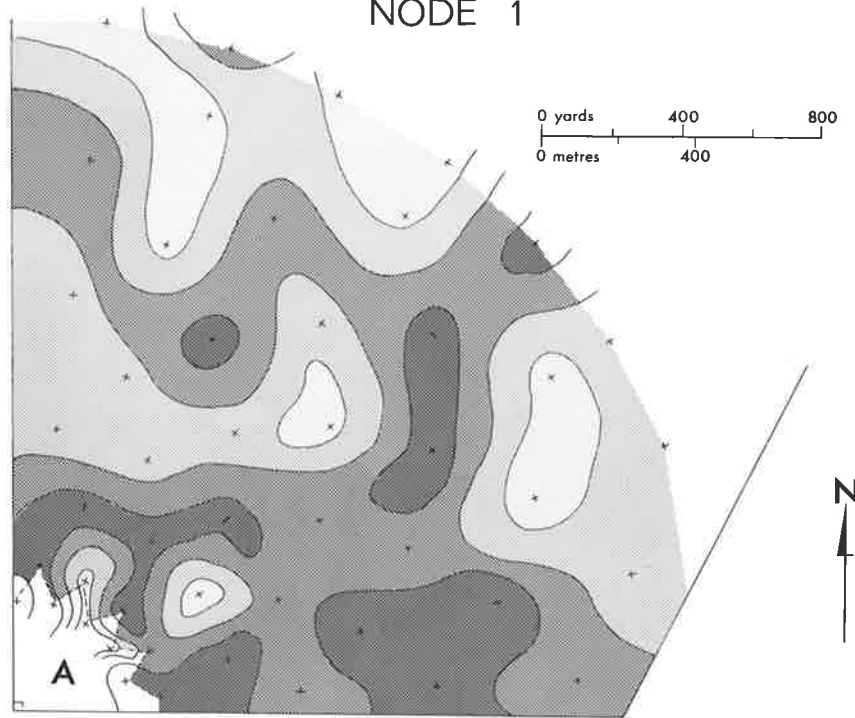
Ki Ki Trough: results of influence analysis

Node 1 - Isotels

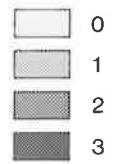
*NOTE:-* In this Map and all subsequent ones which show either density, incidence or isotel layout, details of the inner biosphere area are shown at an enlarged scale as insets. These insets generally appear below the main plan, and their position in the main plan is indicated by an initial. Where either inset or the main plan is not shown, plant populations or vegetation pattern in these areas may be taken as negligible.

The quadrats joined by dotted lines are the same in both inset and main plan; thus there is a degree of overlap, which allows the relationship between the main plan and the inset to be identified.

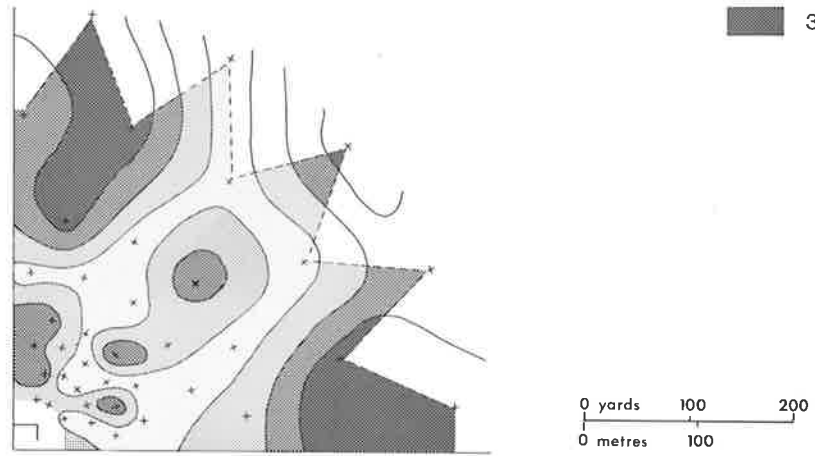
# NODE 1



## INFLUENCE RATINGS



A

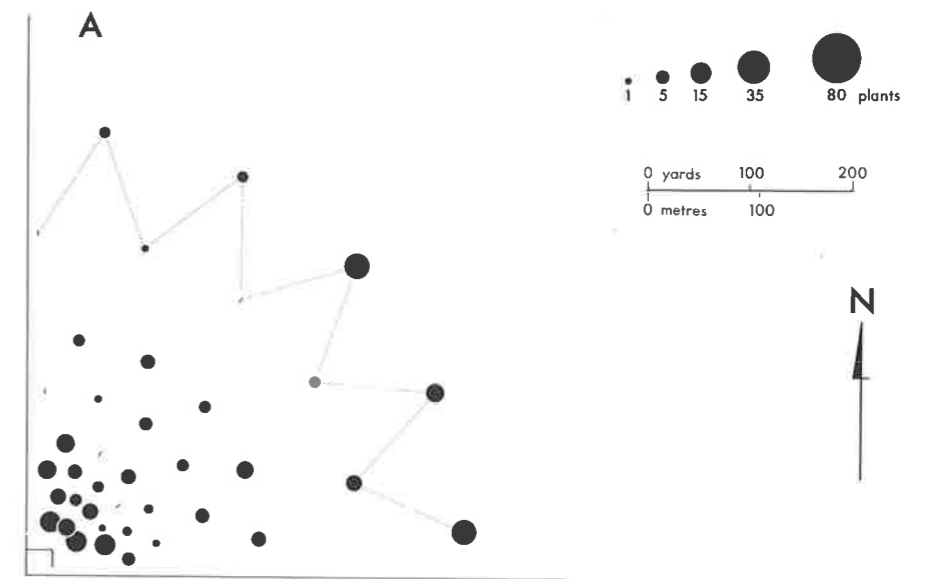
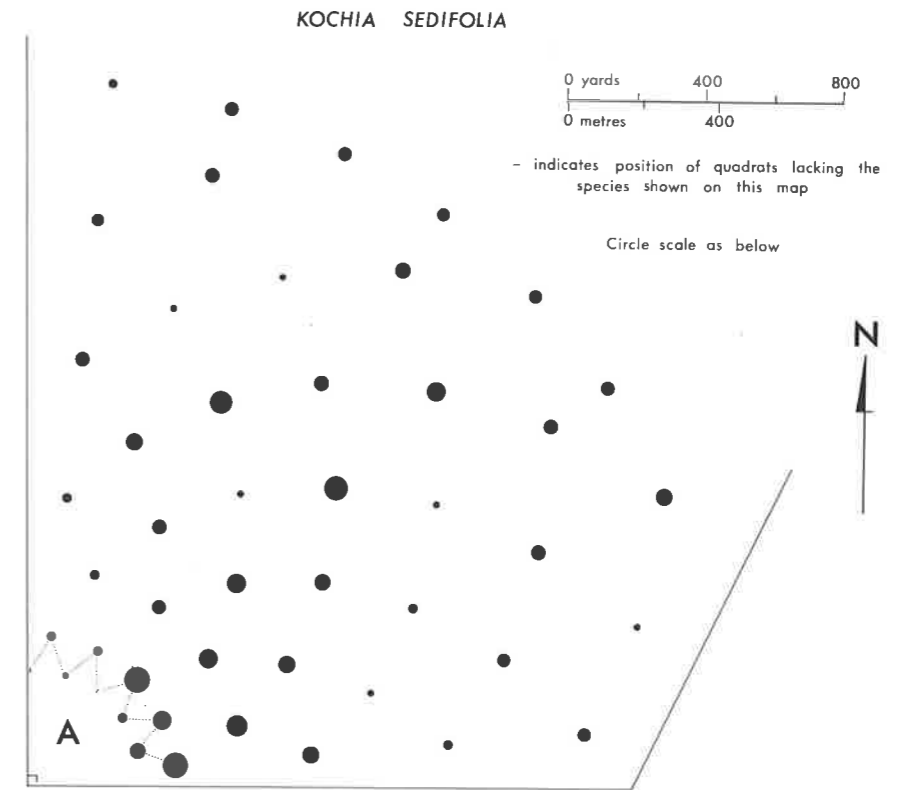
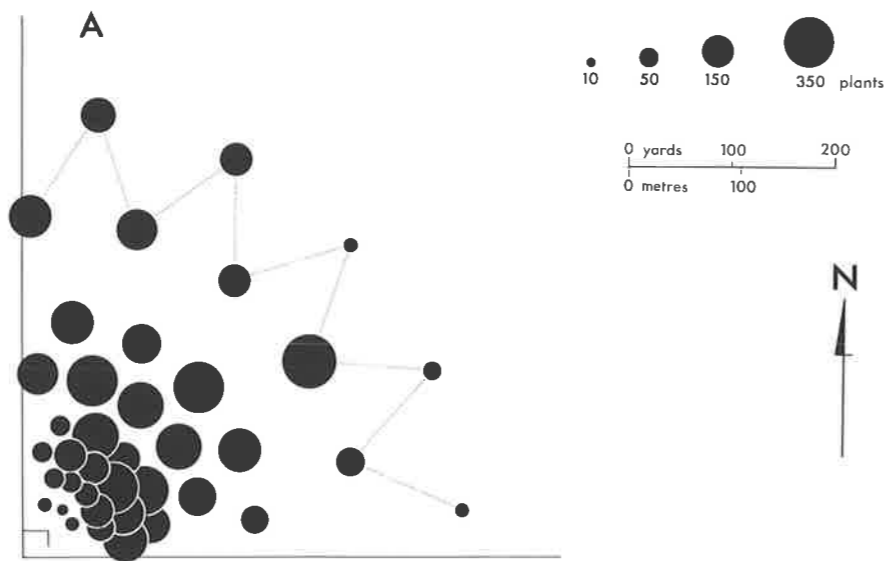
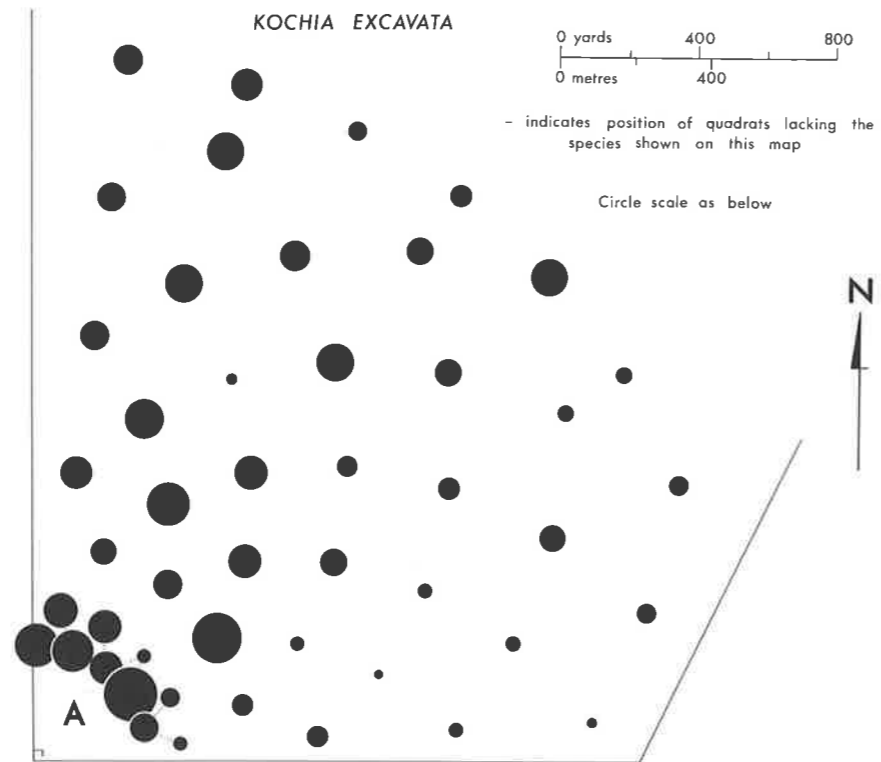


MAP 11

Ki Ki Trough: population densities



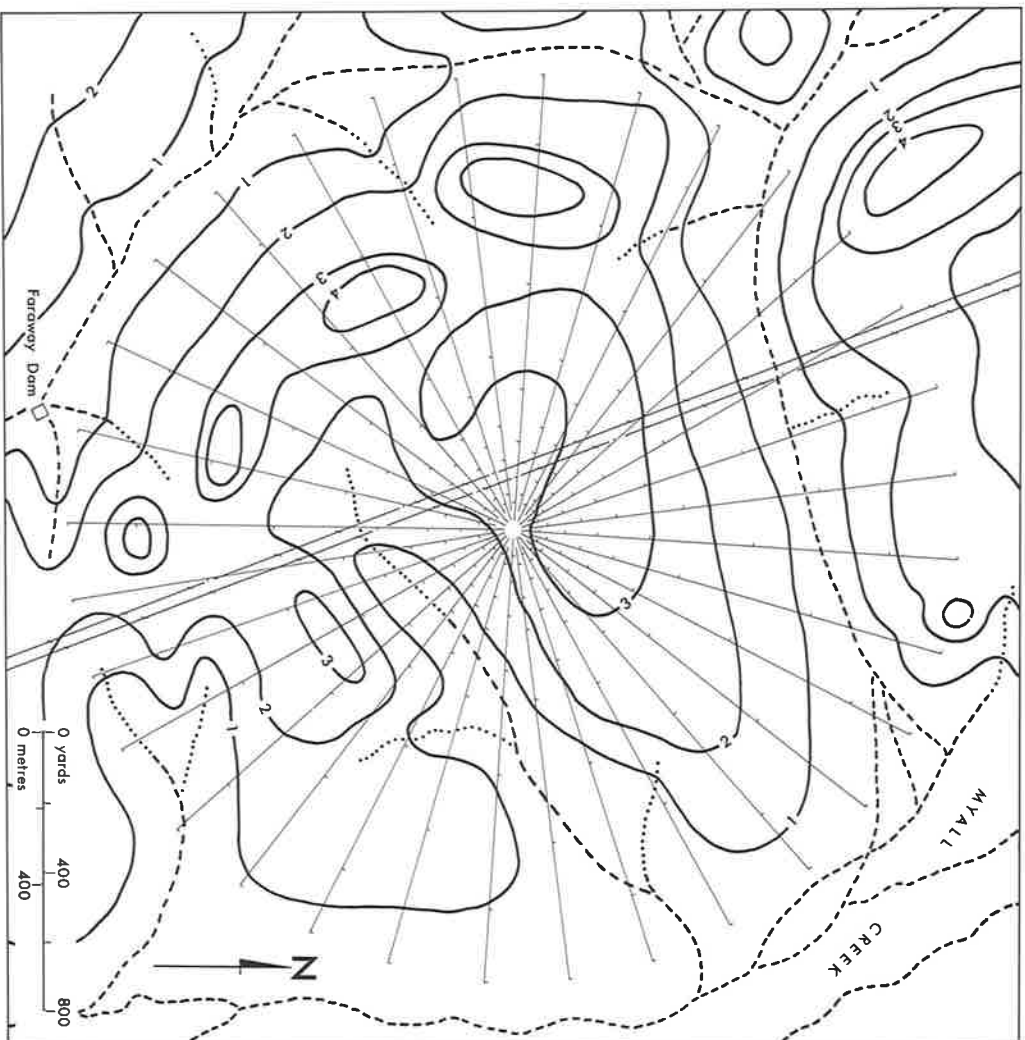




MAP 12

Form-line map of Barrett's Paddock study area

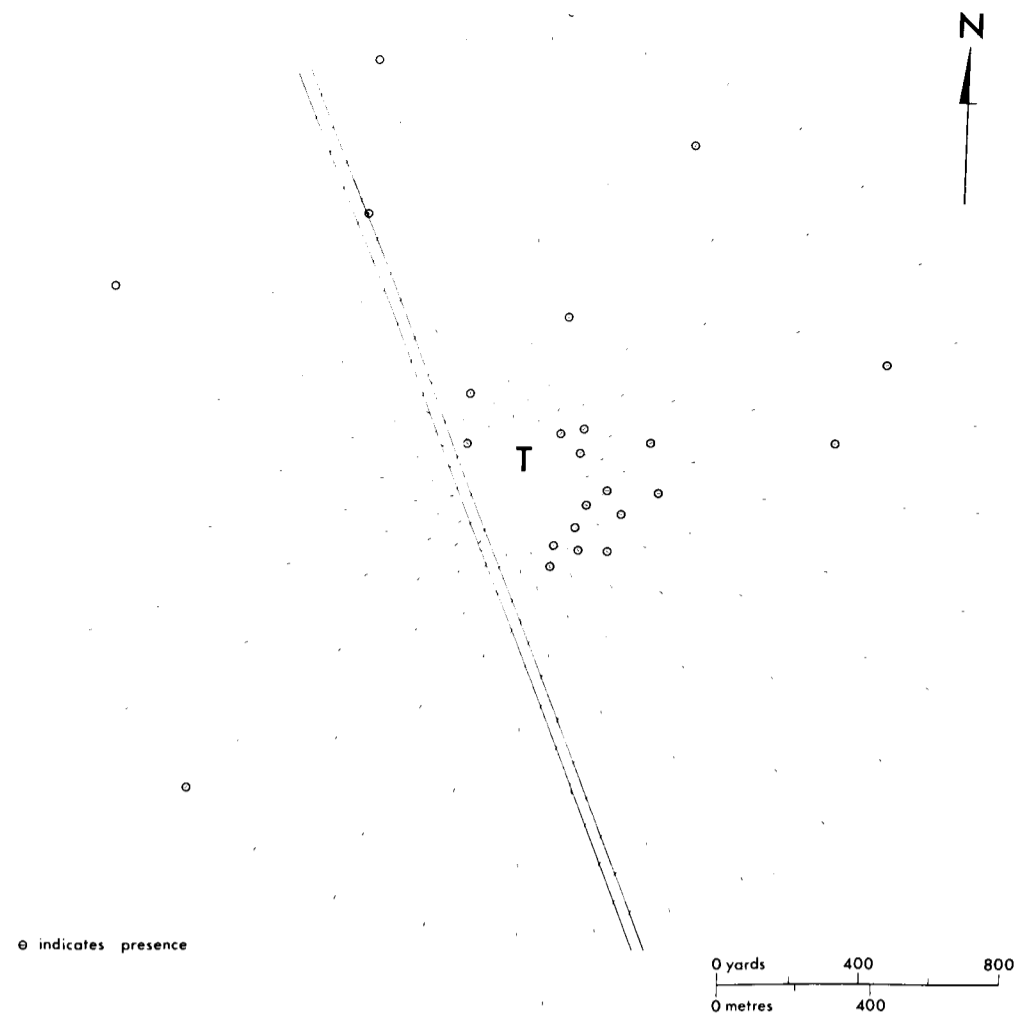
The numbers shown are purely arbitrary and serve only to  
indicate the direction of slope



MAP 13

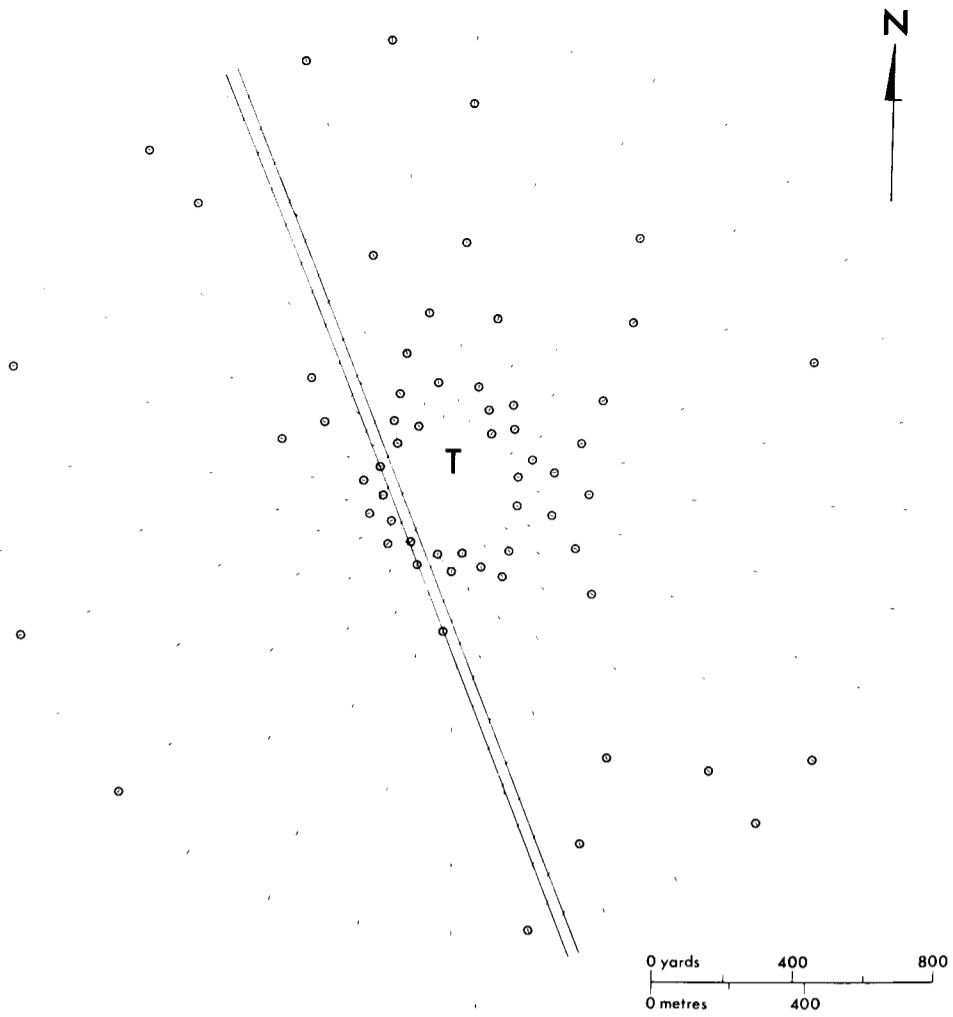
Barrett's Trough: incidence of some important species

BASSIA PATENTICUSPIS

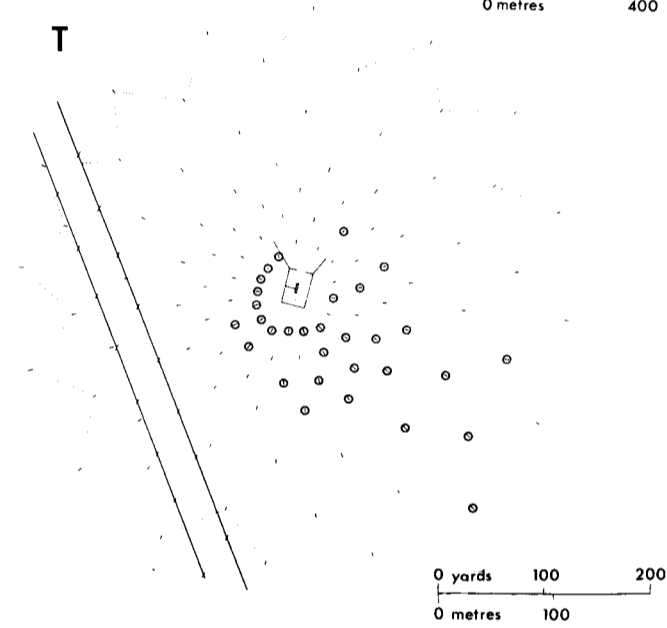
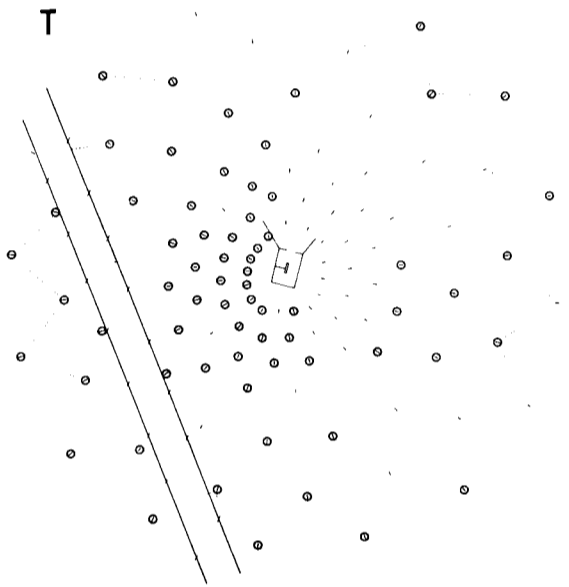
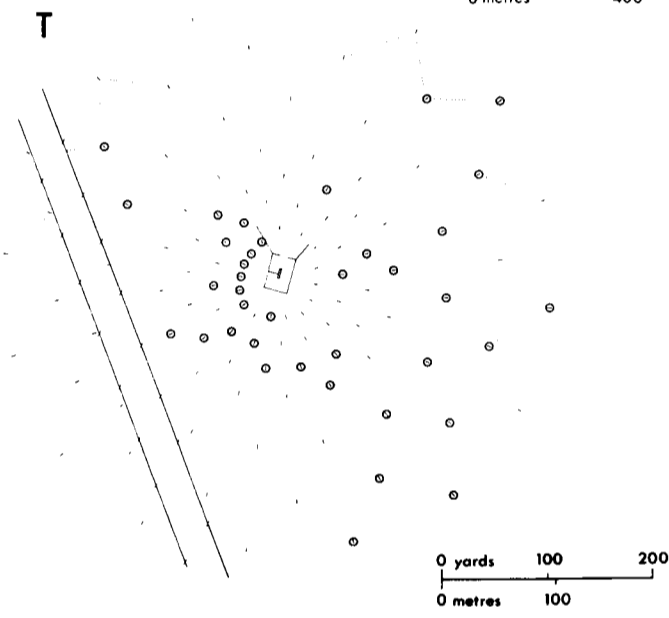
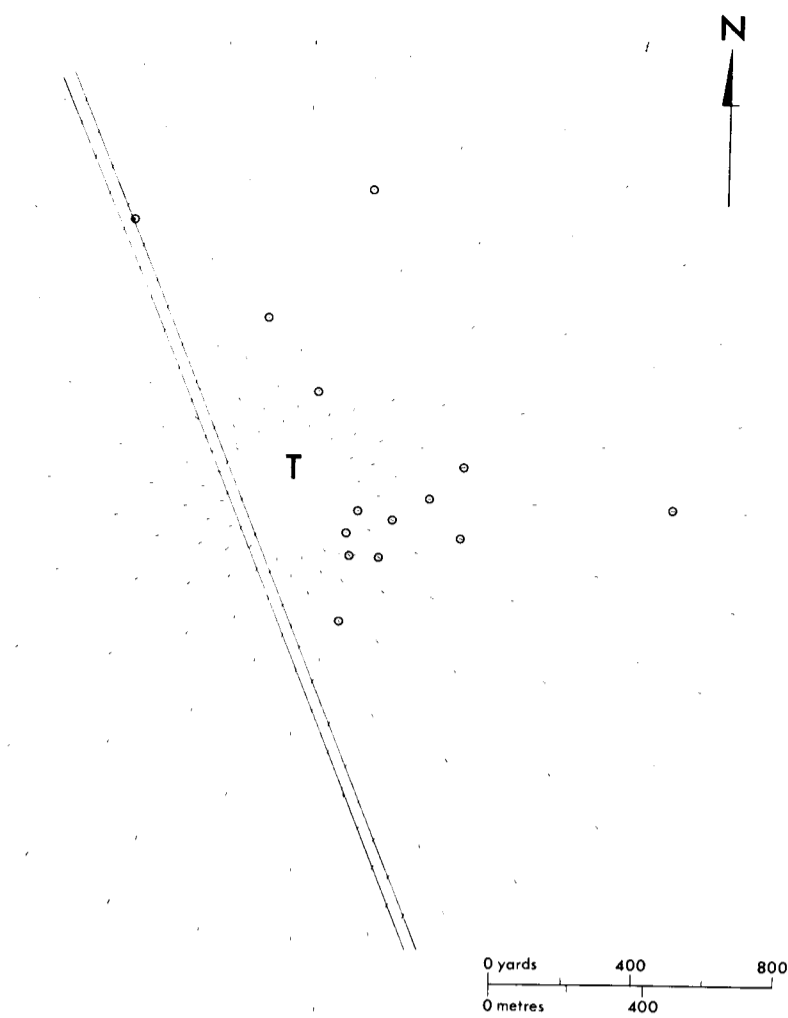


○ indicates presence

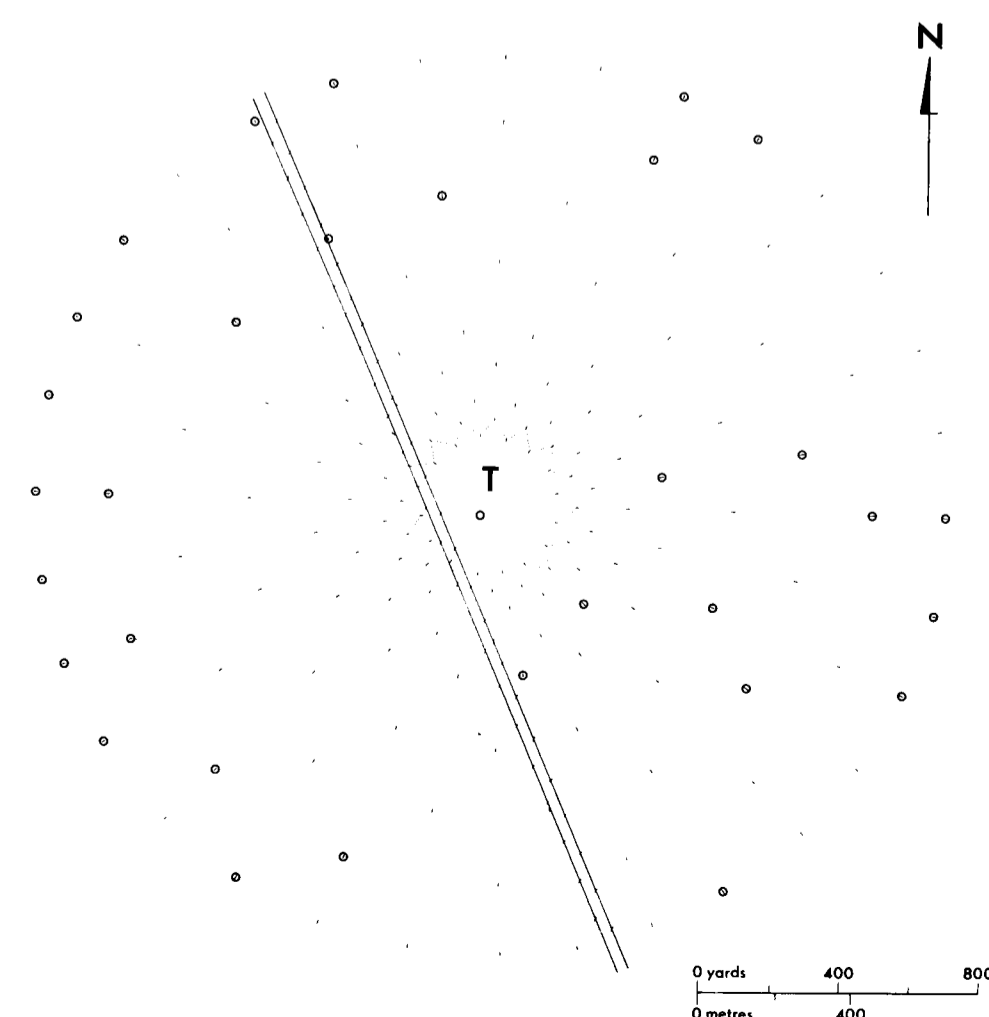
BASSIA SCLEROLAENOIDES



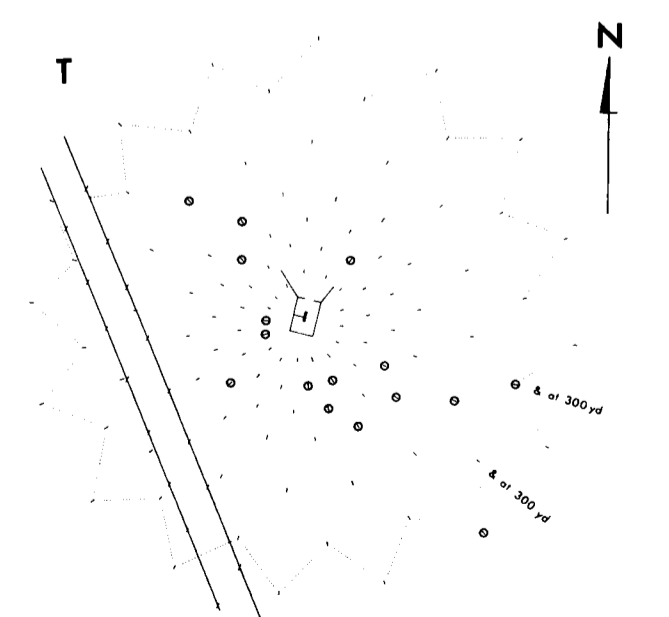
BASSIA PARADOXA



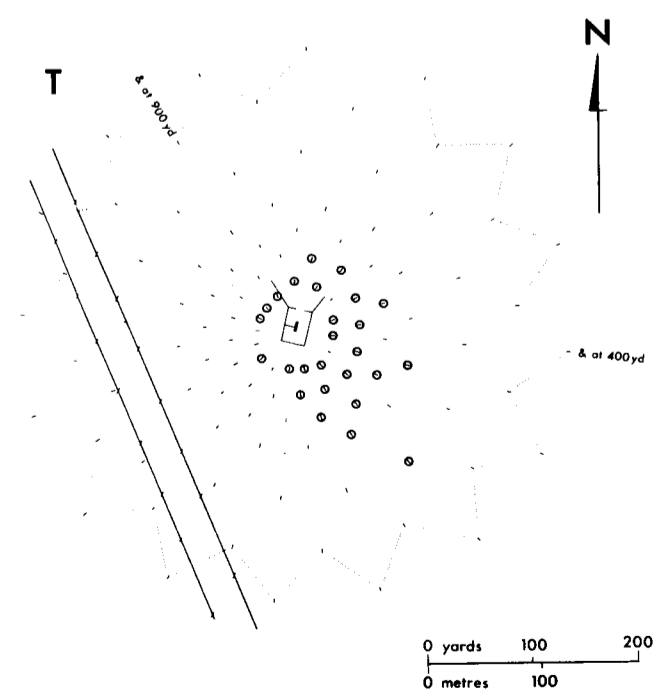
BASSIA BIFLORA



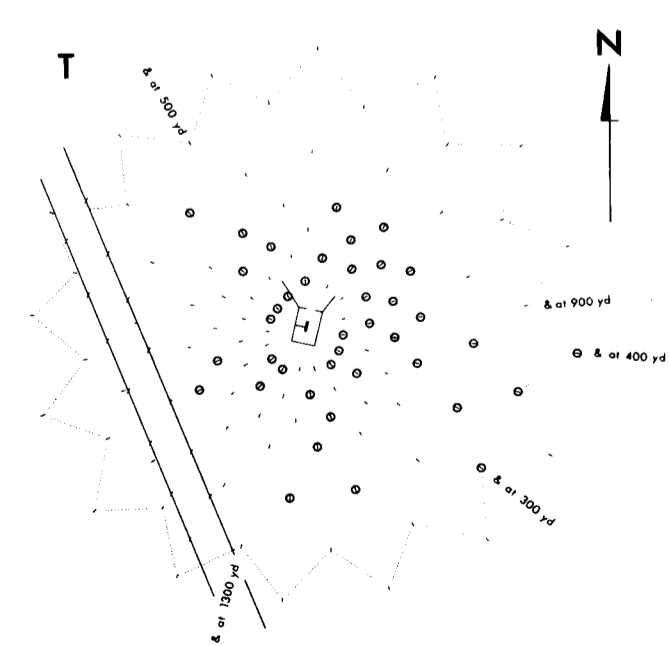
ATRIPLEX EARDLEYAE



KOCHIA BREVIFOLIA



ATRIPLEX SPONGIOSA



0 yards 100 200  
0 metres 100

MAP 14

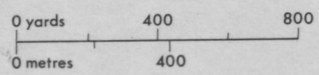
Barrett's Trough: results of influence analysis

Node 1a)  
Node 1b)  
Node 1c) - Isotels  
 )  
Node 2 )

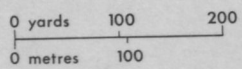
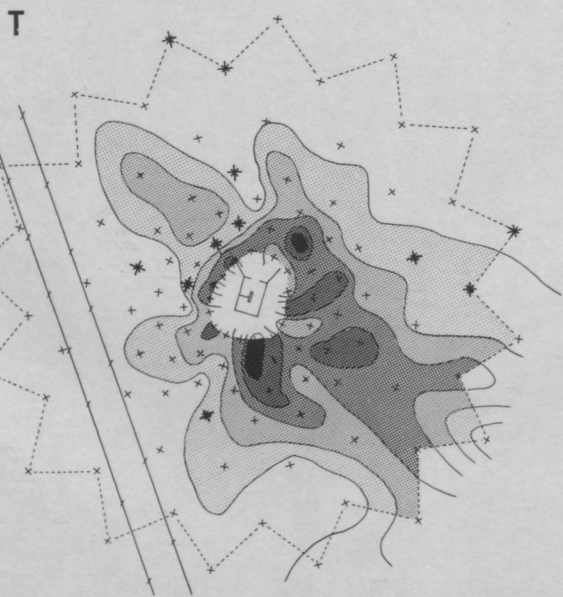
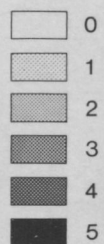
NODE 1a



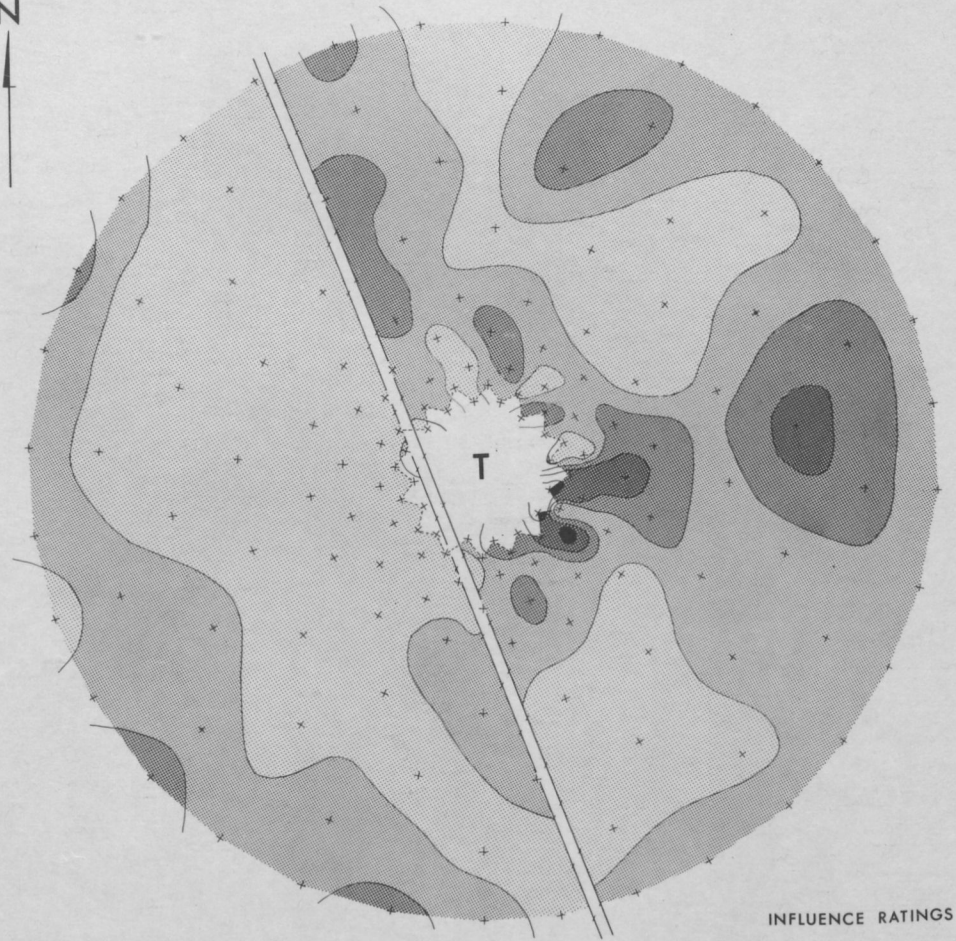
\* indicates position of quadrats lacking the species of this Node



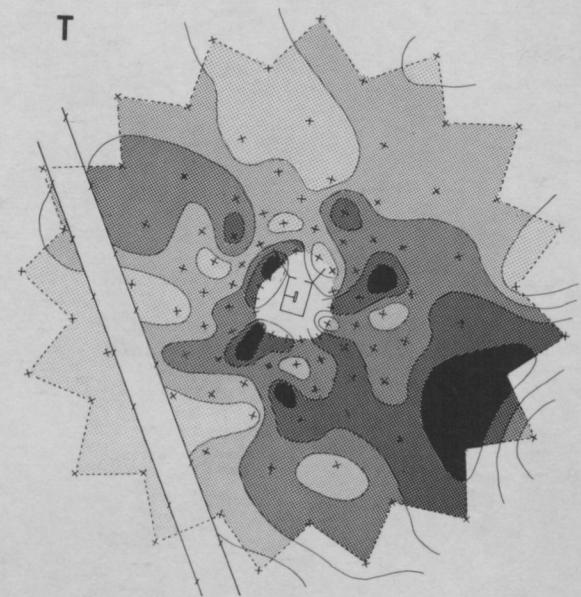
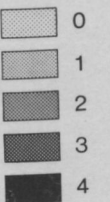
INFLUENCE RATINGS



NODE 1b

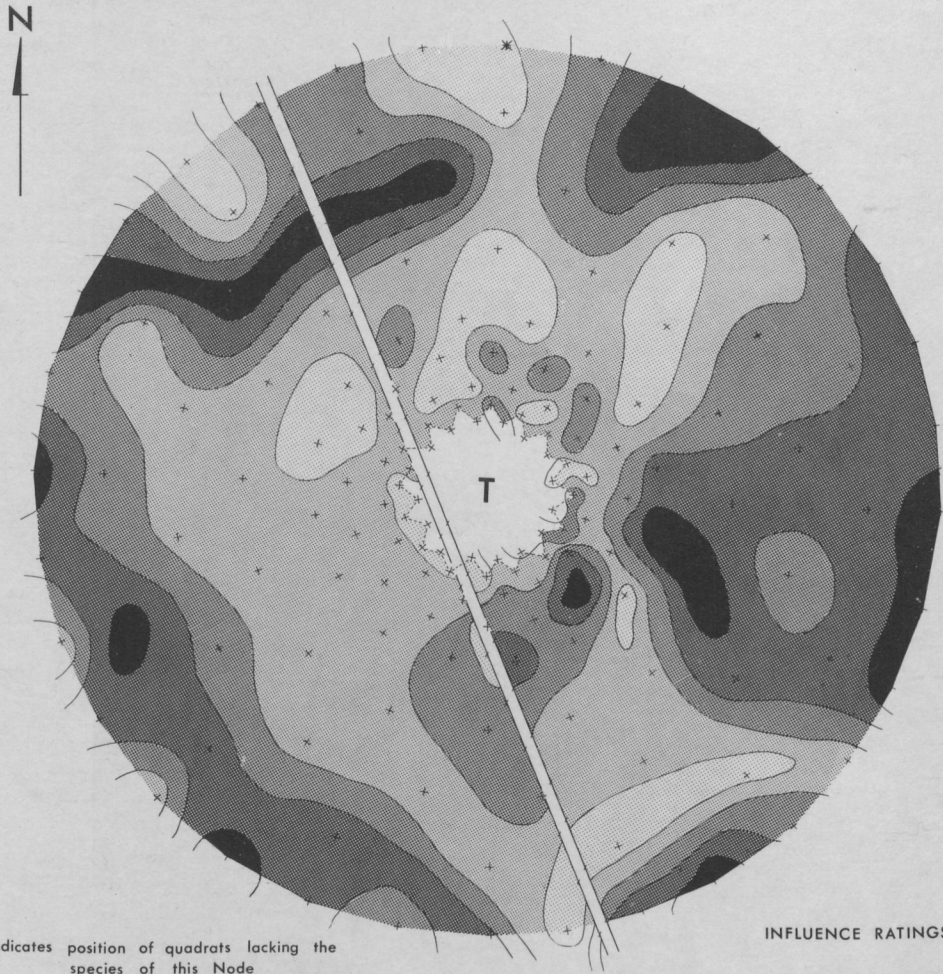


INFLUENCE RATINGS



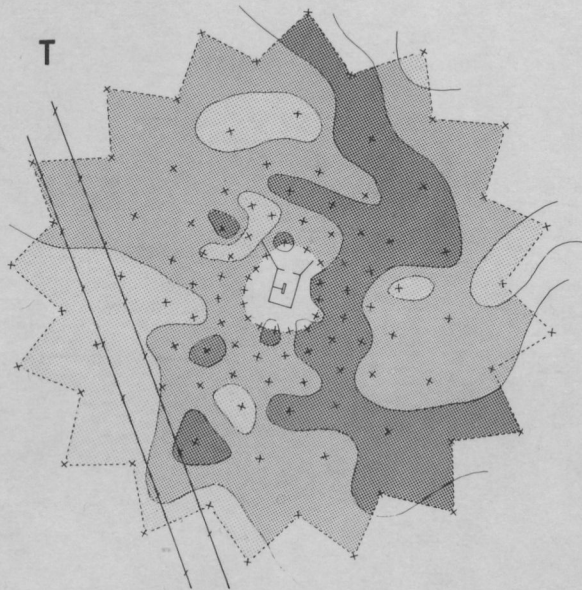
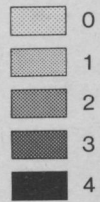


NODE 1c

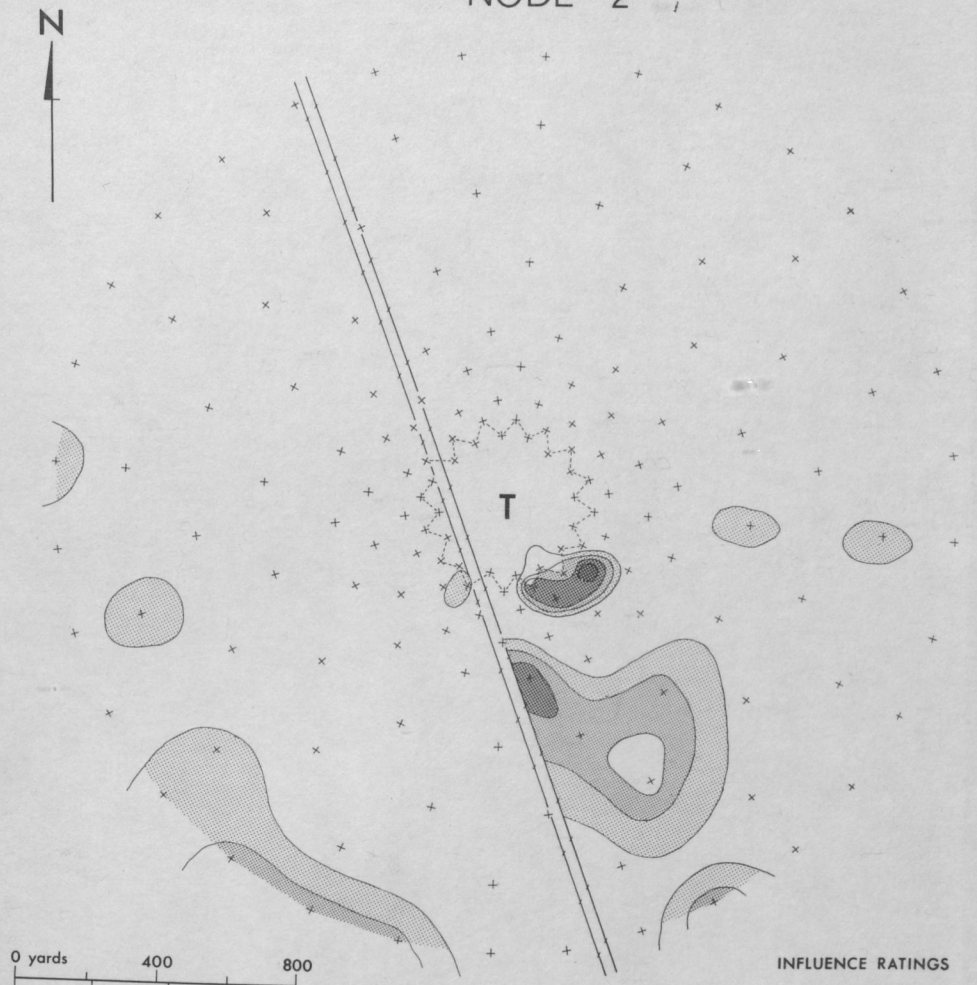


\* indicates position of quadrats lacking the species of this Node

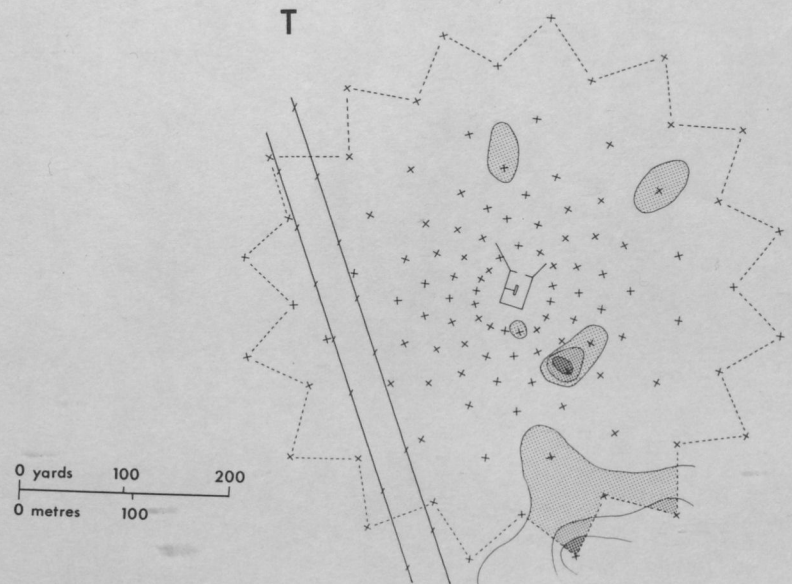
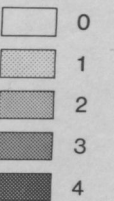
INFLUENCE RATINGS



NODE 2

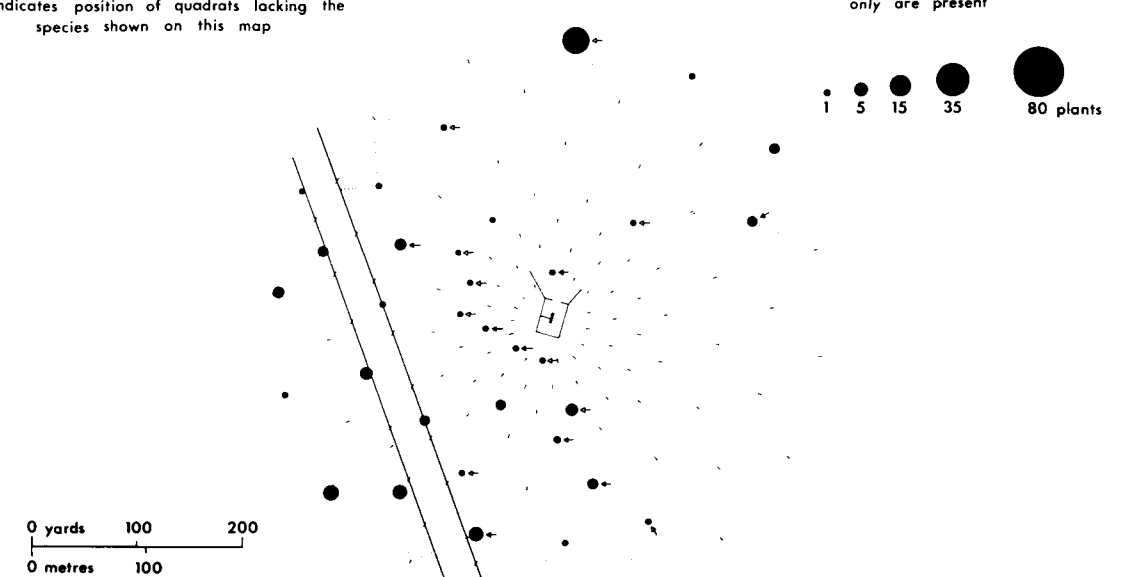
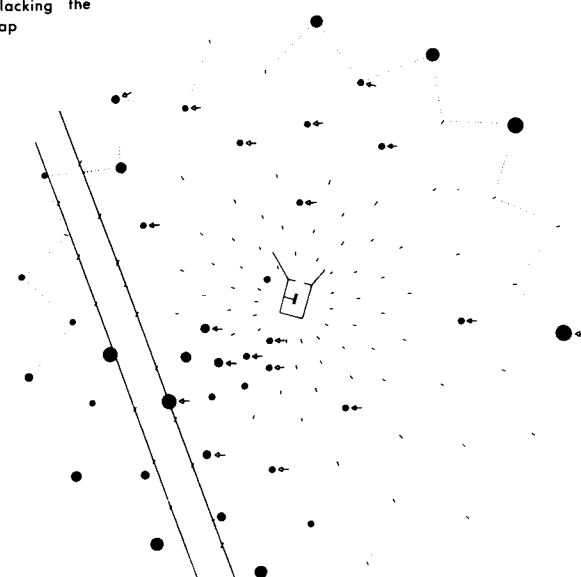
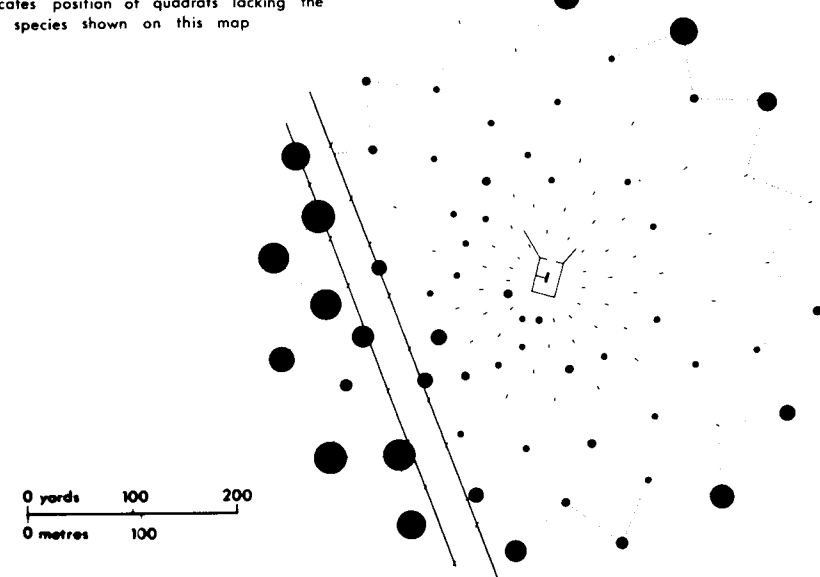
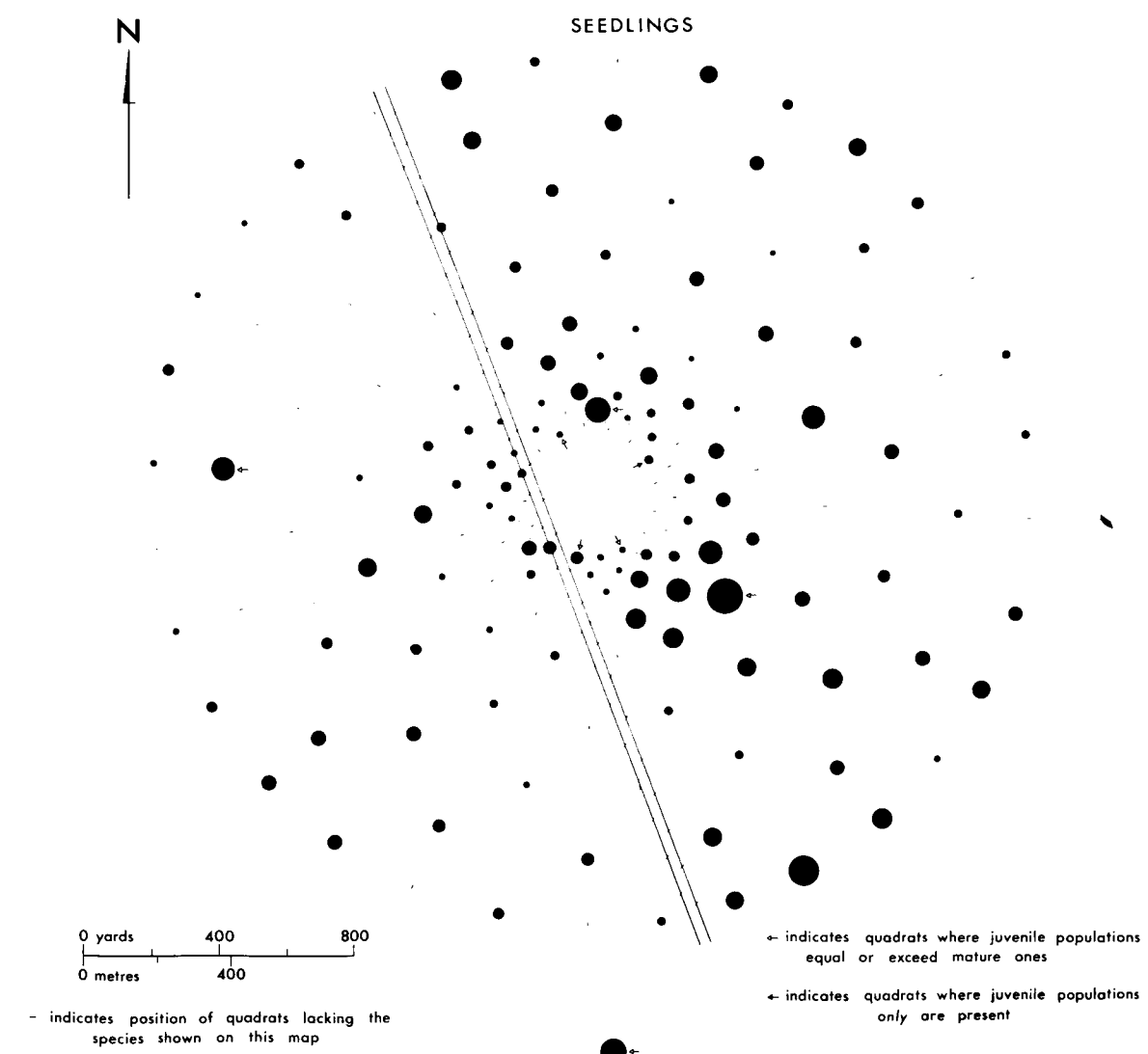
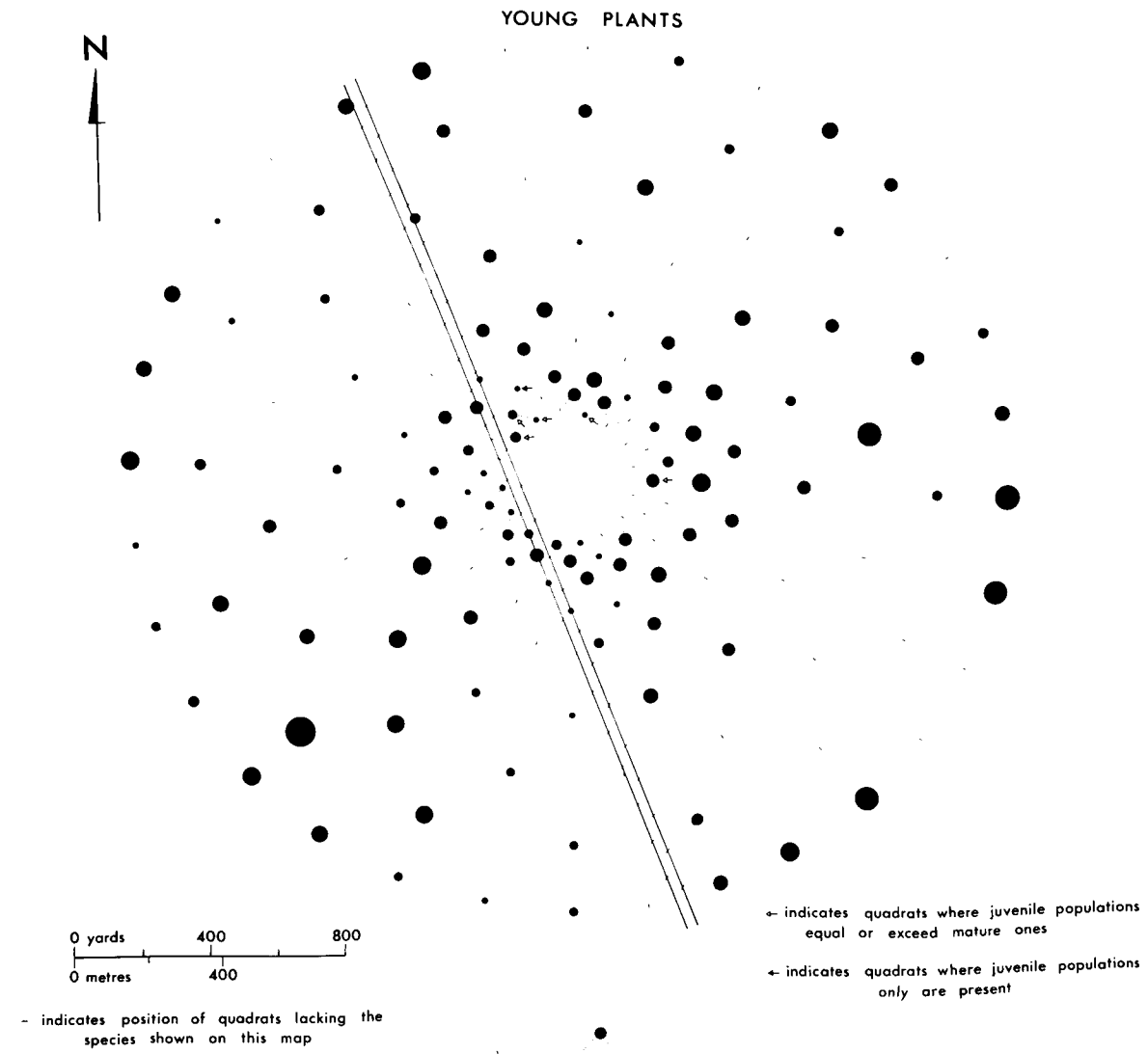
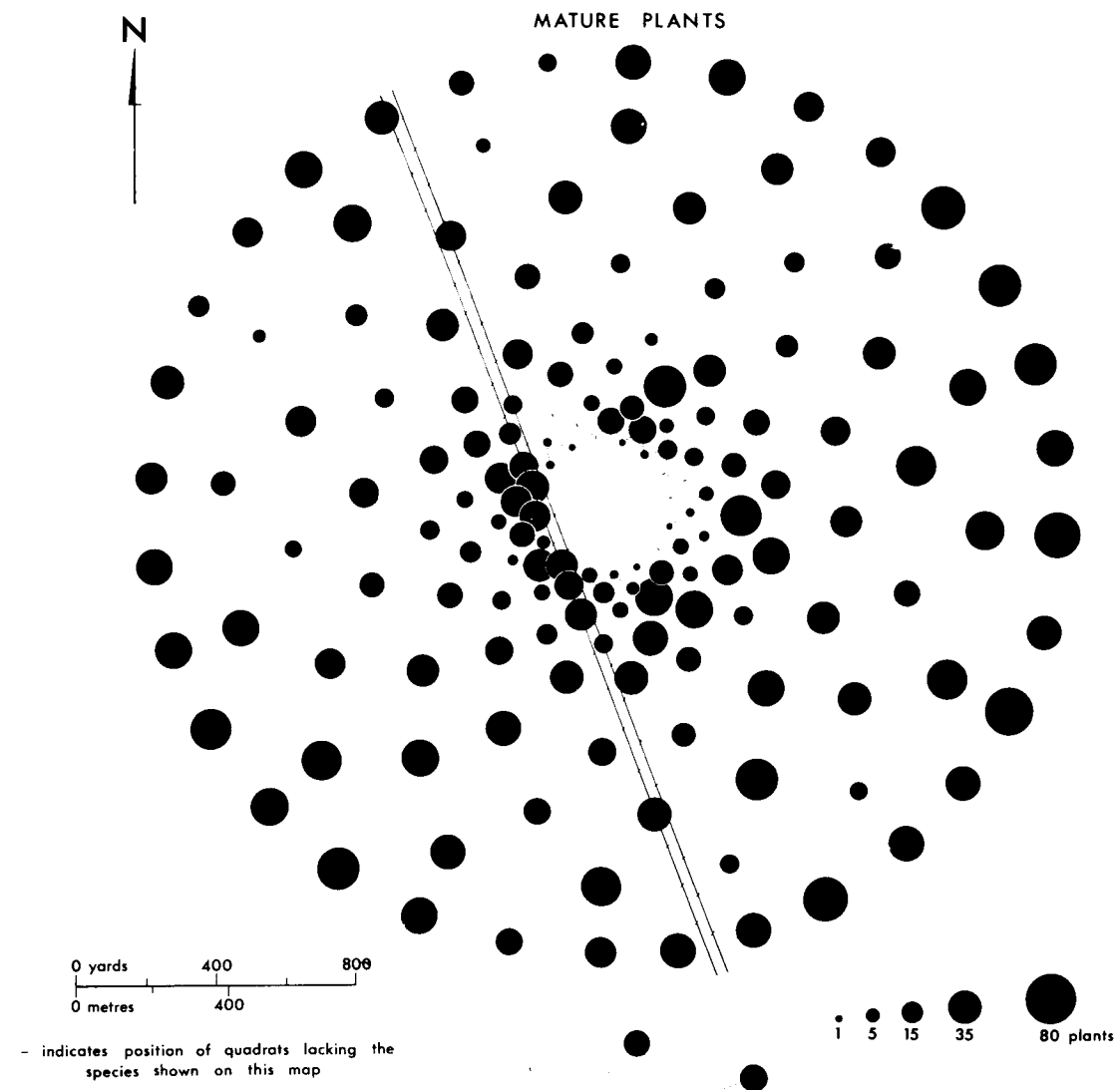


INFLUENCE RATINGS



MAP 15

Barrett's Trough: population densities of *Atriplex vesicaria*

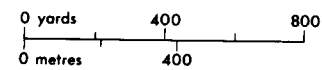
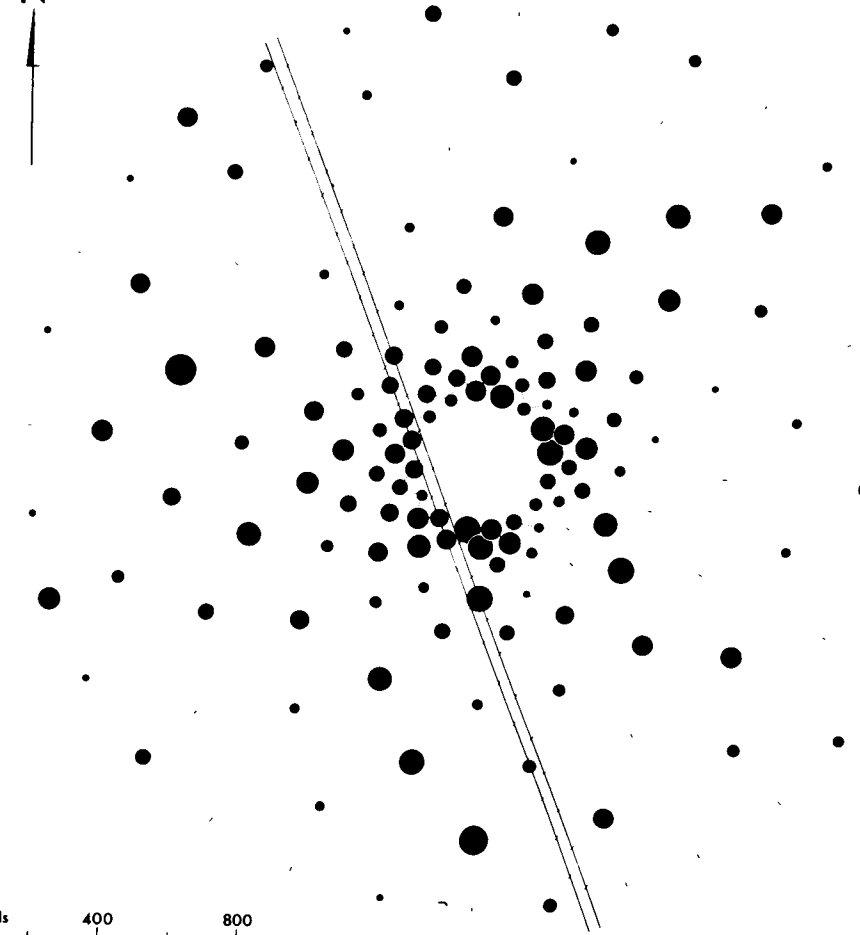


MAP 16

Barrett's Trough: population densities of *Kochia sedifolia*



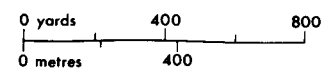
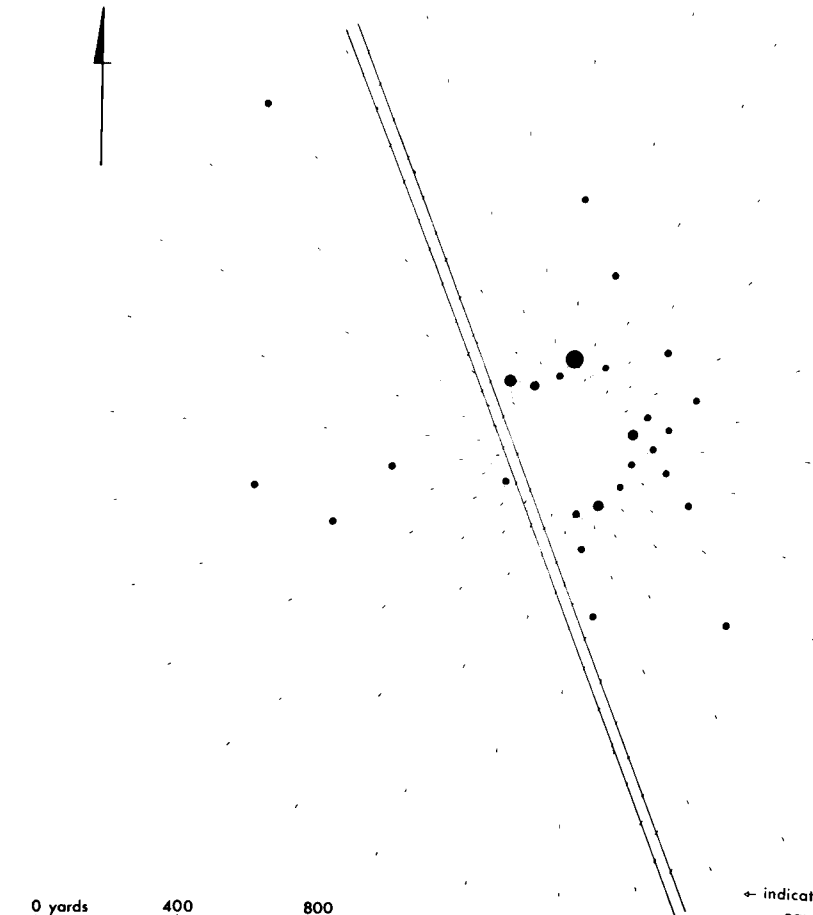
MATURE PLANTS



- indicates position of quadrats lacking the species shown on this map



YOUNG PLANTS



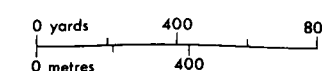
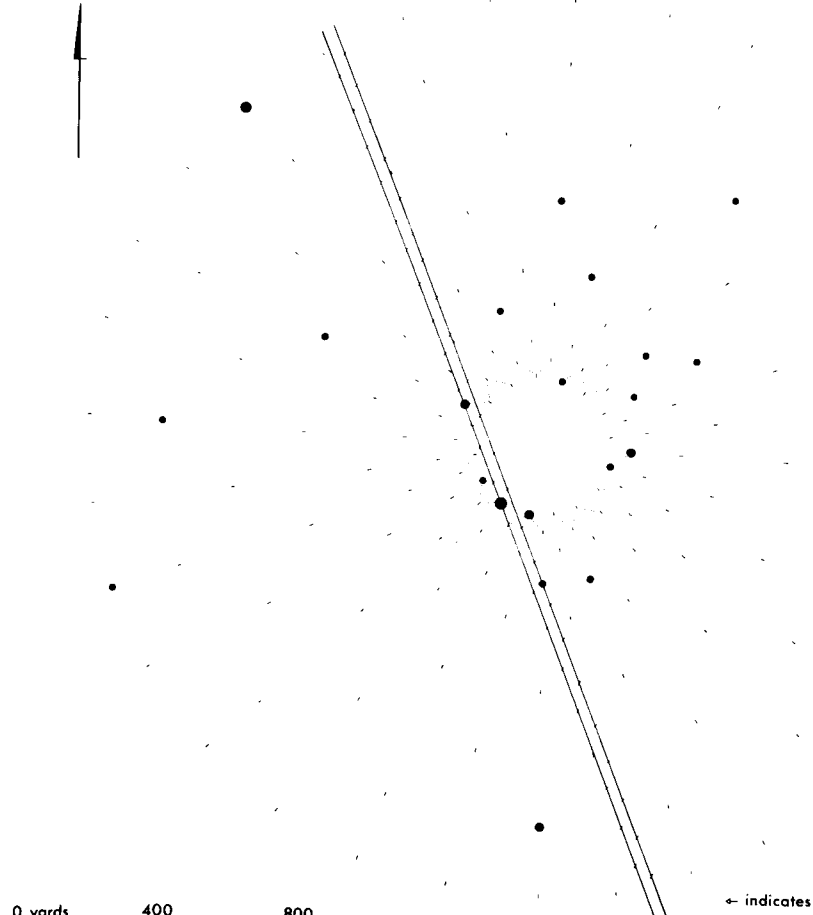
- indicates position of quadrats lacking the species shown on this map

← indicates quadrats where juvenile populations equal or exceed mature ones

← indicates quadrats where juvenile populations only are present



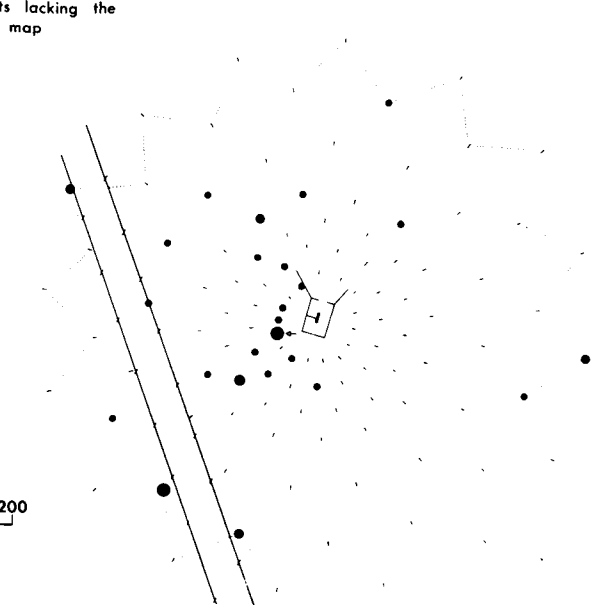
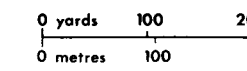
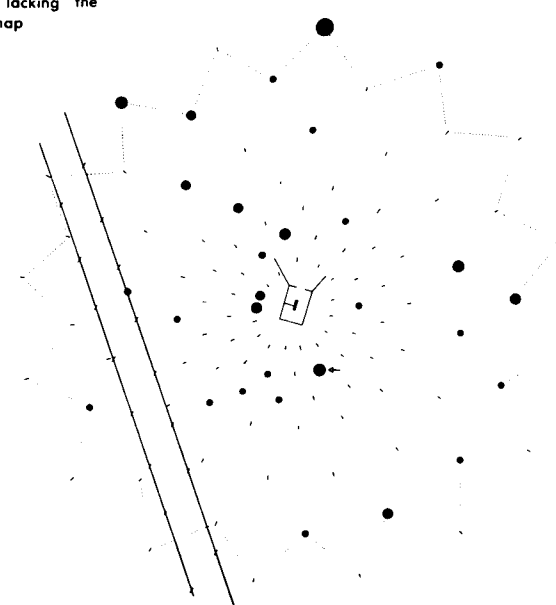
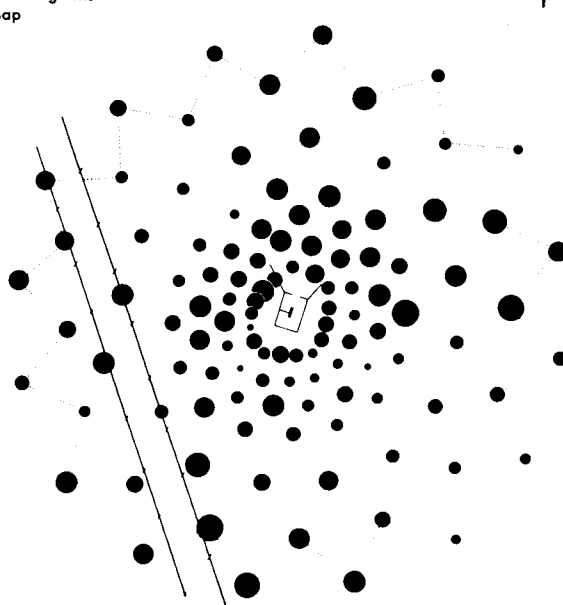
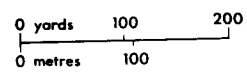
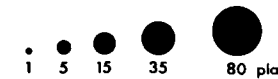
SEEDLINGS



- indicates position of quadrats lacking the species shown on this map

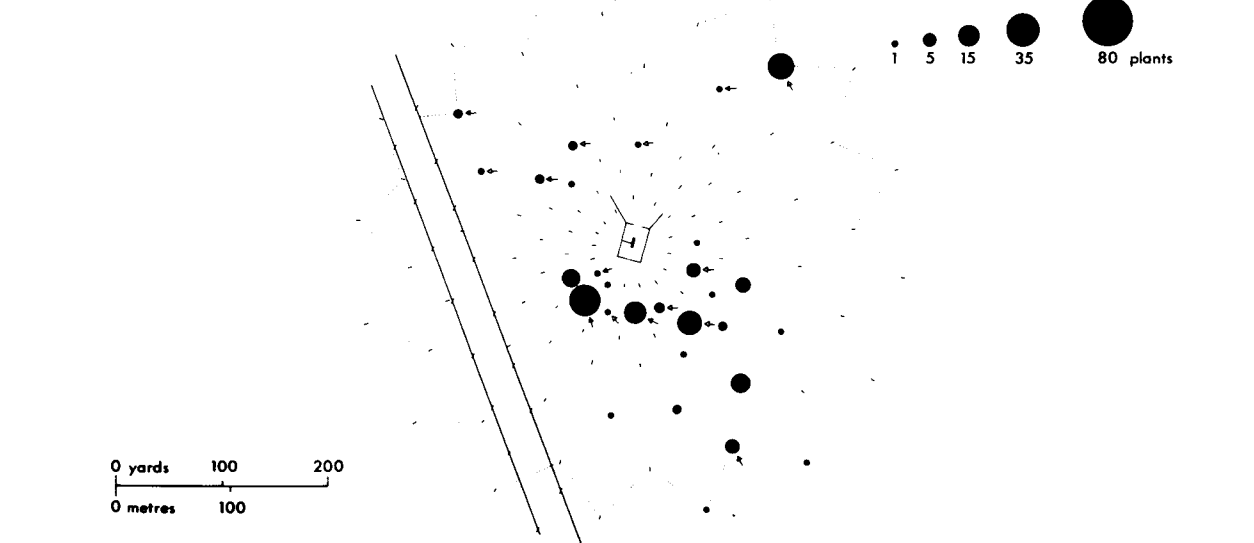
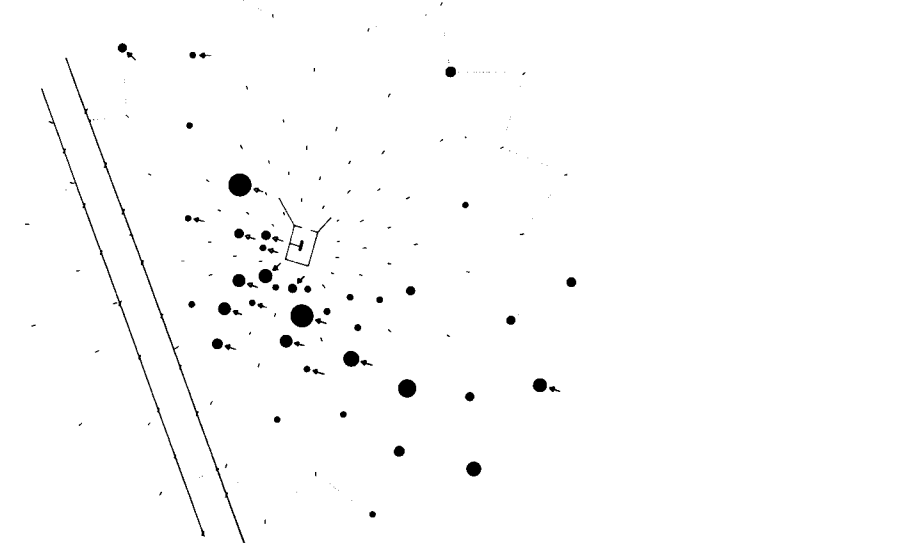
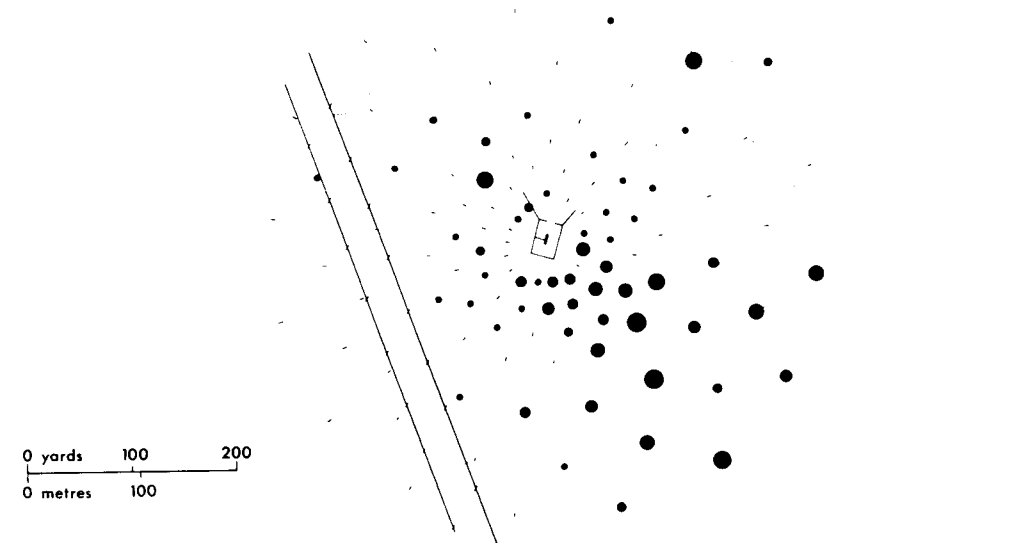
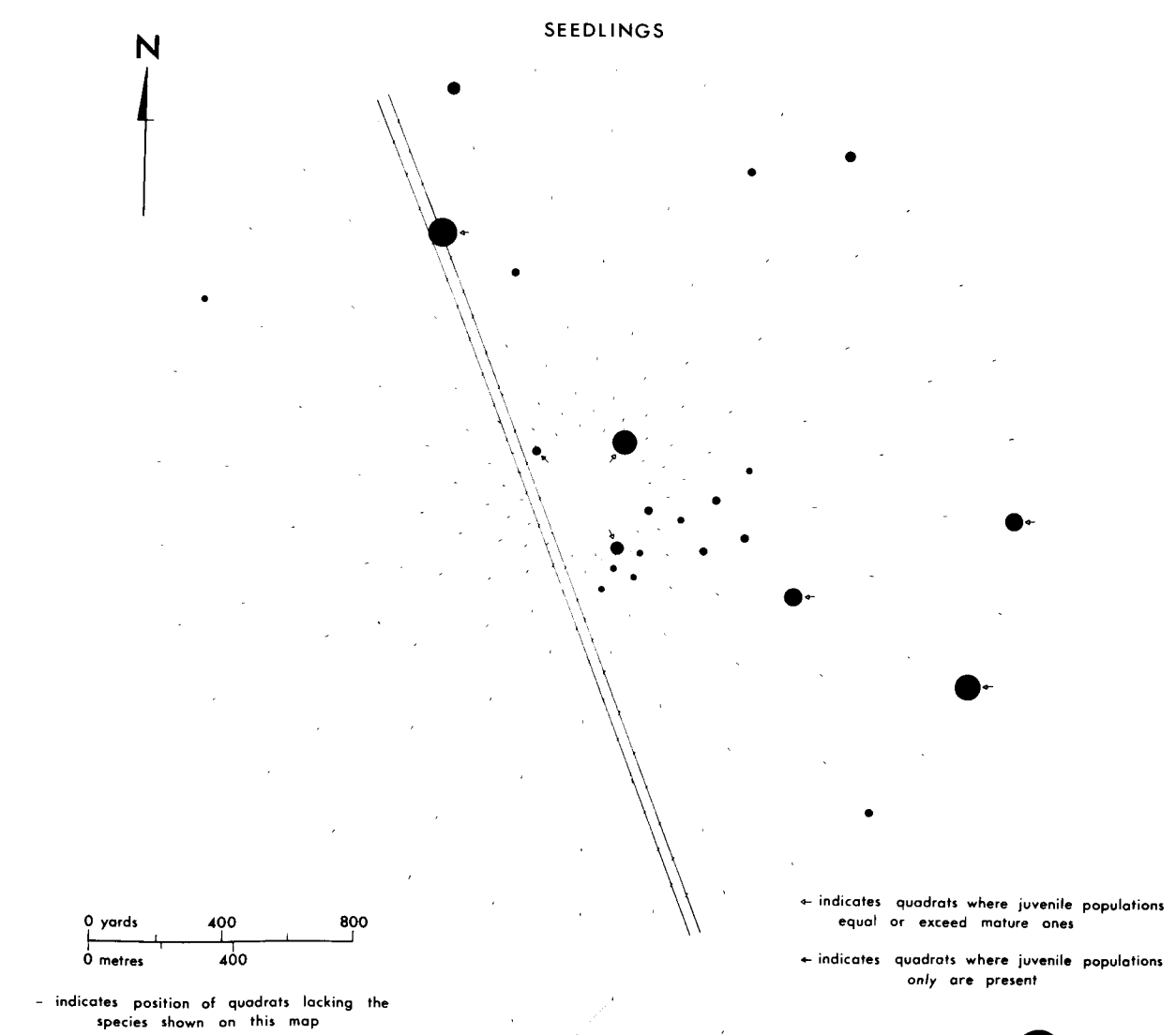
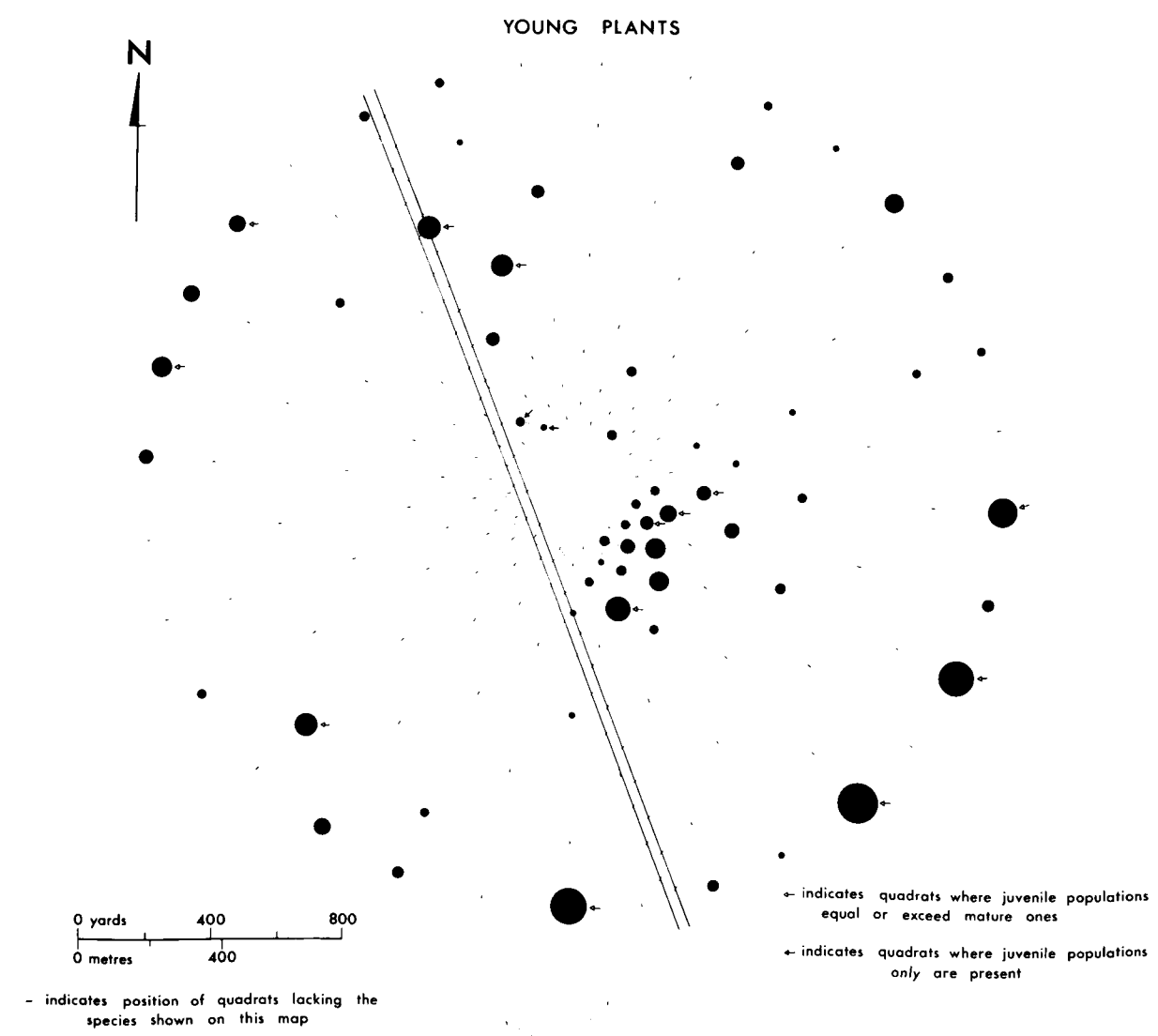
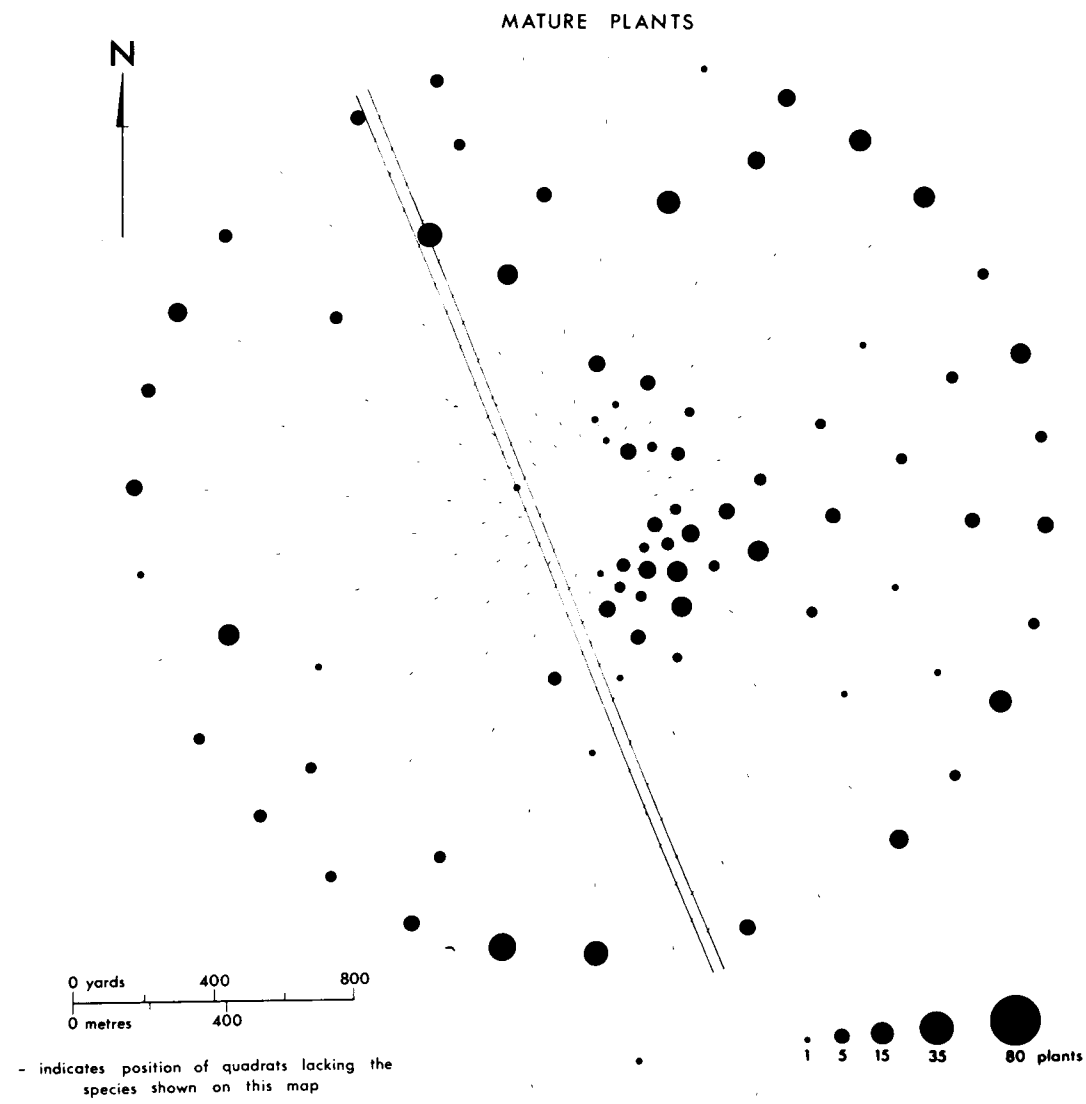
← indicates quadrats where juvenile populations equal or exceed mature ones

← indicates quadrats where juvenile populations only are present



MAP 17

Barrett's Trough: population densities of *Kochia pyramidata*

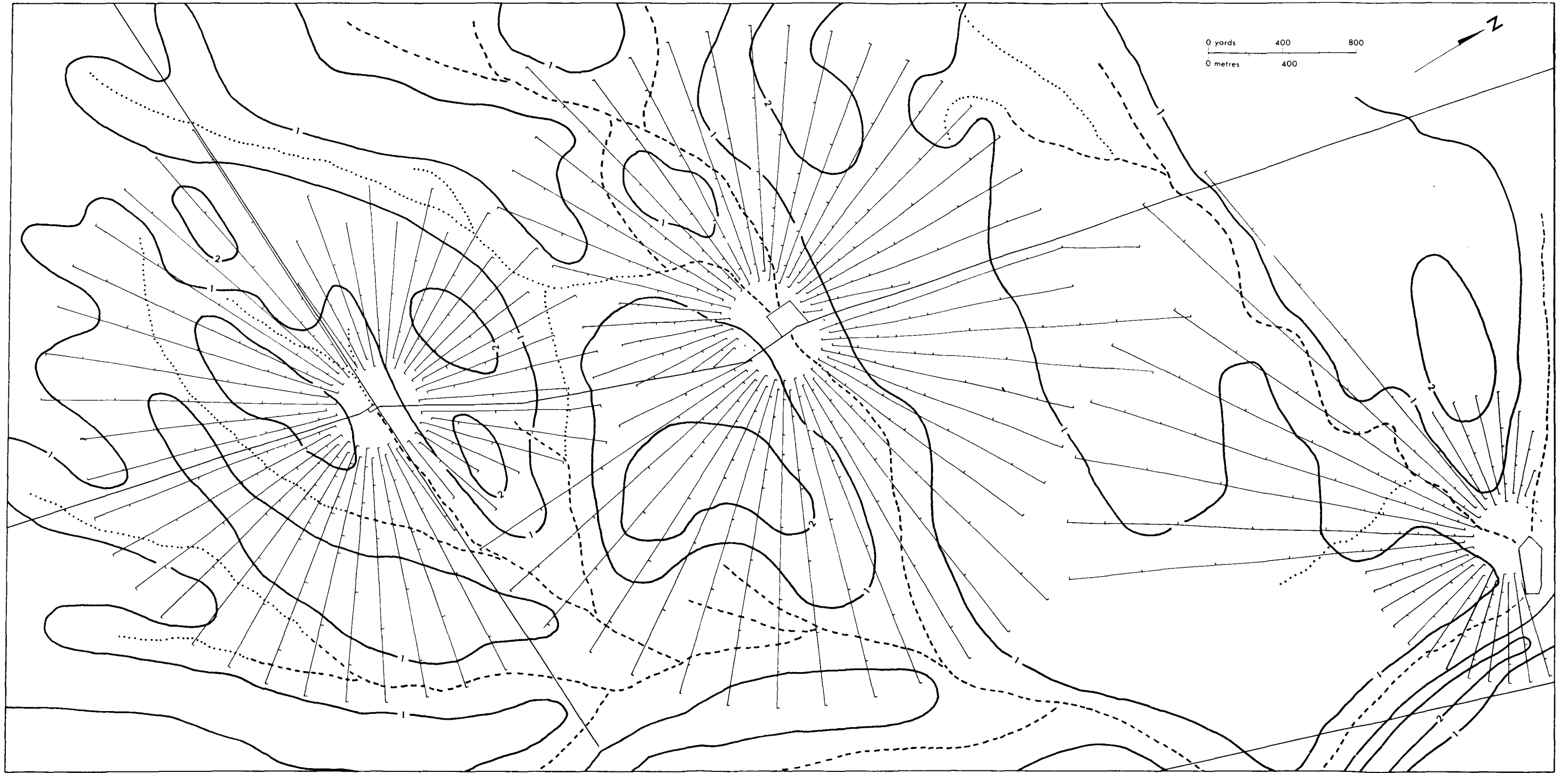


MAP 18

Form-line map of Two-Mile - Winter Flat study area

The numbers shown are purely arbitrary and serve only to  
indicate the direction of slope

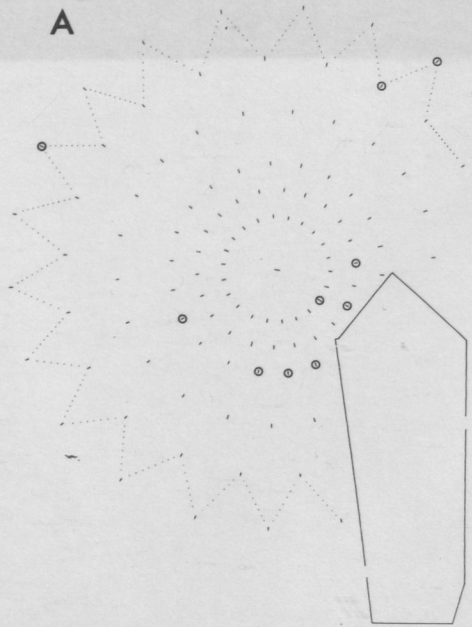
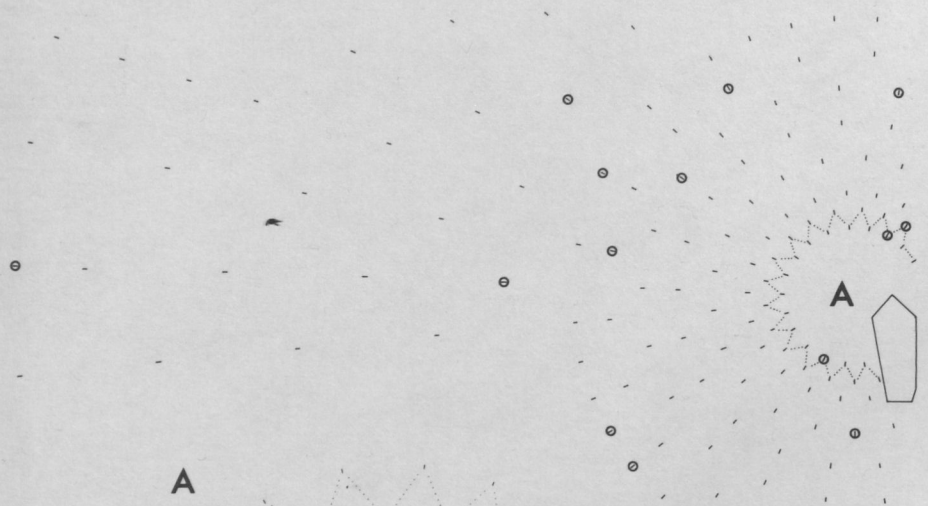
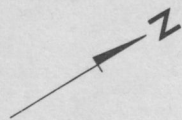
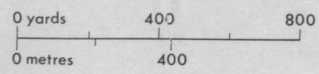




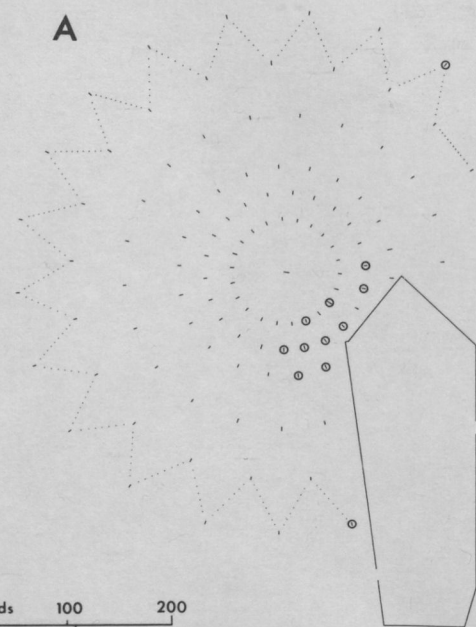
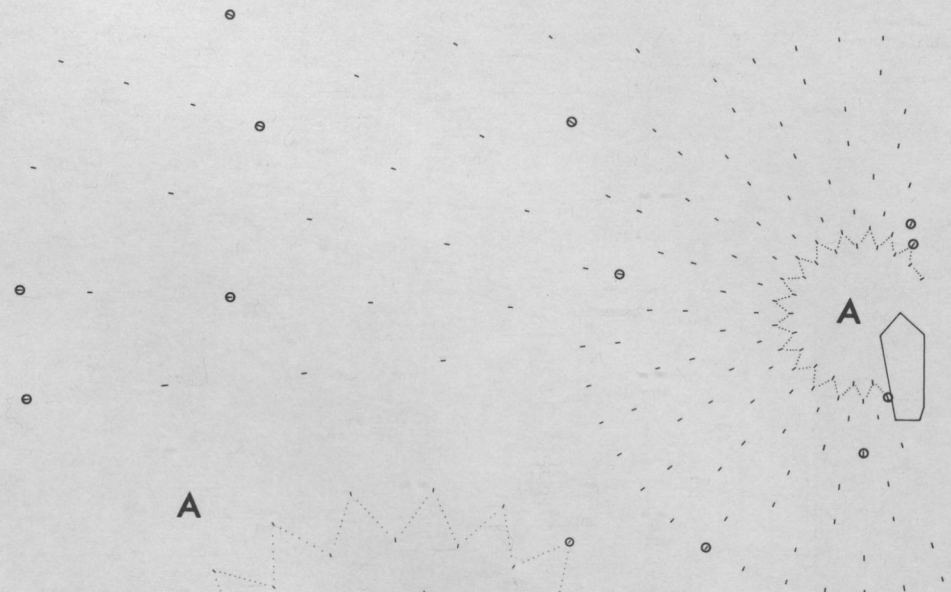
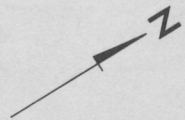
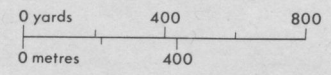
MAP 19

Two-Mile Dam: incidence of some important species

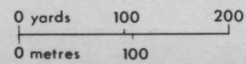
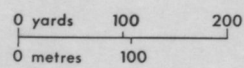
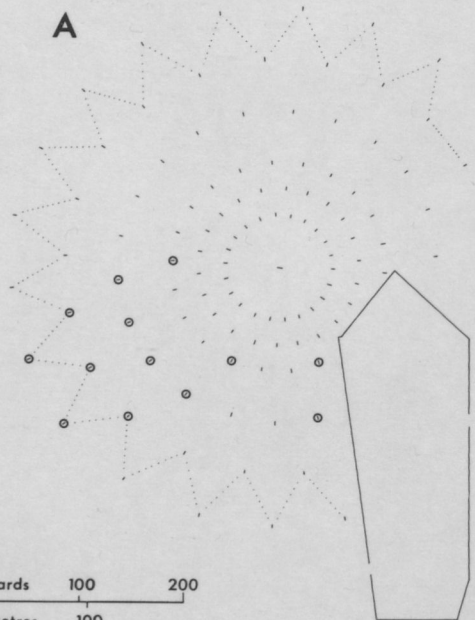
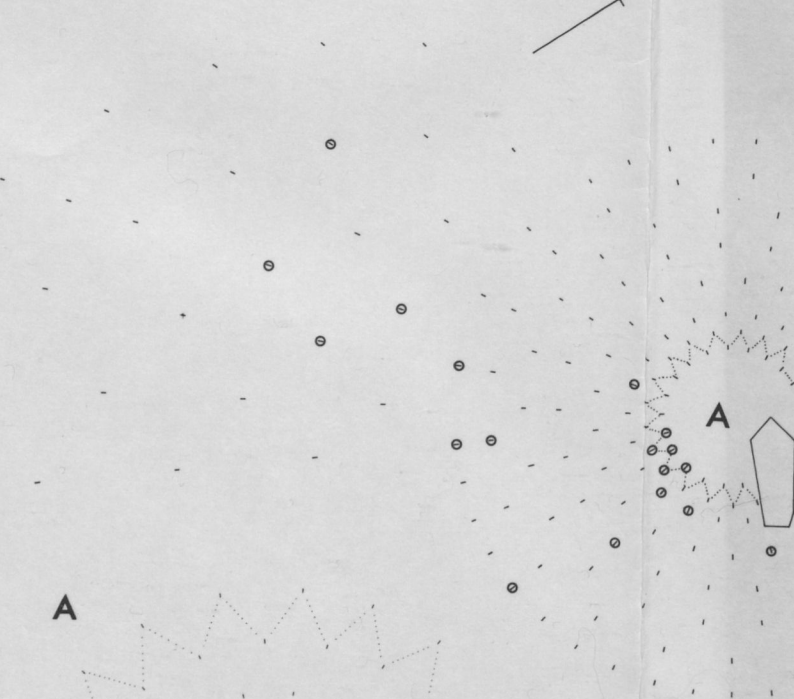
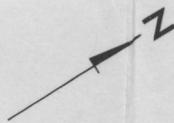
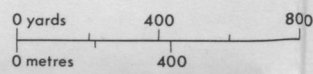
RHAGODIA SPINESCENS var. DELTOPHYLLA



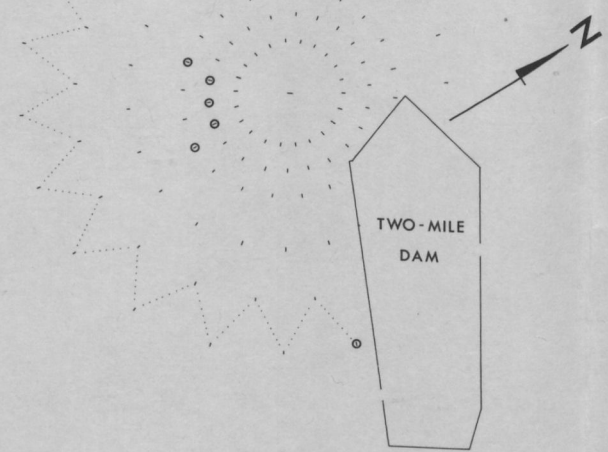
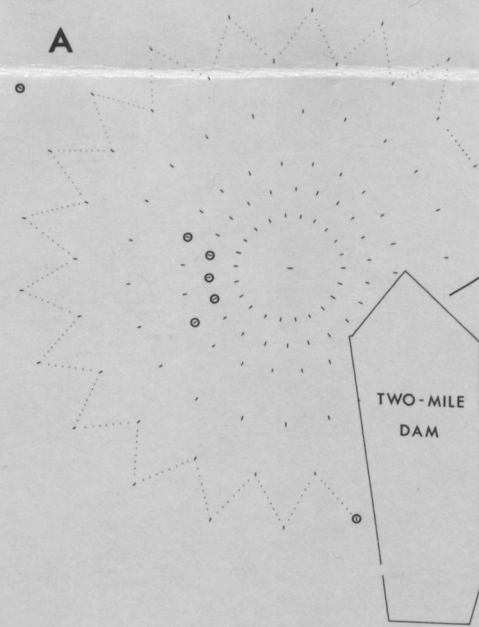
LYCIUM AUSTRALE



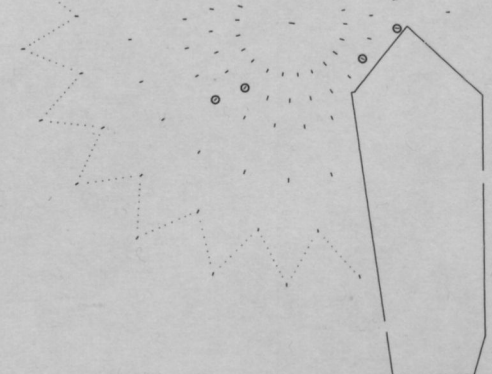
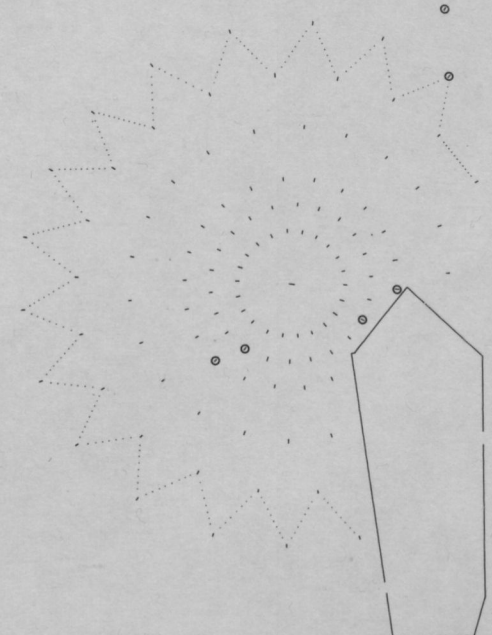
ATRIPLEX SPONGIOSA



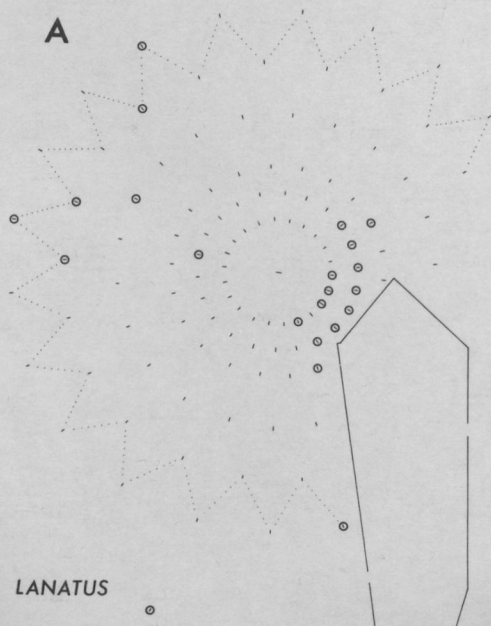
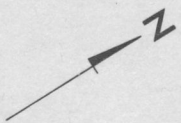
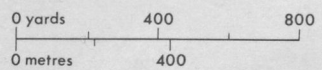
SIDA INTRICATA



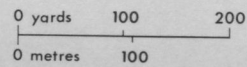
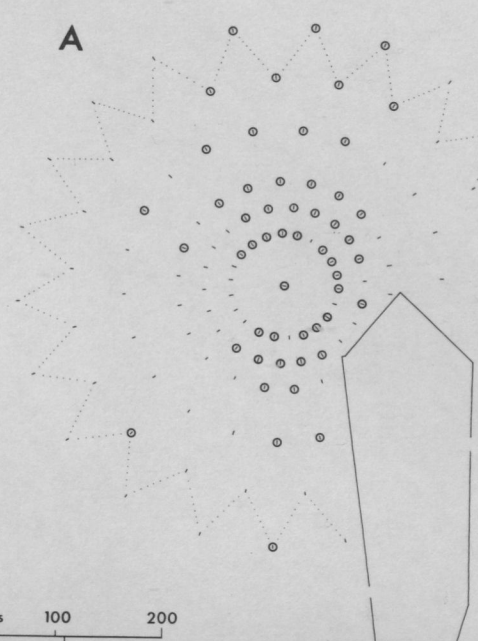
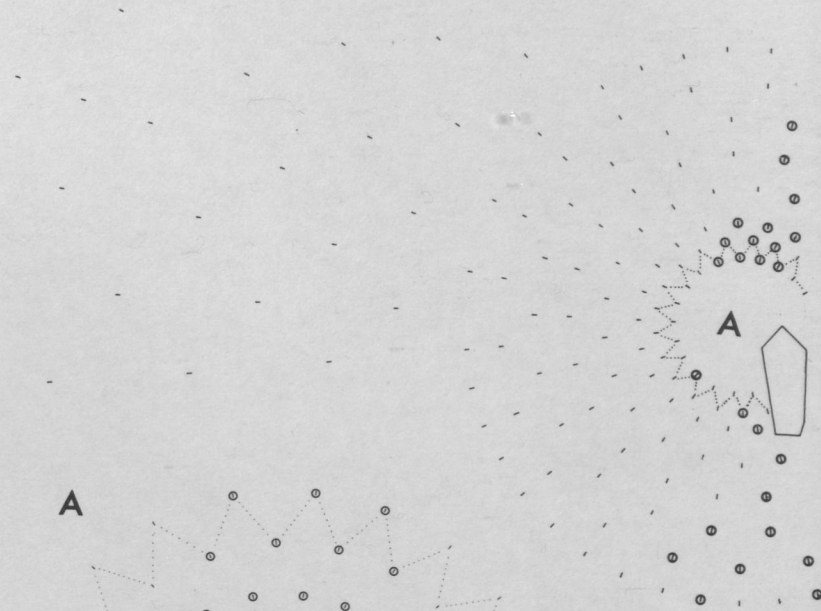
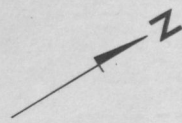
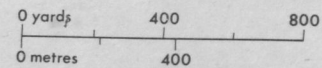
VERBENA OFFICINALIS



ENCHYLAENA TOMENTOSA

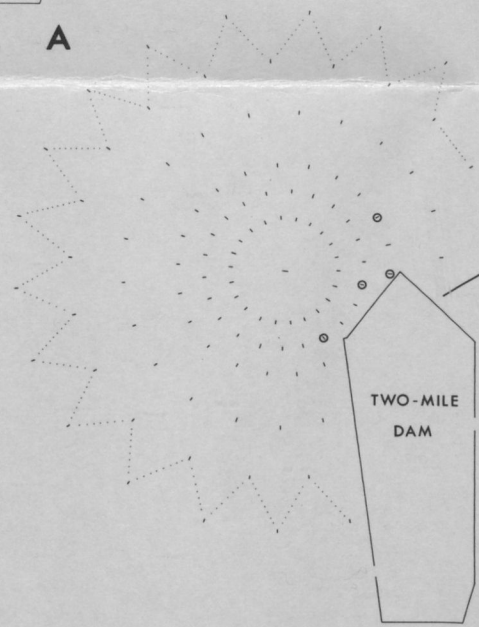
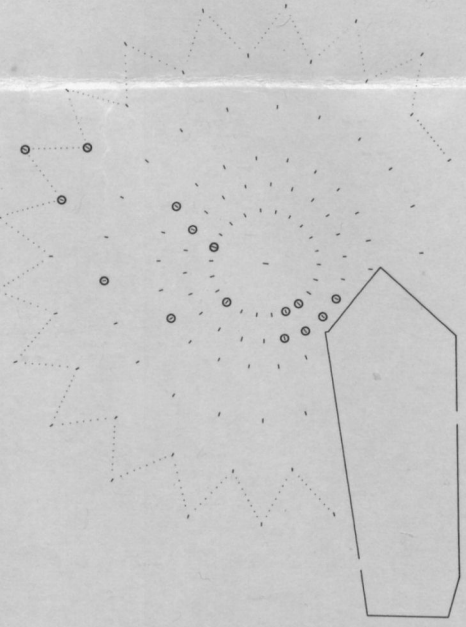


KOCHIA TOMENTOSA



CARTHAMUS LANATUS

INULA GRAVEOLENS



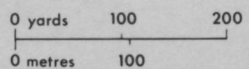
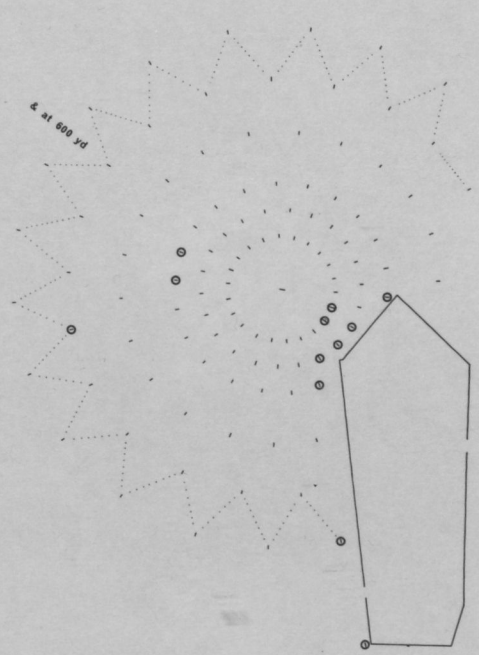
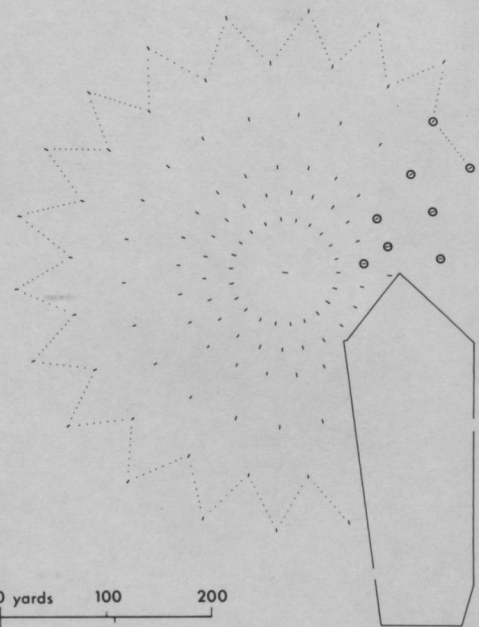
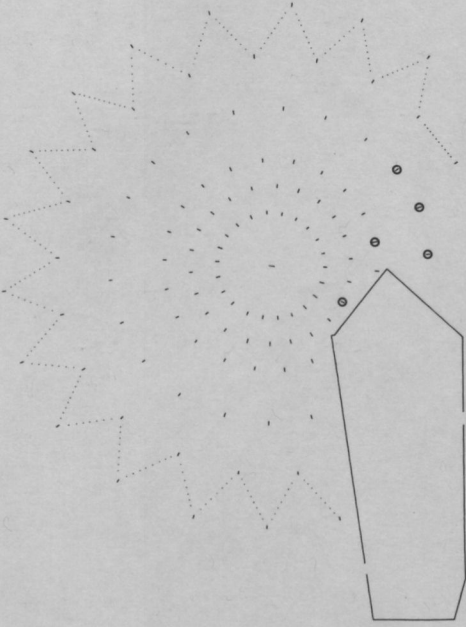
TWO-MILE DAM



MARSILEA DRUMMONDII

CENTIPEDA THESPIDIOIDES

ATRIplex EARDLEYAE



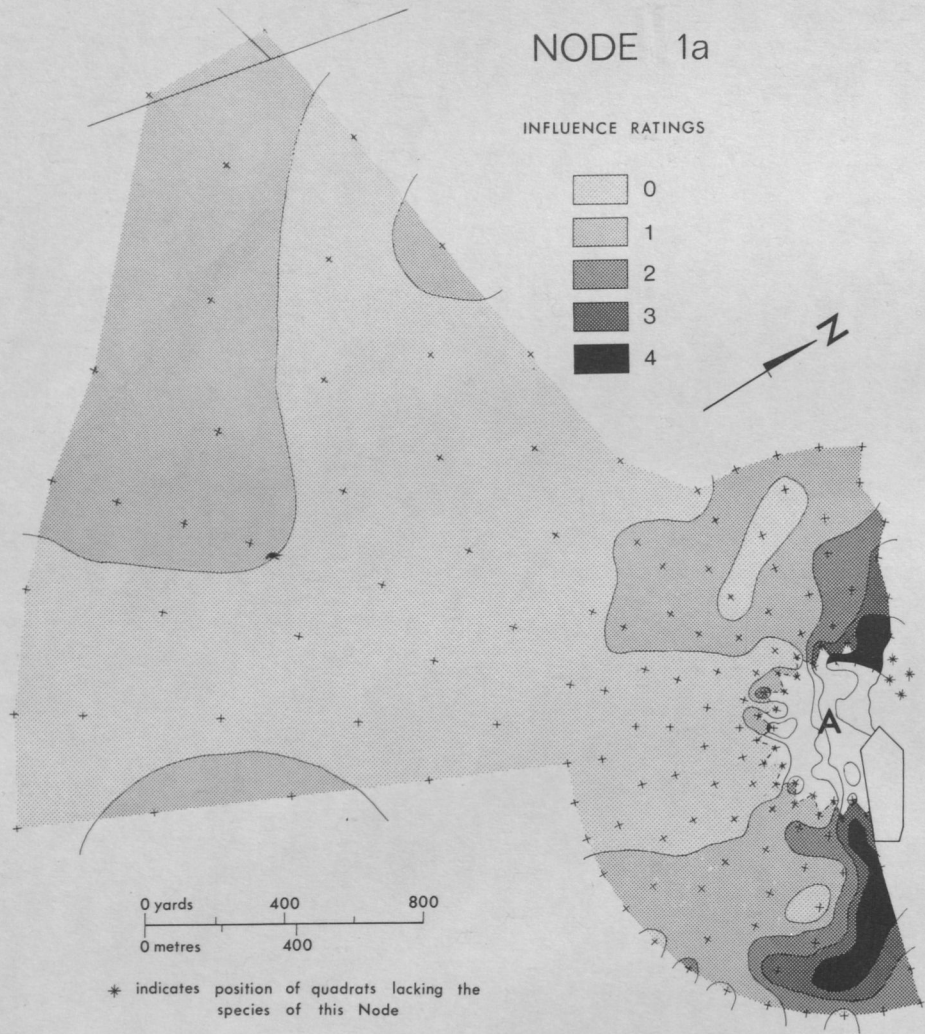
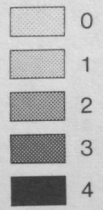
MAP 20

Two-Mile Dam: results of influence analysis

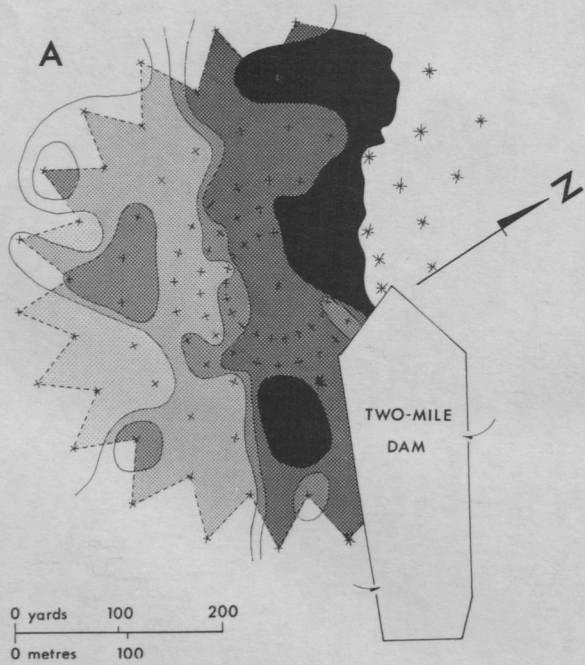
Node 1a)  
Node 1b) - Isotels  
Node 1c)  
Node 1d)

### NODE 1a

INFLUENCE RATINGS

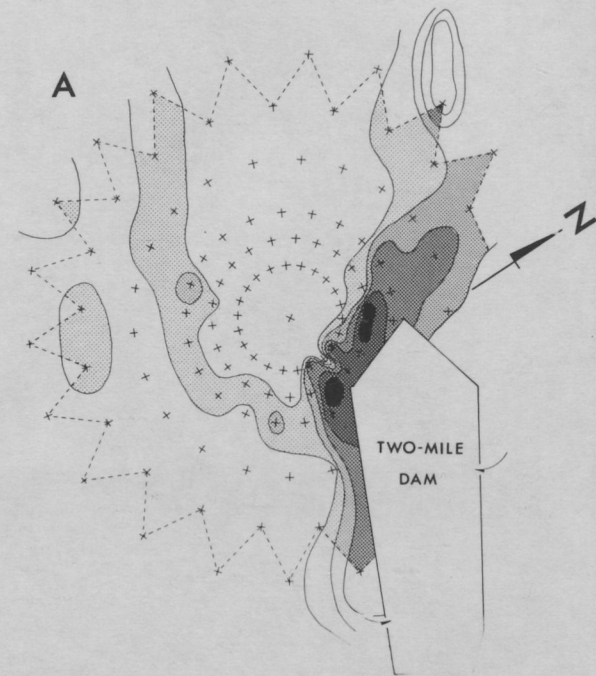
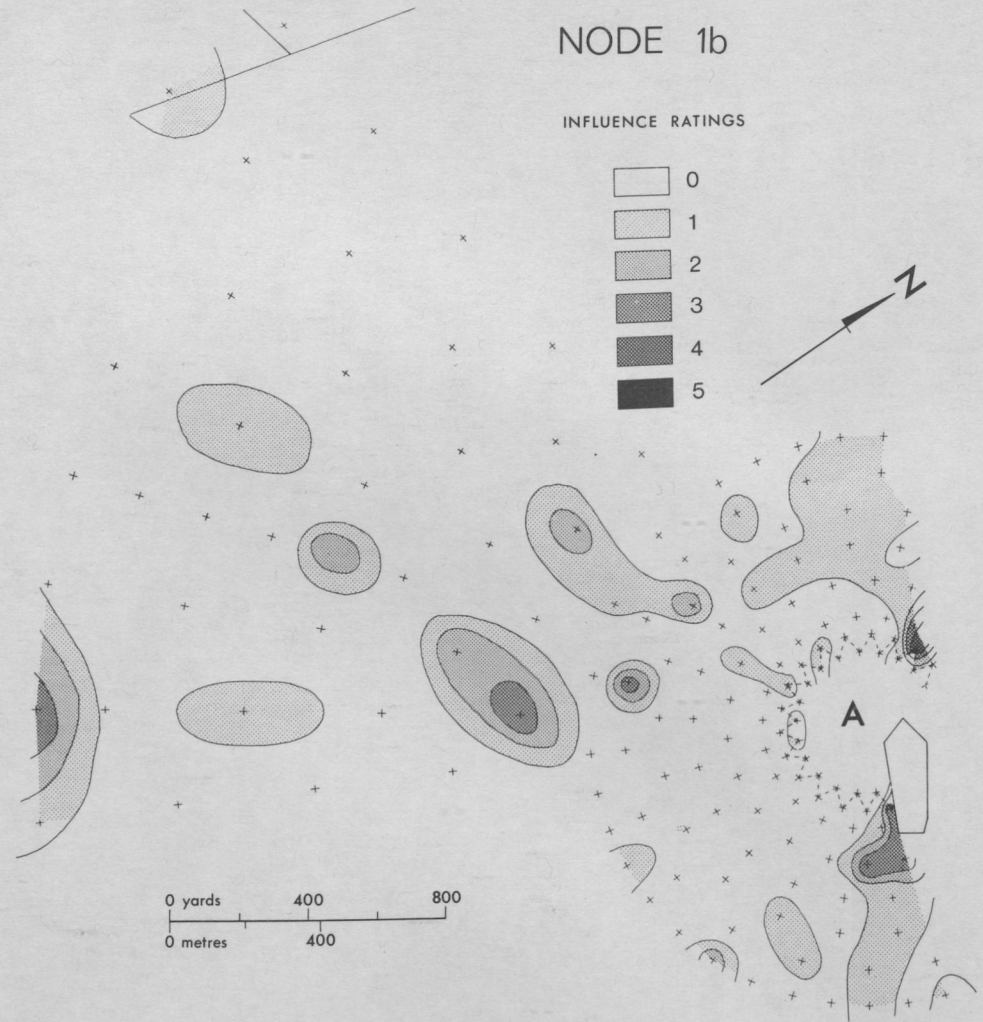
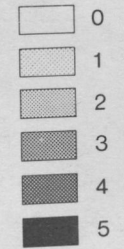


\* indicates position of quadrats lacking the species of this Node



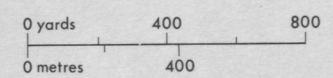
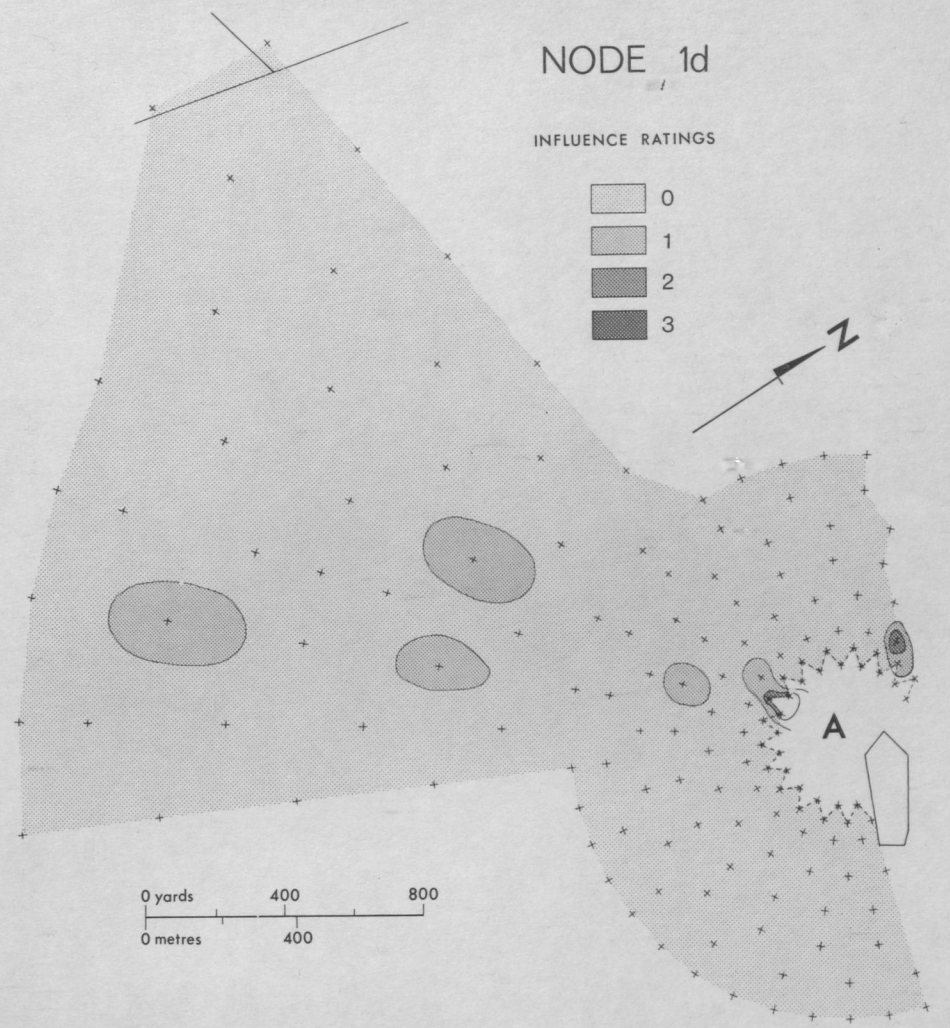
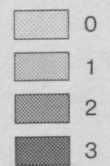
### NODE 1b

INFLUENCE RATINGS

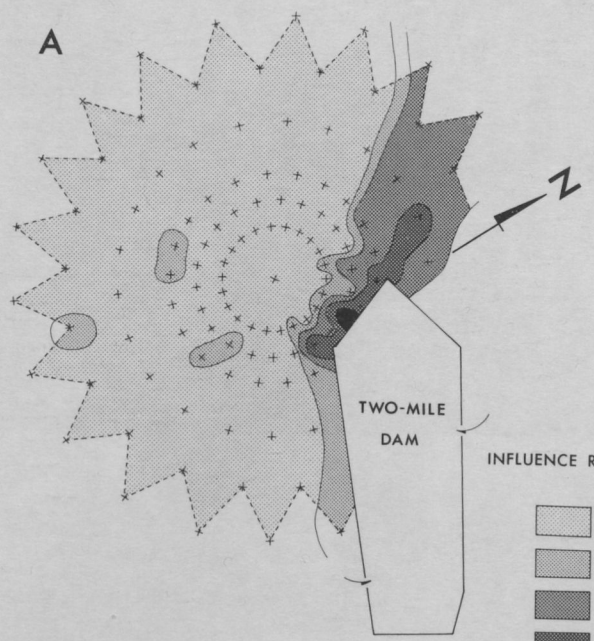


# NODE 1d

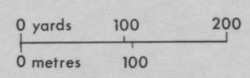
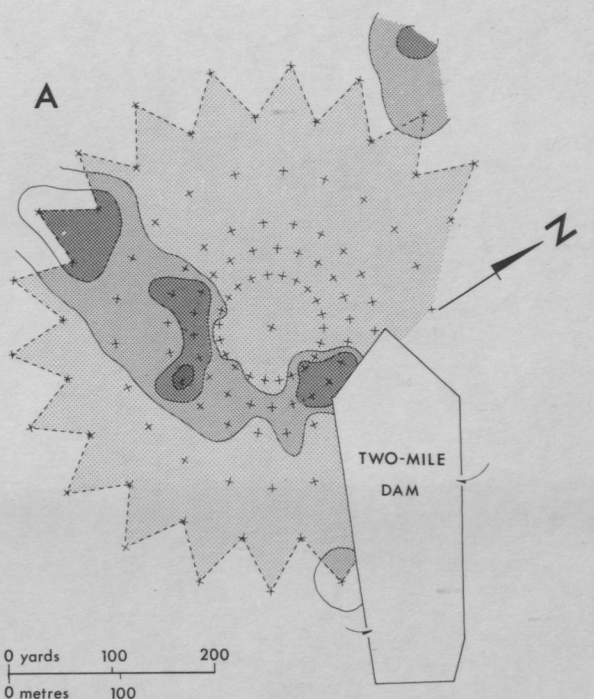
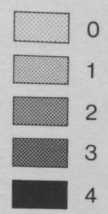
INFLUENCE RATINGS



# NODE 1c



INFLUENCE RATINGS

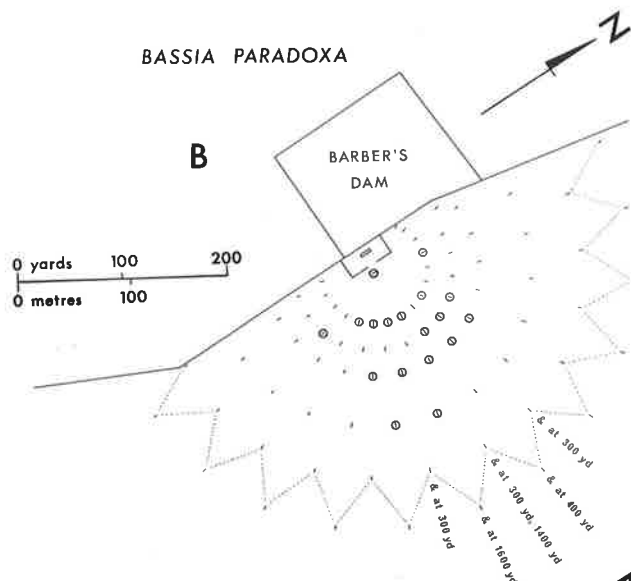


MAP 21

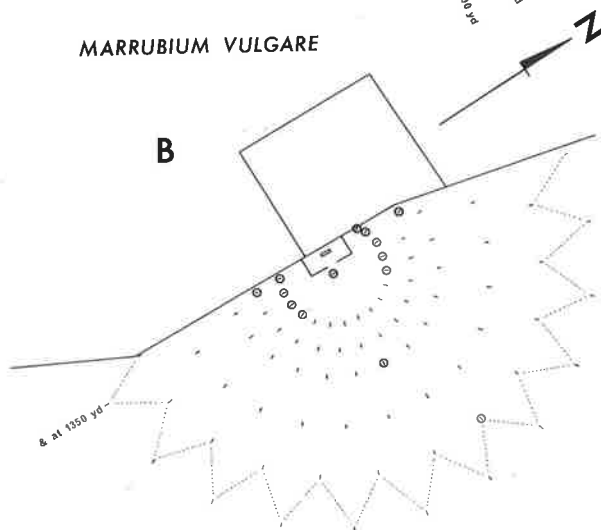
Barber's Dam (Two-Mile Pdk.): incidence of some  
important species



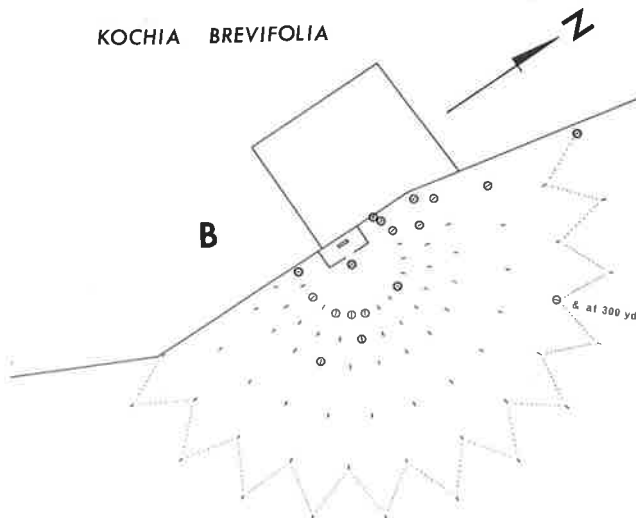
BASSIA PARADOXA



MARRUBIUM VULGARE



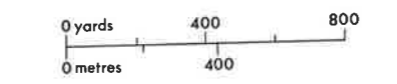
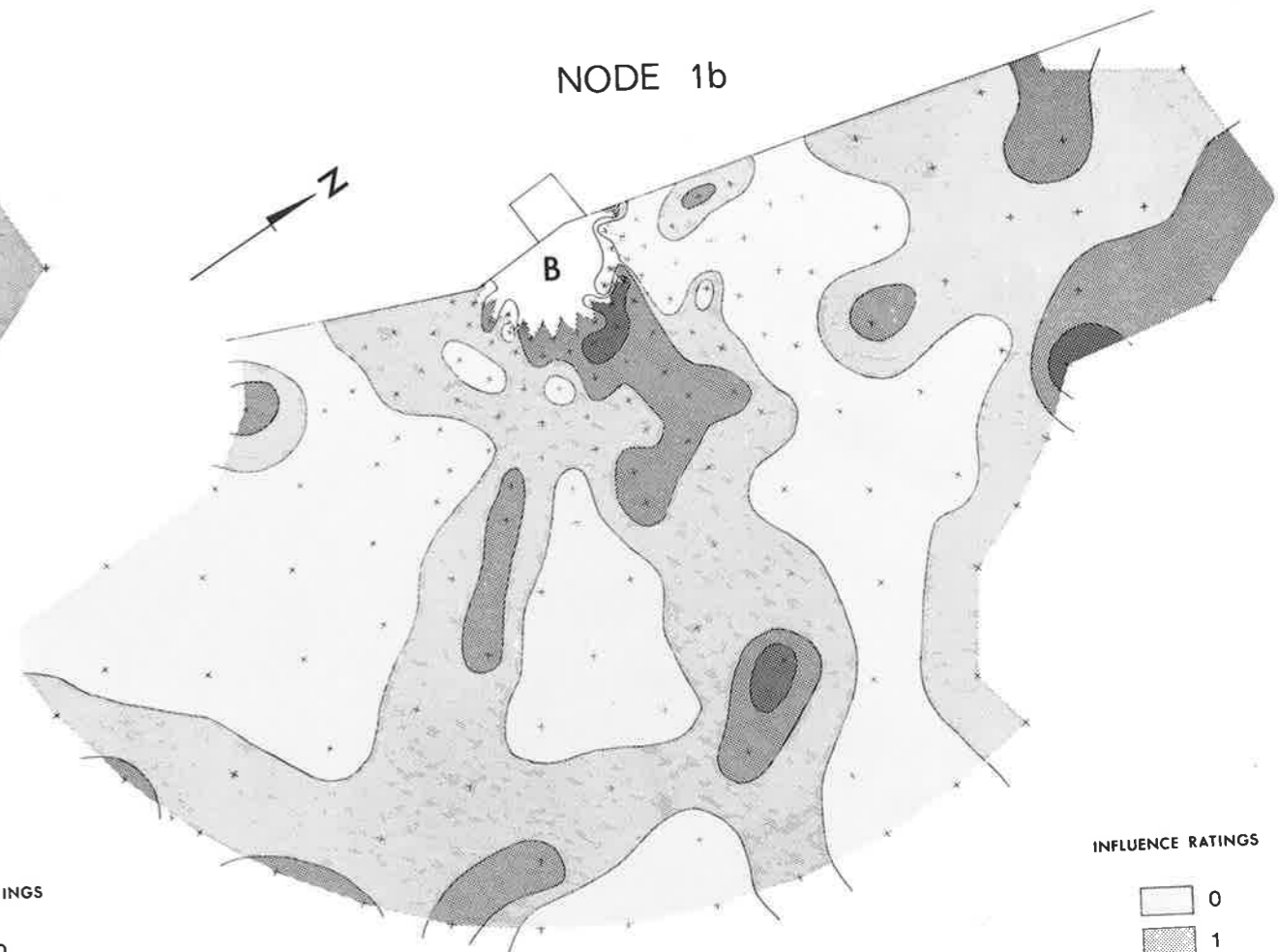
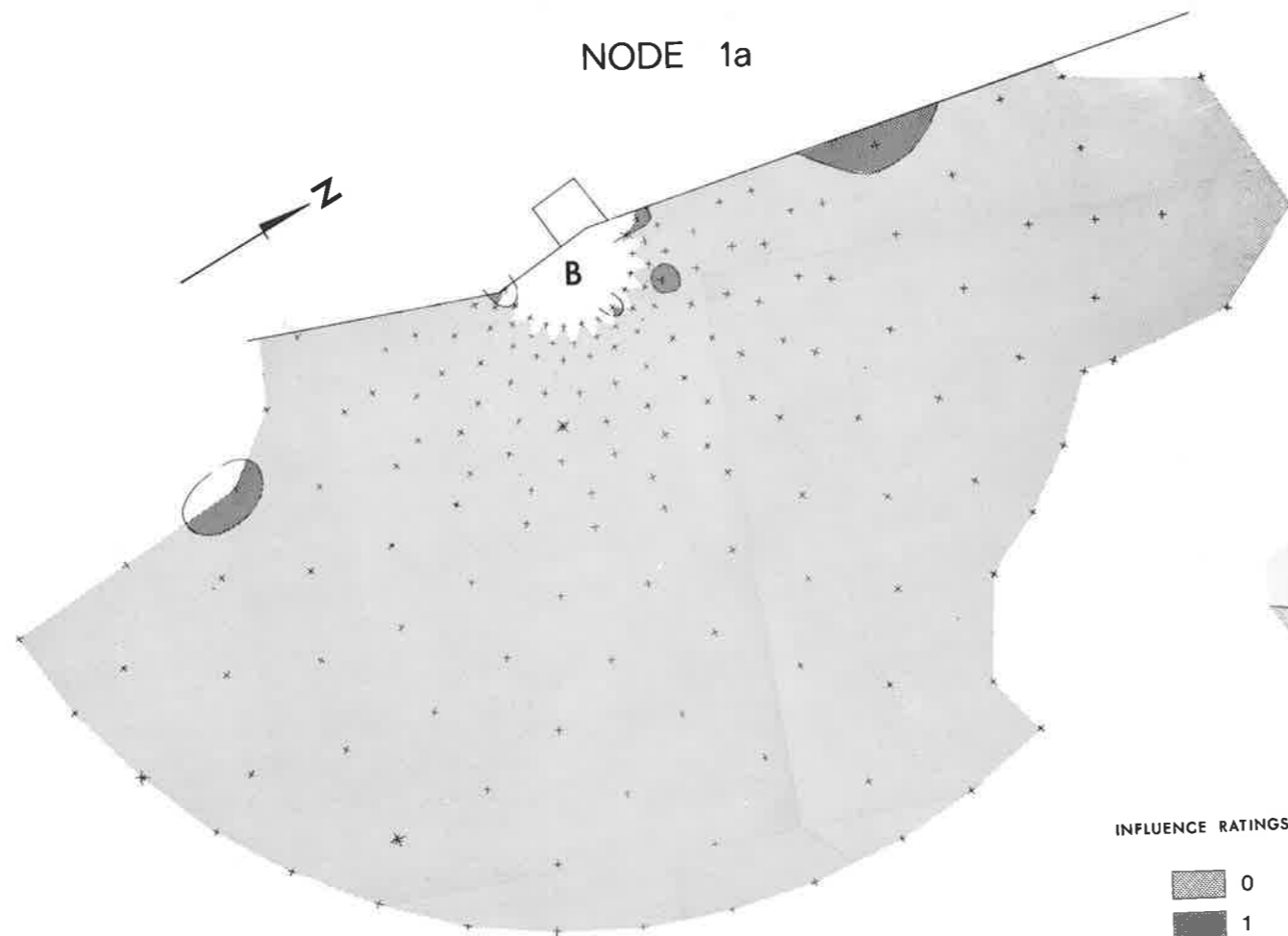
KOCHIA BREVIFOLIA



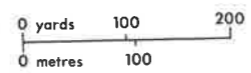
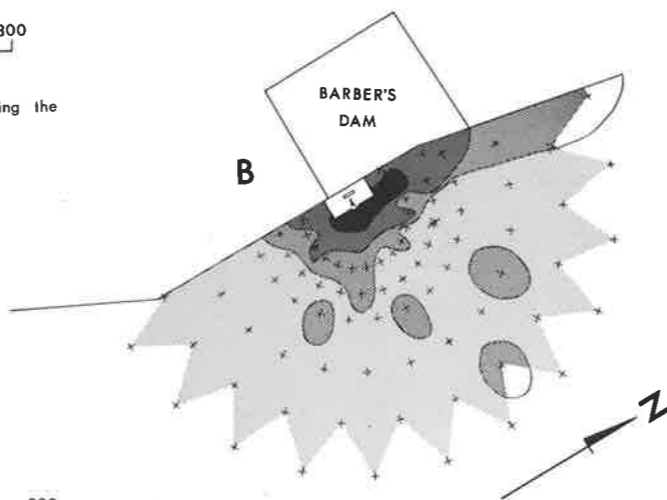
MAP 22

Barber's Dam (Two-Mile Pdk.): results of influence analysis

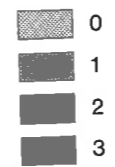
Node 1a)  
Node 1b) - Isotels



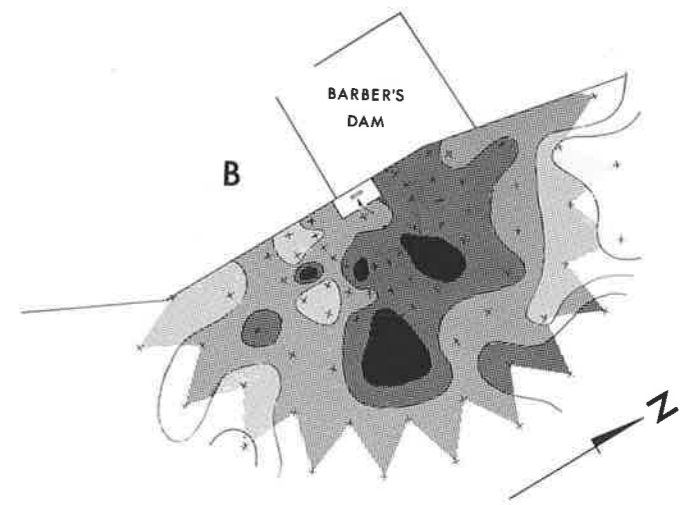
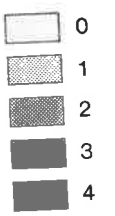
\* indicates position of quadrats lacking the species of this Node



INFLUENCE RATINGS



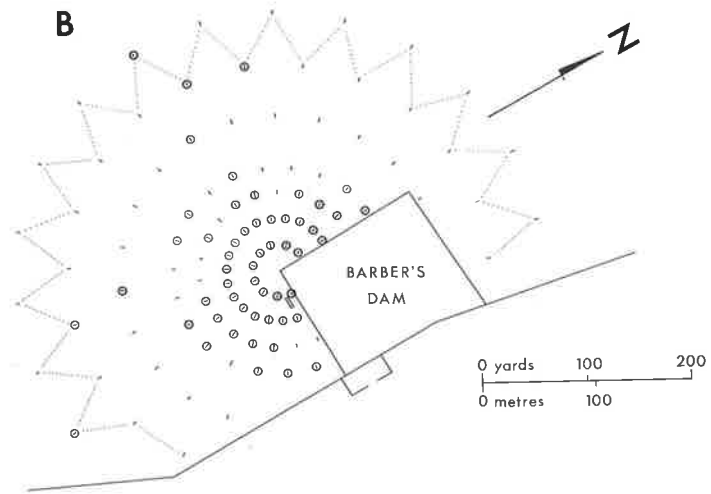
INFLUENCE RATINGS



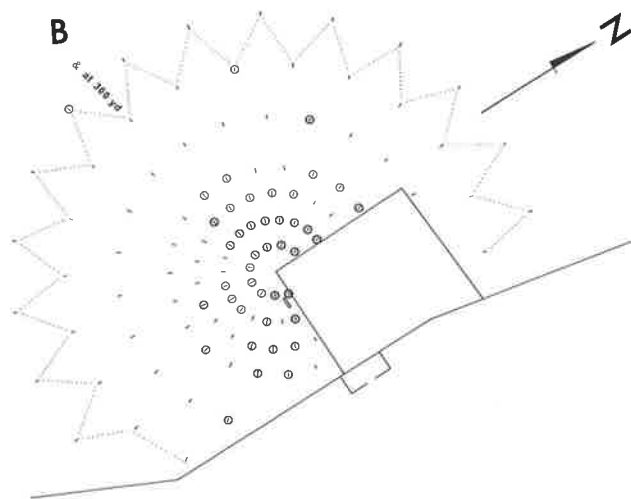
MAP 23

Barber's Dam (Barber's Pdk): incidence of some  
important species

MARRUBIUM VULGARE



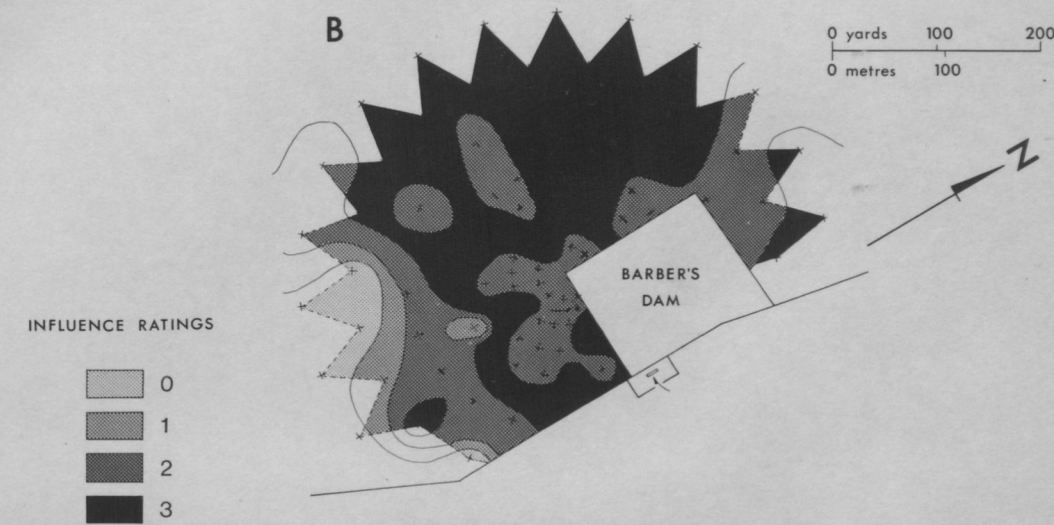
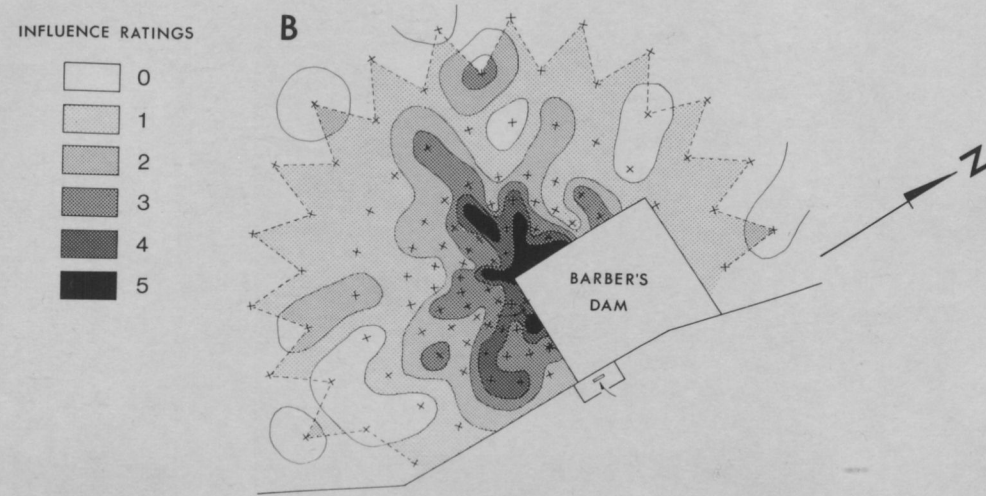
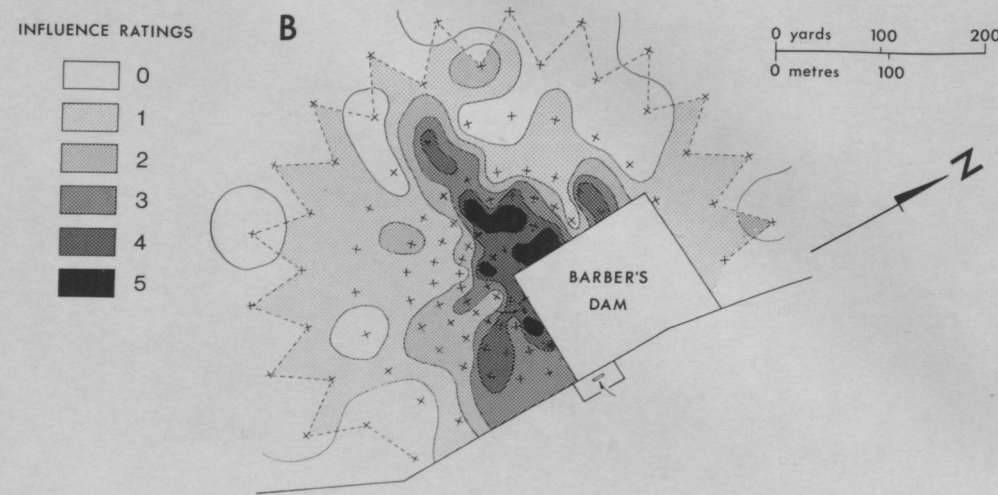
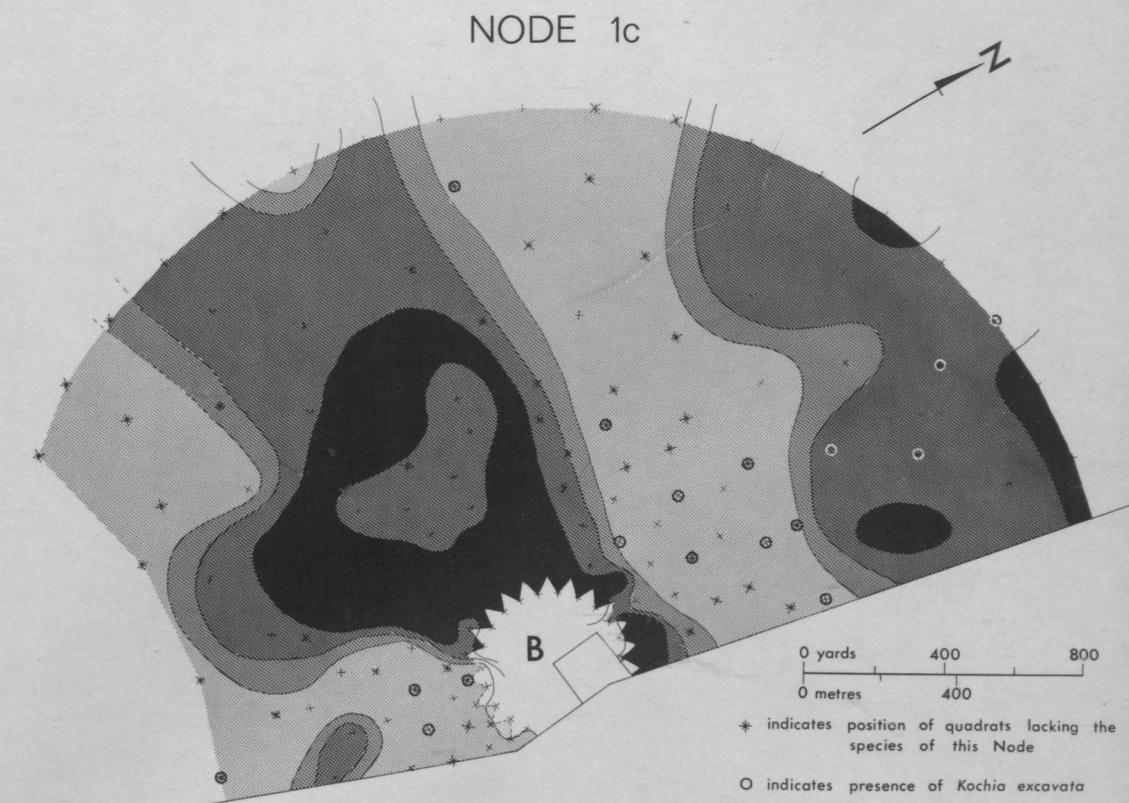
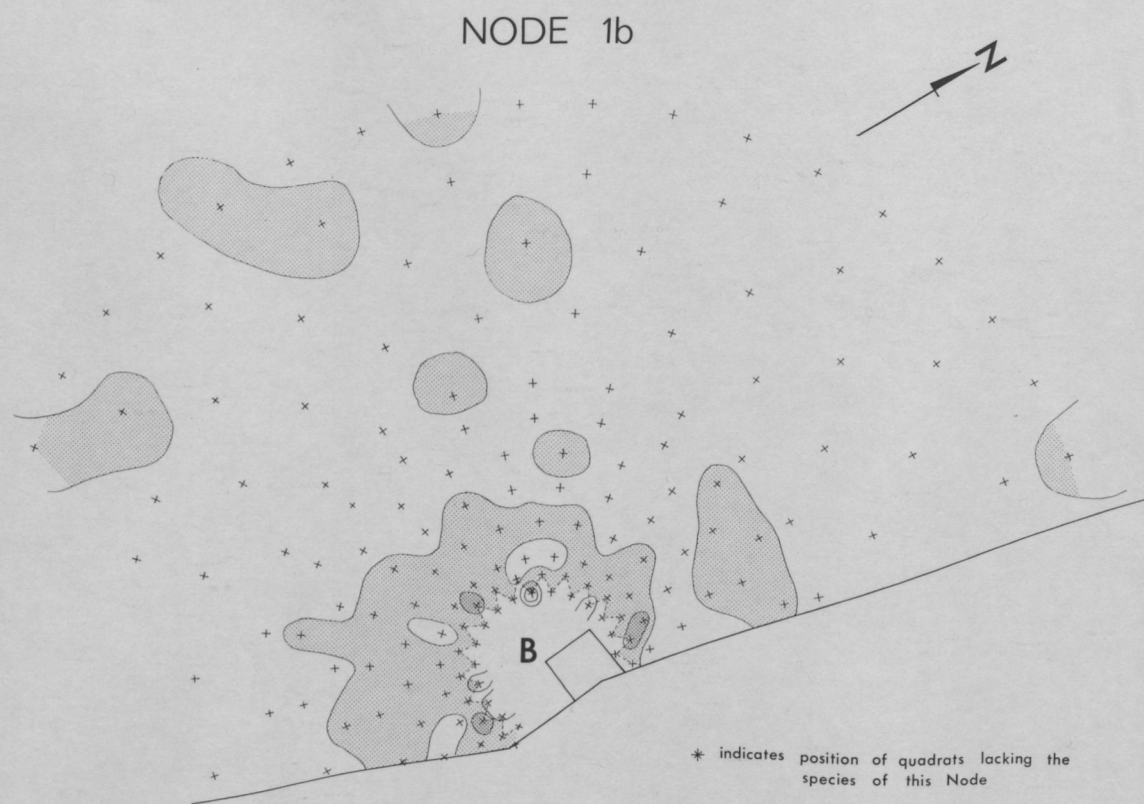
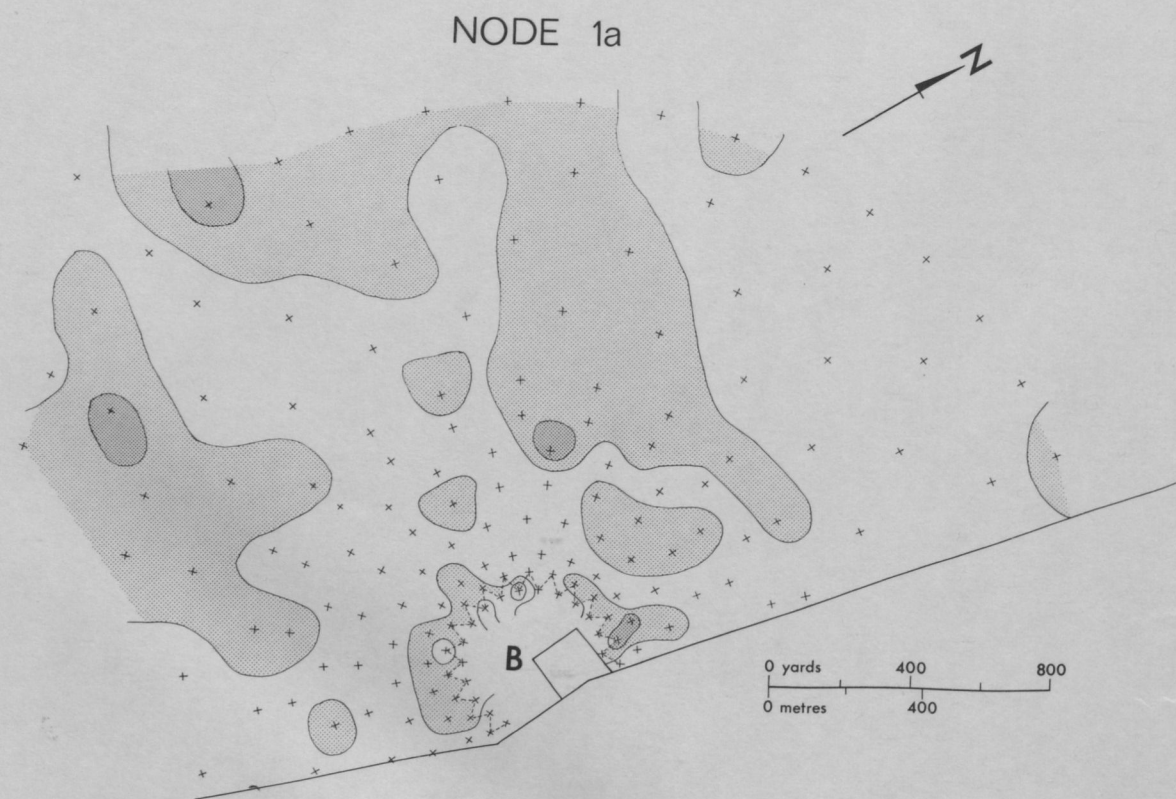
KOCHIA BREVIFOLIA



MAP 24

Barber's Dam (Barber's Pdk.): results of influence analysis

Node 1a)  
Node 1b) - Isotels  
Node 1c)

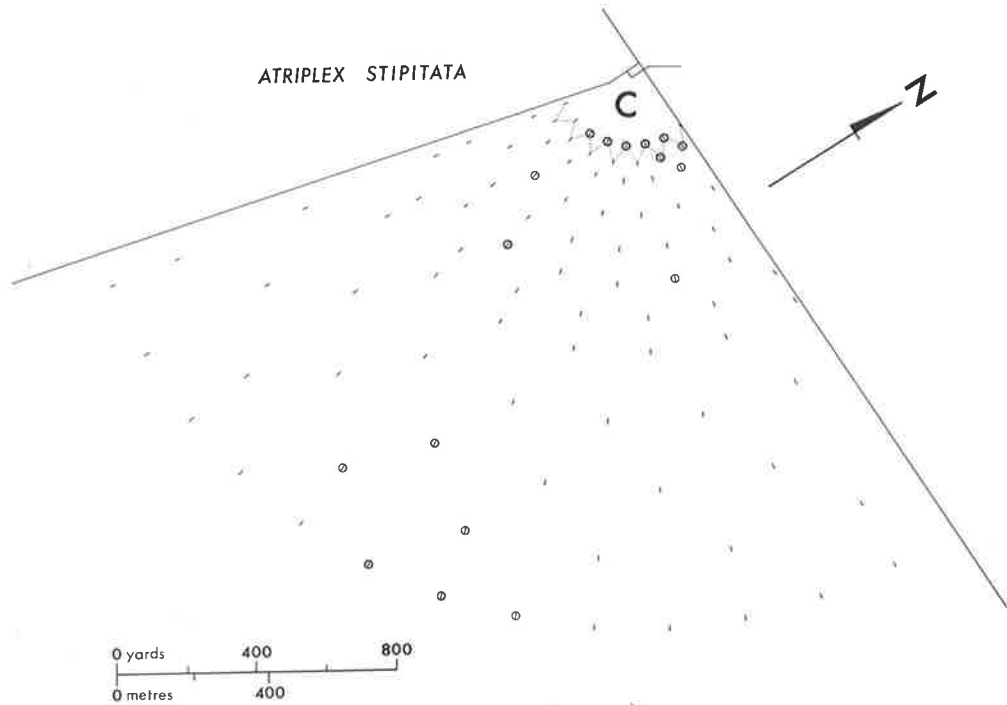


MAP 25

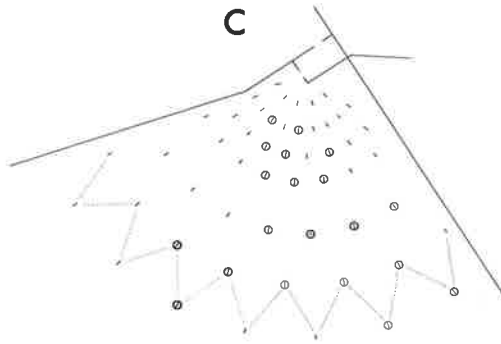
Winter Trough: incidence of some important species



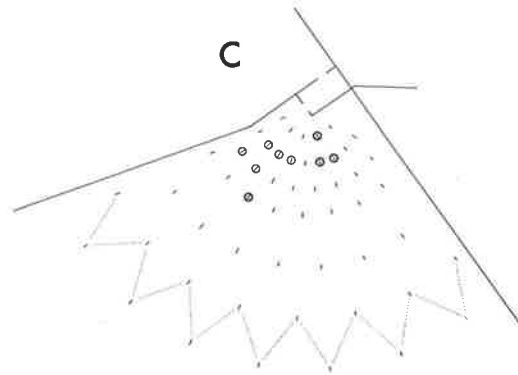
ATRIPLEX STIPITATA



C



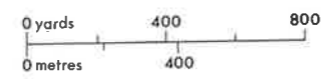
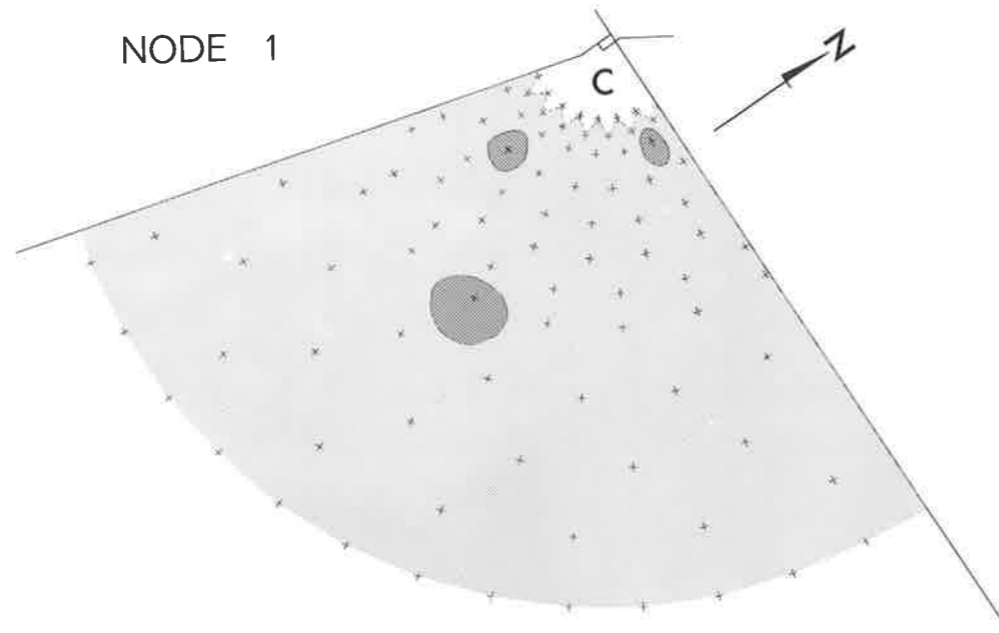
ATRIPLEX SPONGIOSA



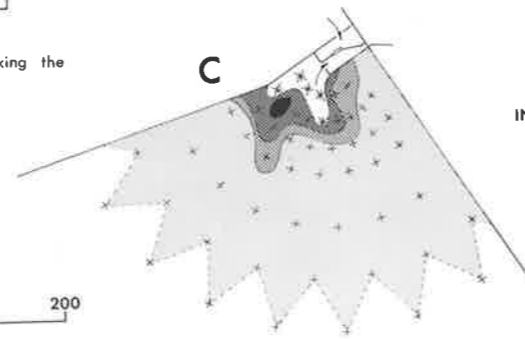
MAP 26

Winter Trough: results of influence analysis

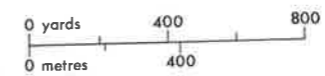
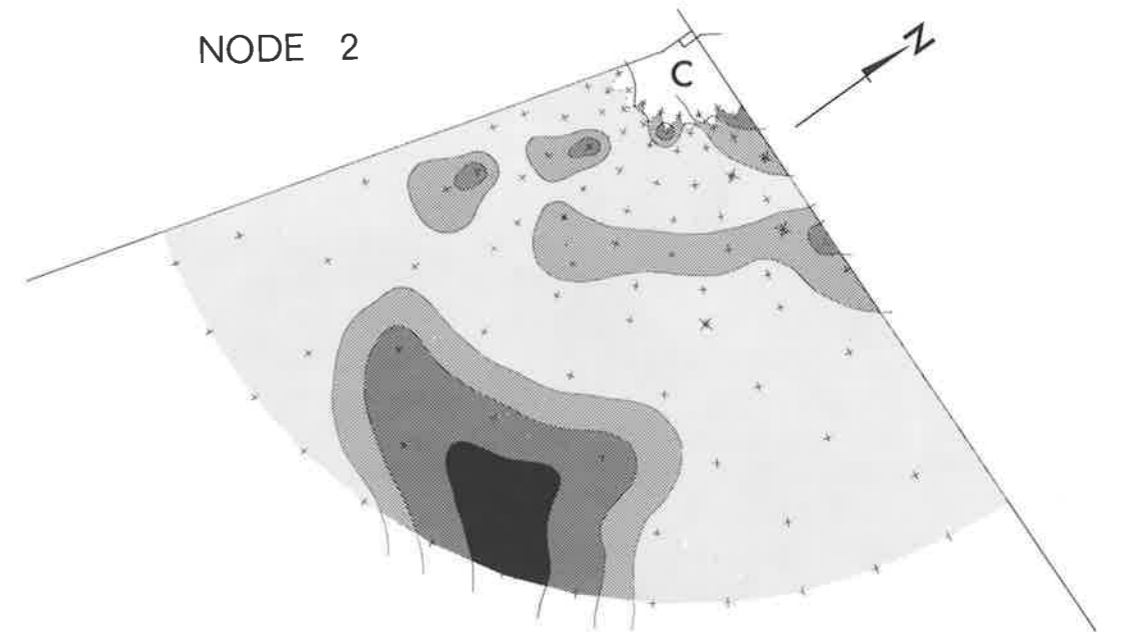
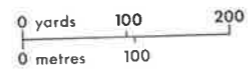
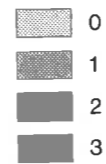
Node 1)  
    ) - Isotels  
Node 2)



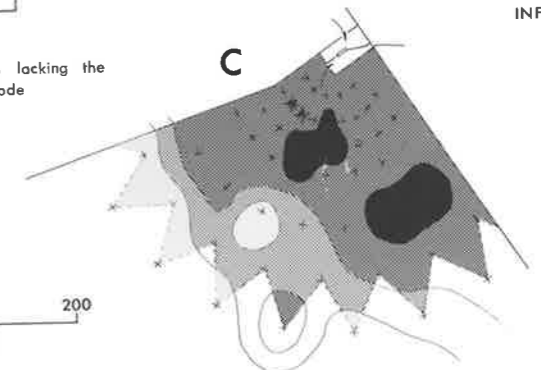
\* indicates position of quadrats lacking the species of this Node



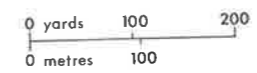
INFLUENCE RATINGS



\* indicates position of quadrats lacking the species of this Node



INFLUENCE RATINGS

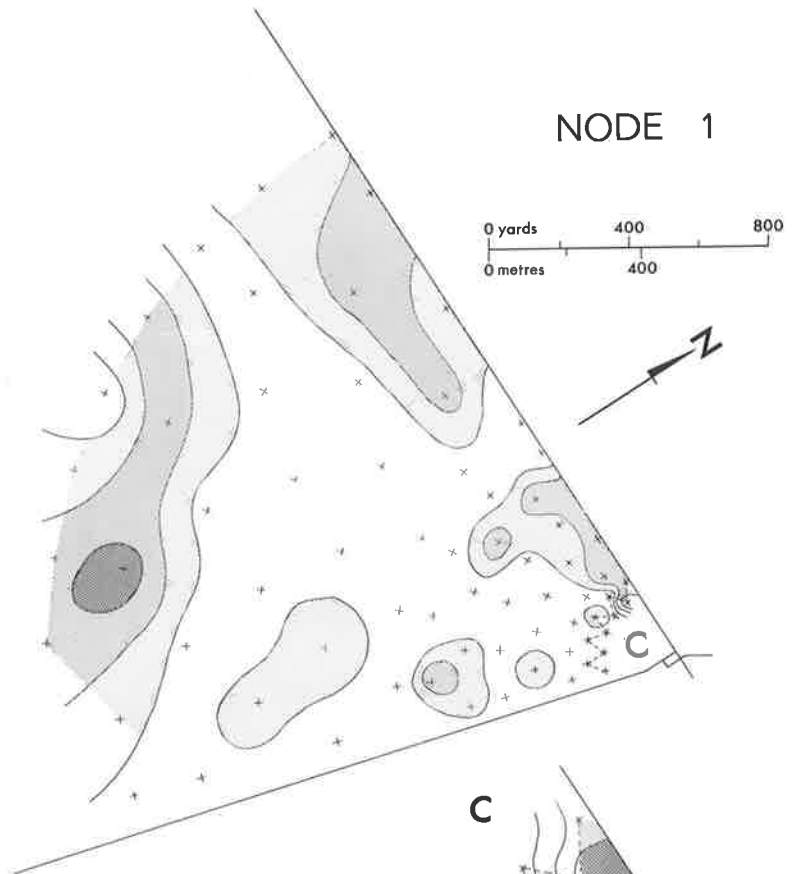


MAP 27

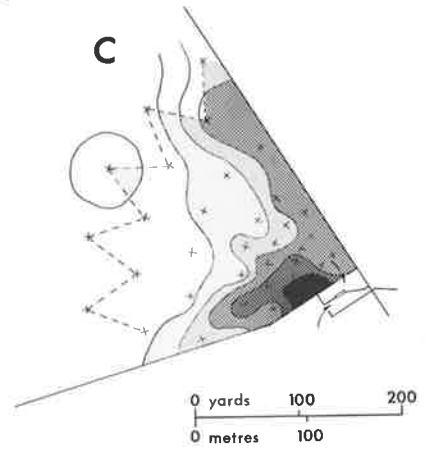
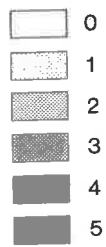
Kirrani Trough: results of influence analysis

Node 1 - Isotels

# NODE 1



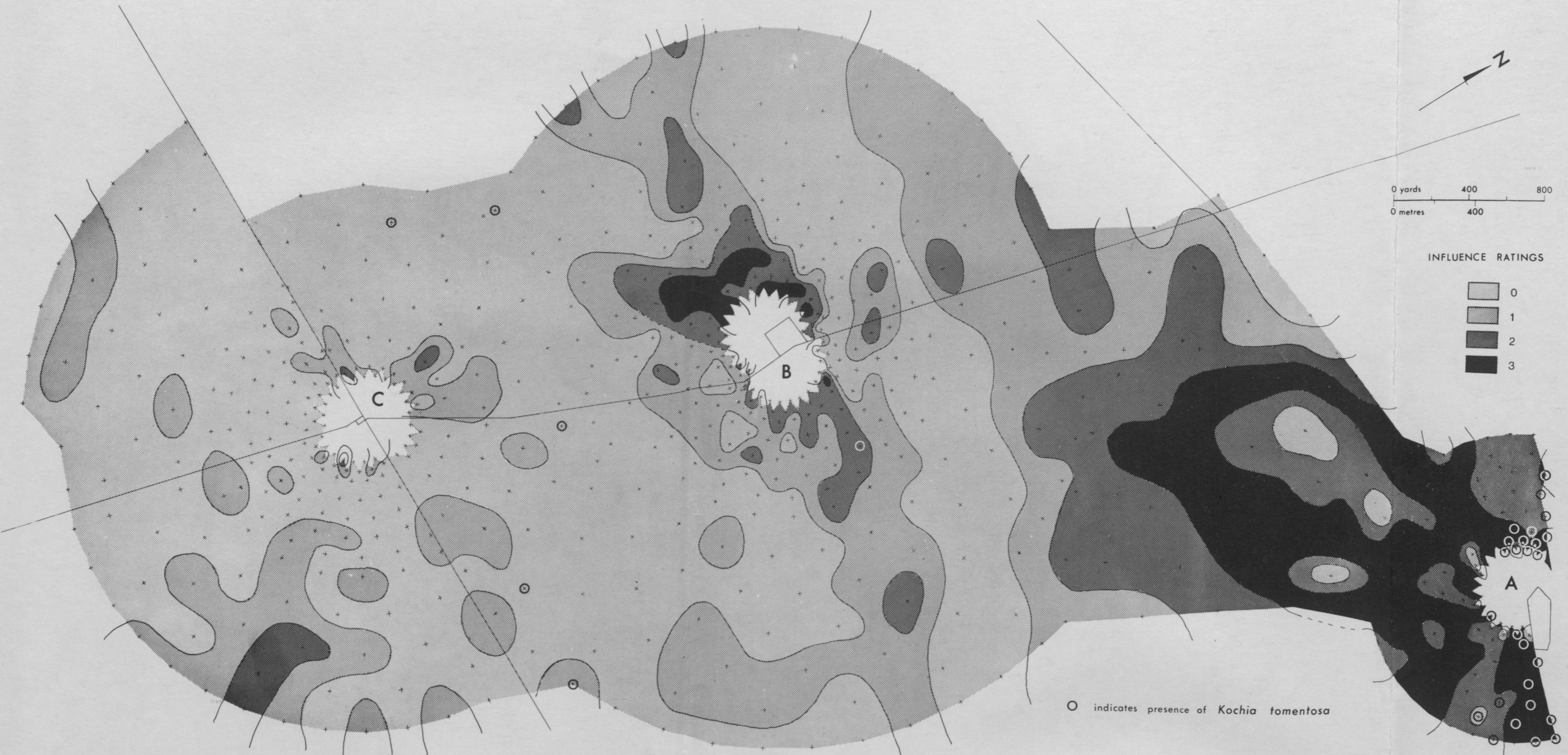
## INFLUENCE RATINGS



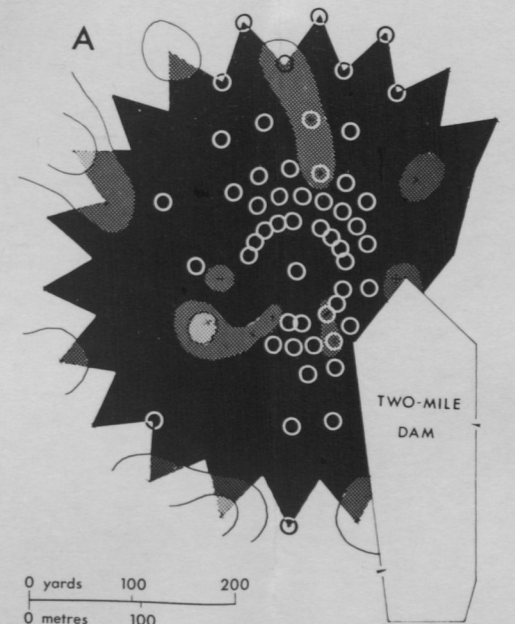
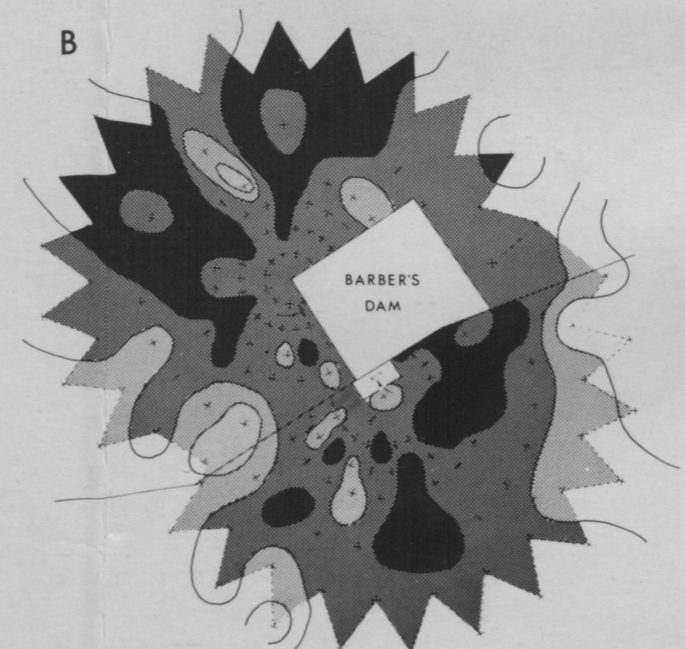
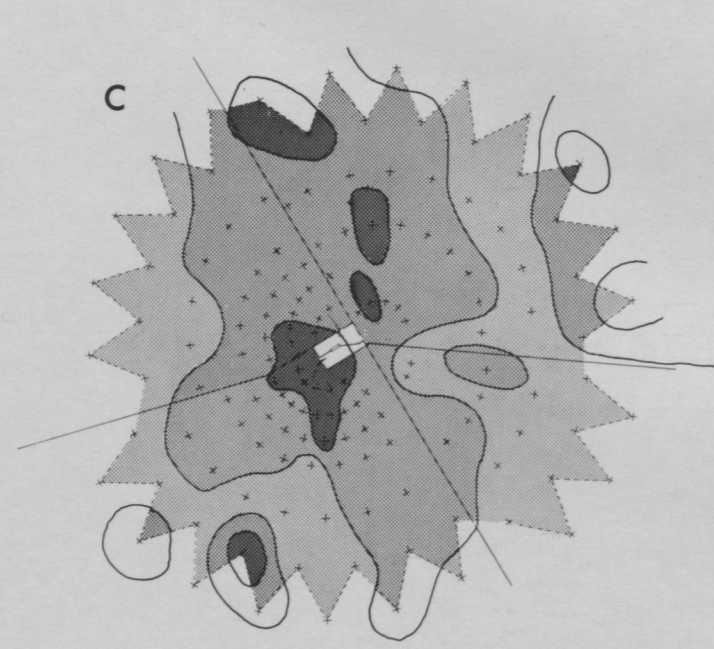
MAP 28

Two-Mile - Winter Flat total data: results of  
influence analysis

Node 1a - Isotels



O indicates presence of *Kochia tomentosa*



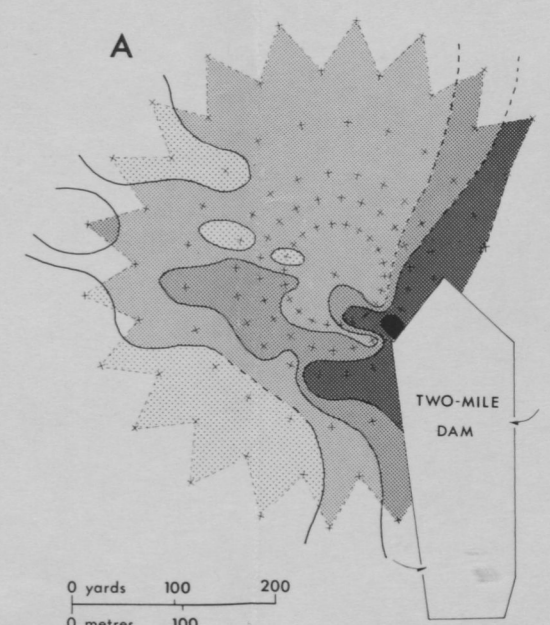
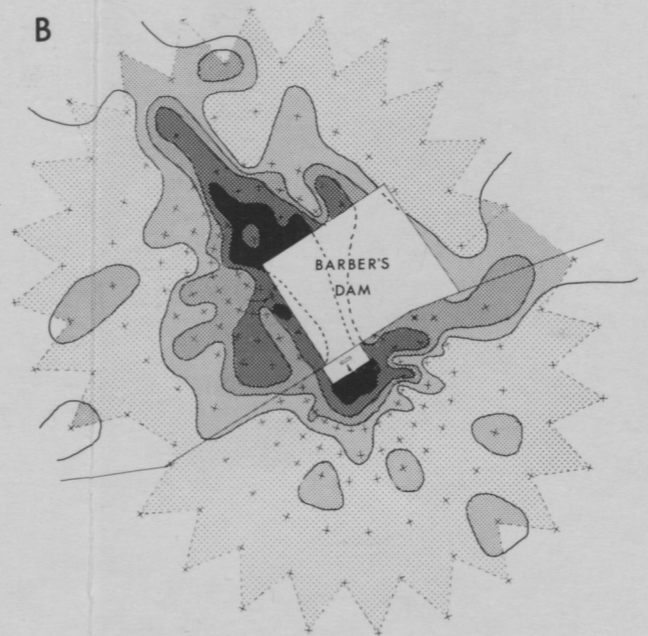
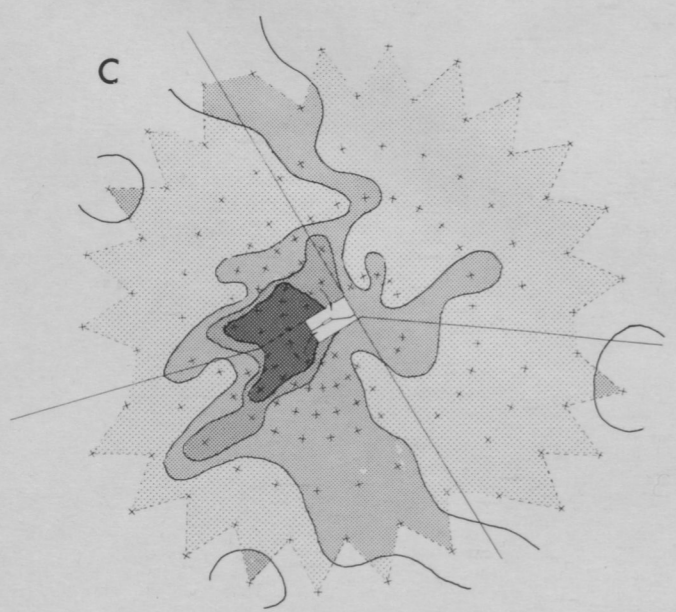
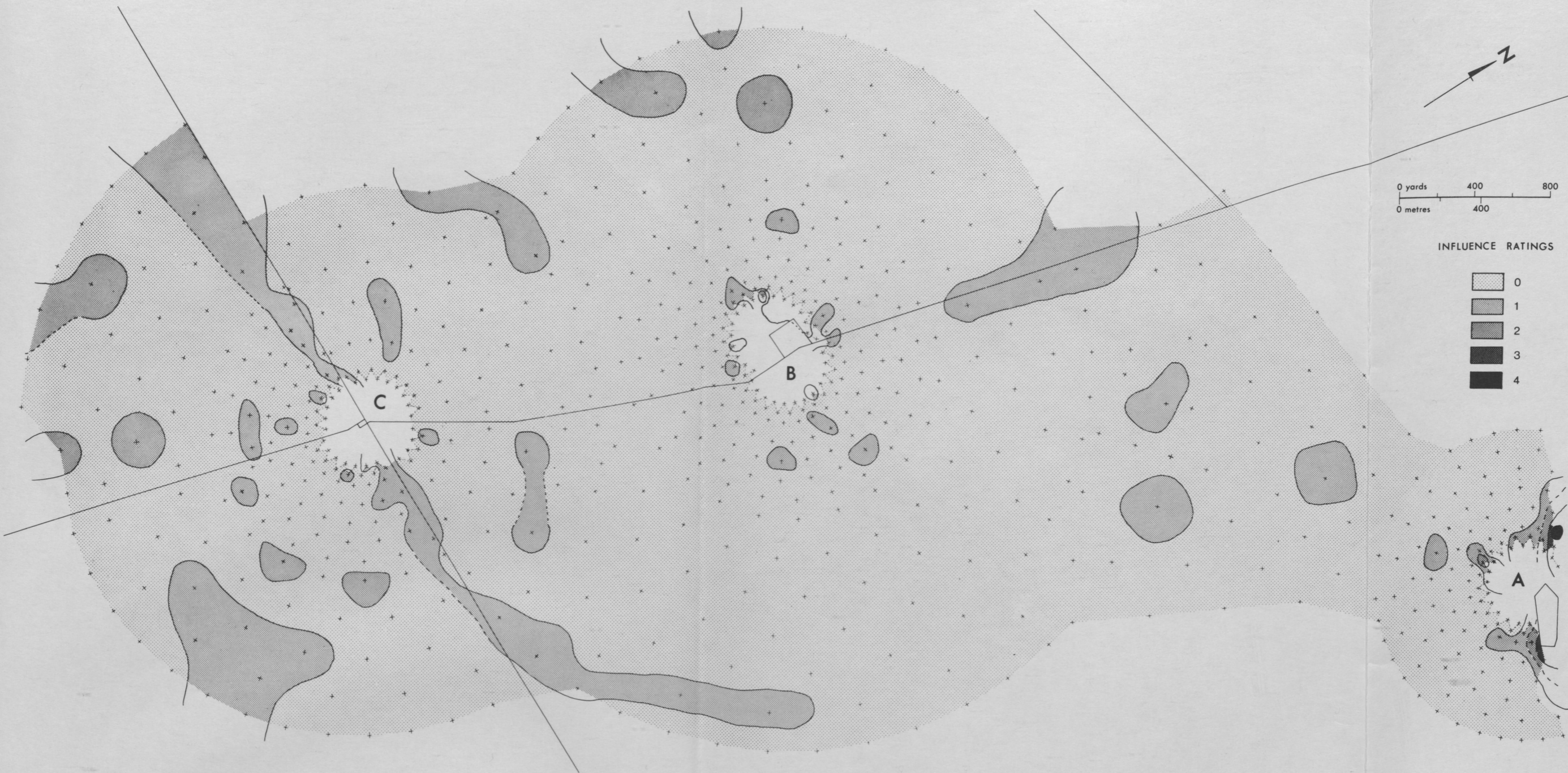
0 yards 100 200  
0 metres 100

MAP 29

Two-Mile - Winter Flat total data: results of  
influence analysis

Node 1b - Isotels

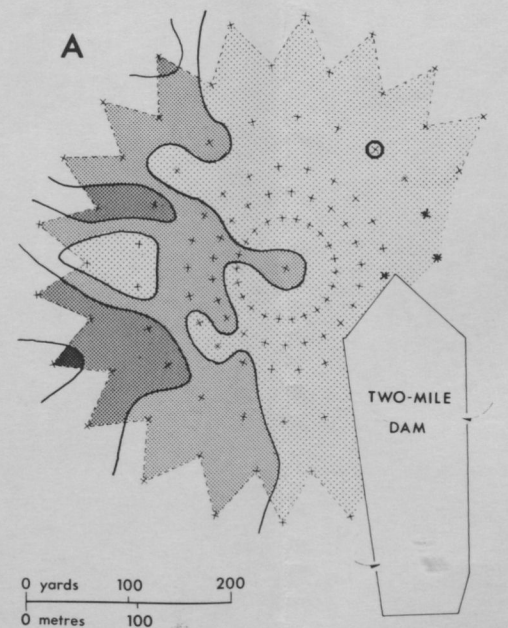
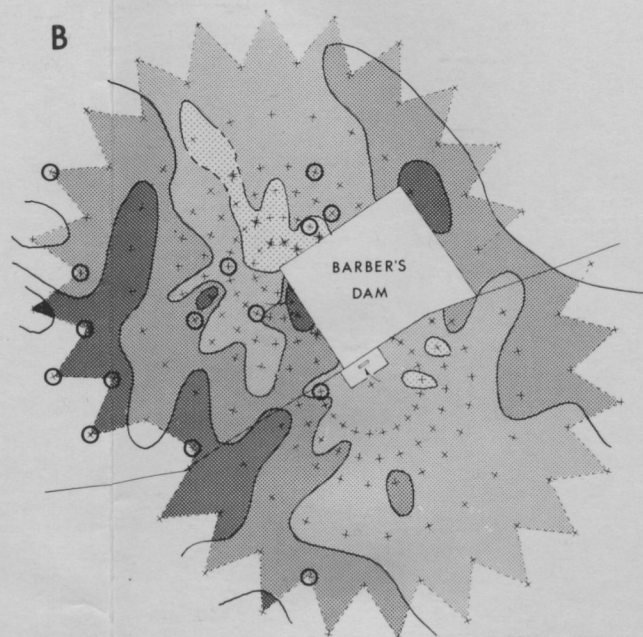
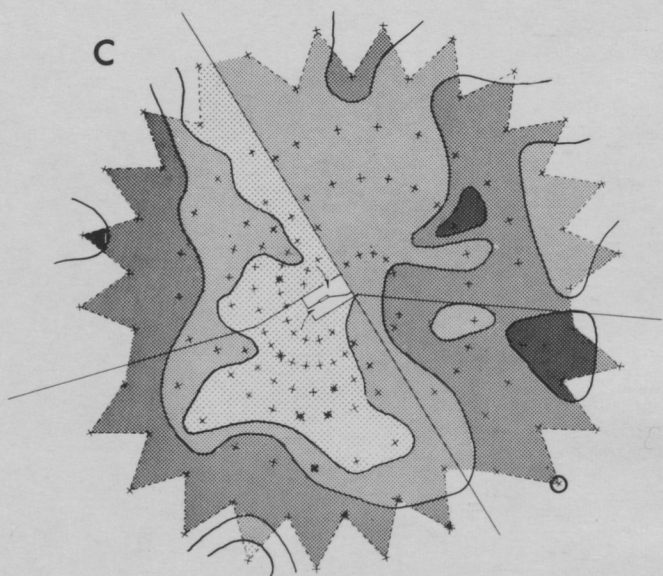
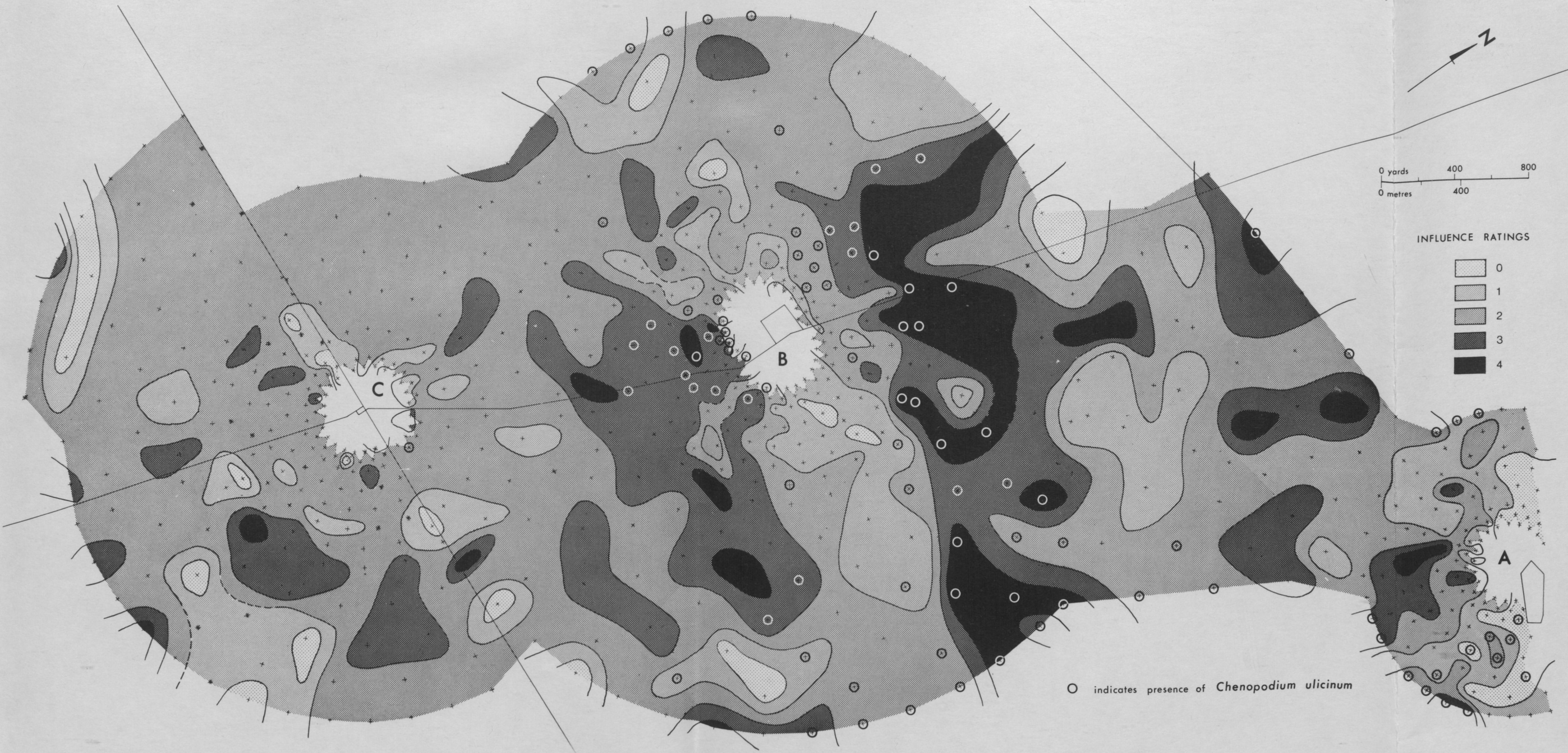




MAP 30 .

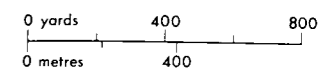
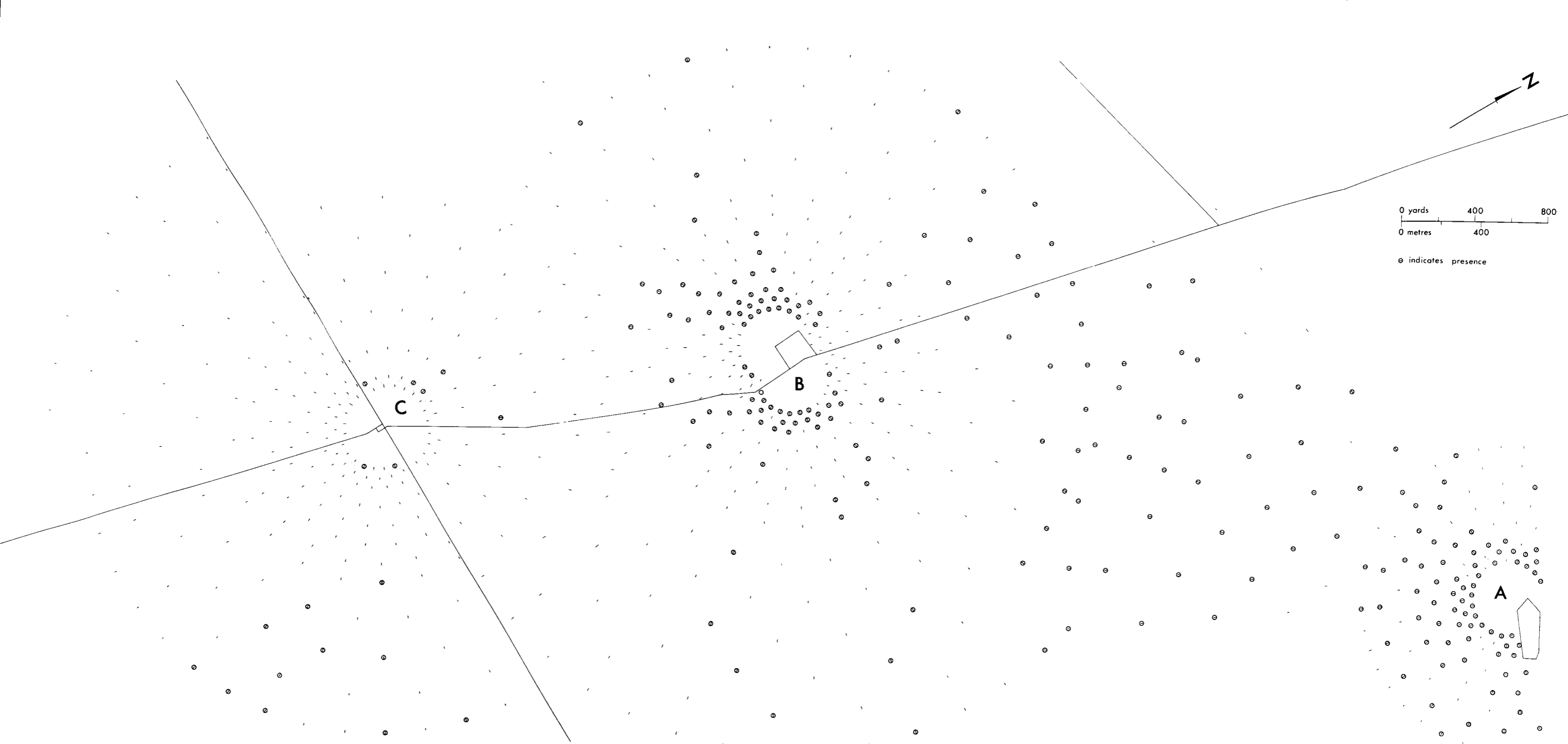
Two-Mile - Winter Flat total data: results of  
influence analysis

Node 1c - Isotels

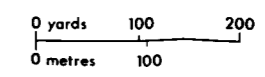
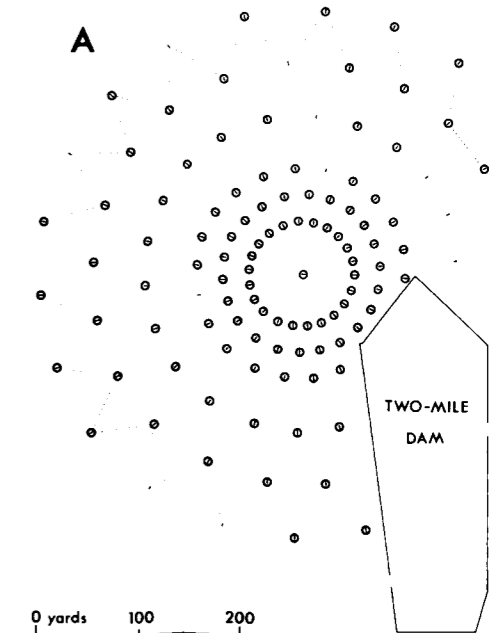
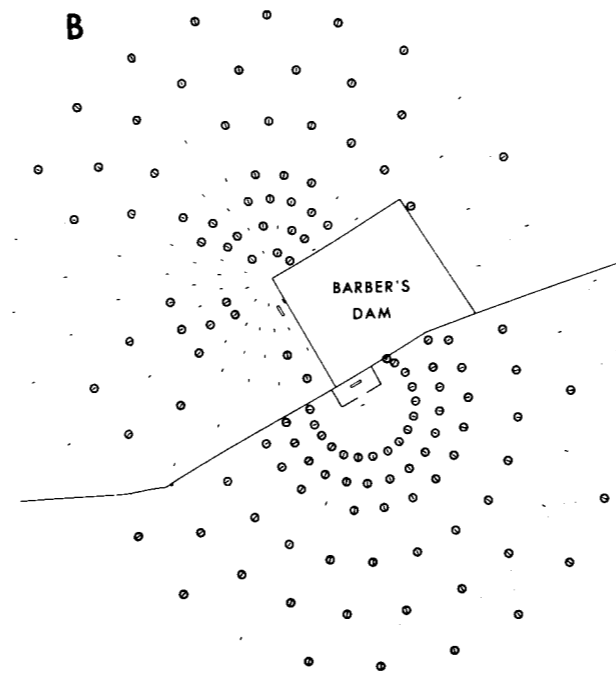
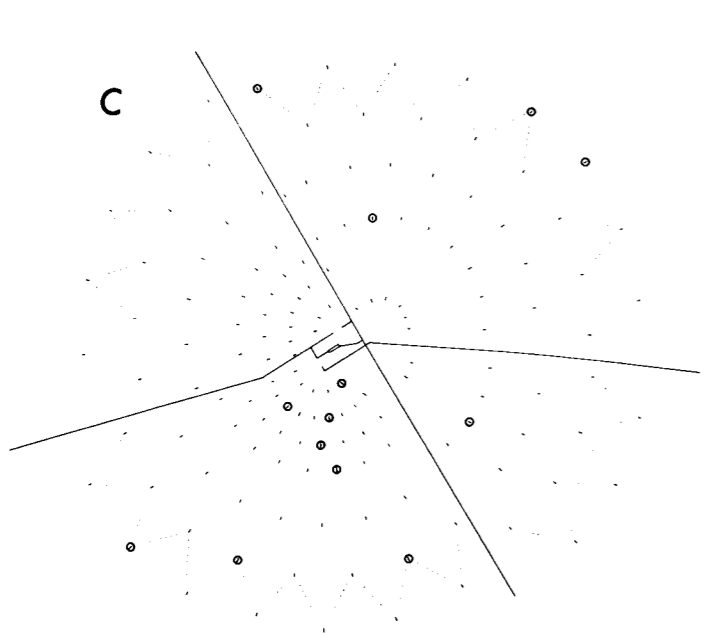


MAP 31

Two-Mile - Winter Flat total data: incidence of  
*Bassia patentiscuspis*

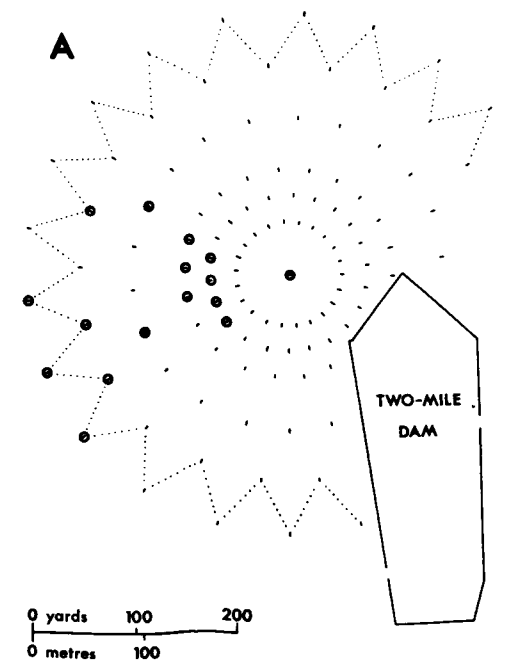
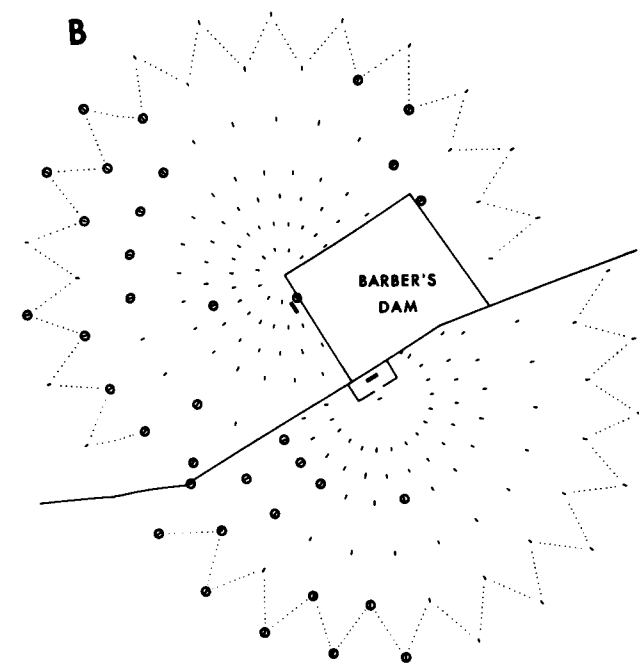
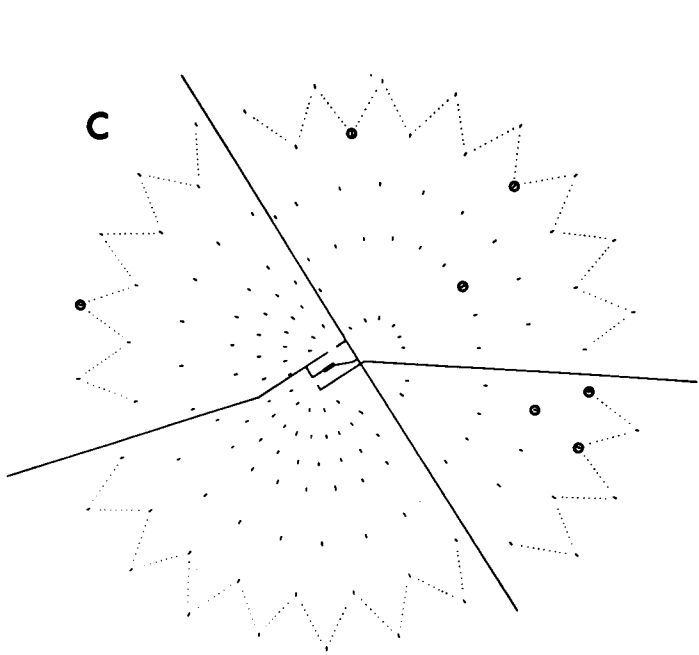
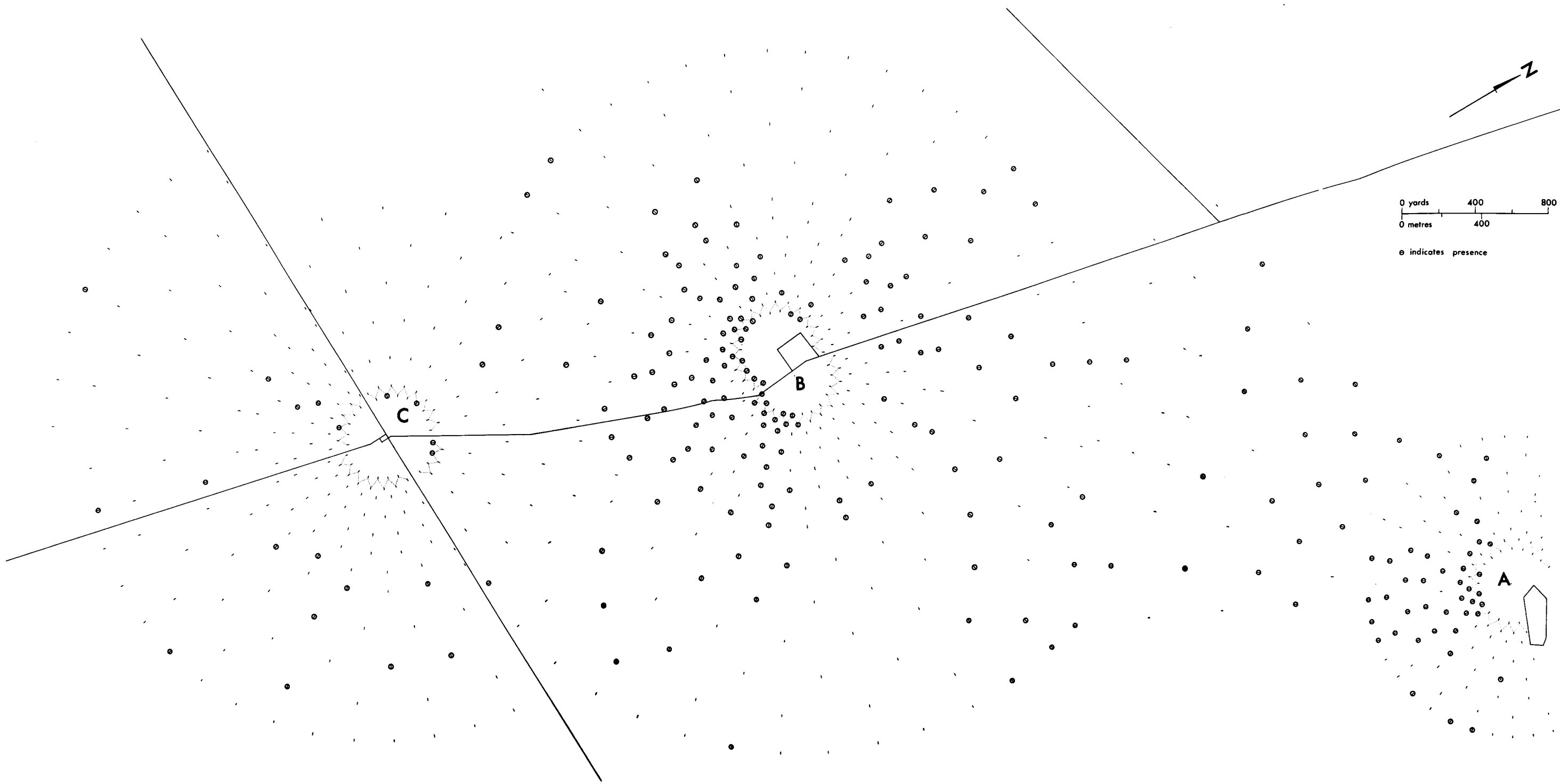


○ indicates presence



MAP 32

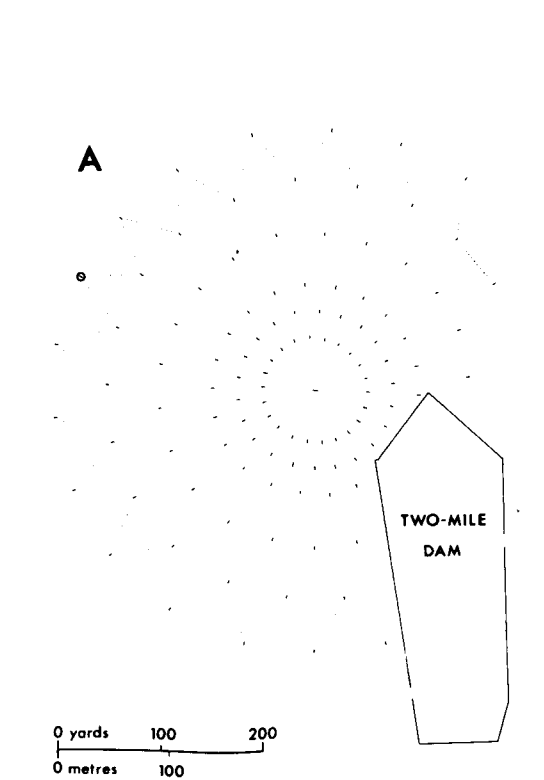
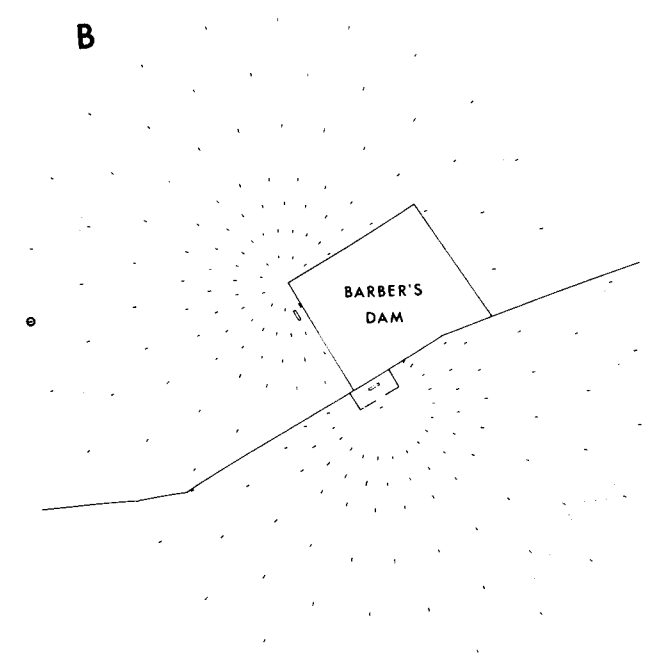
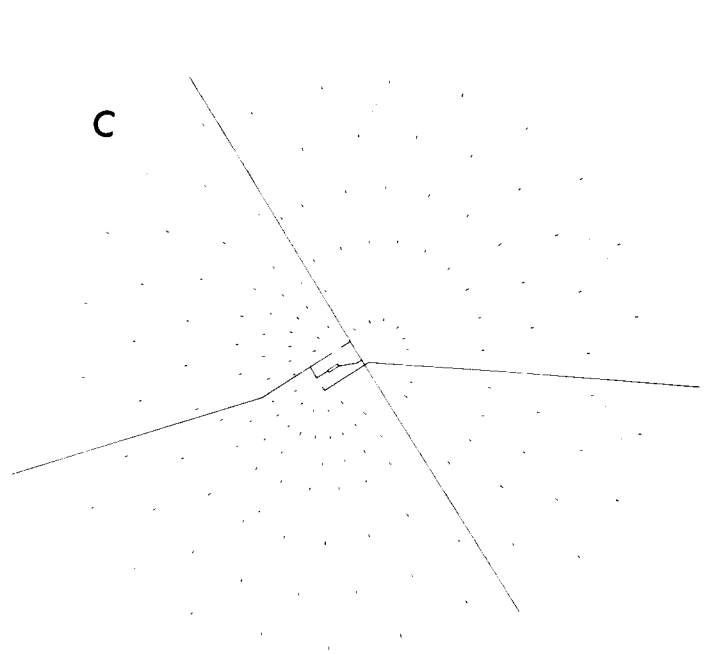
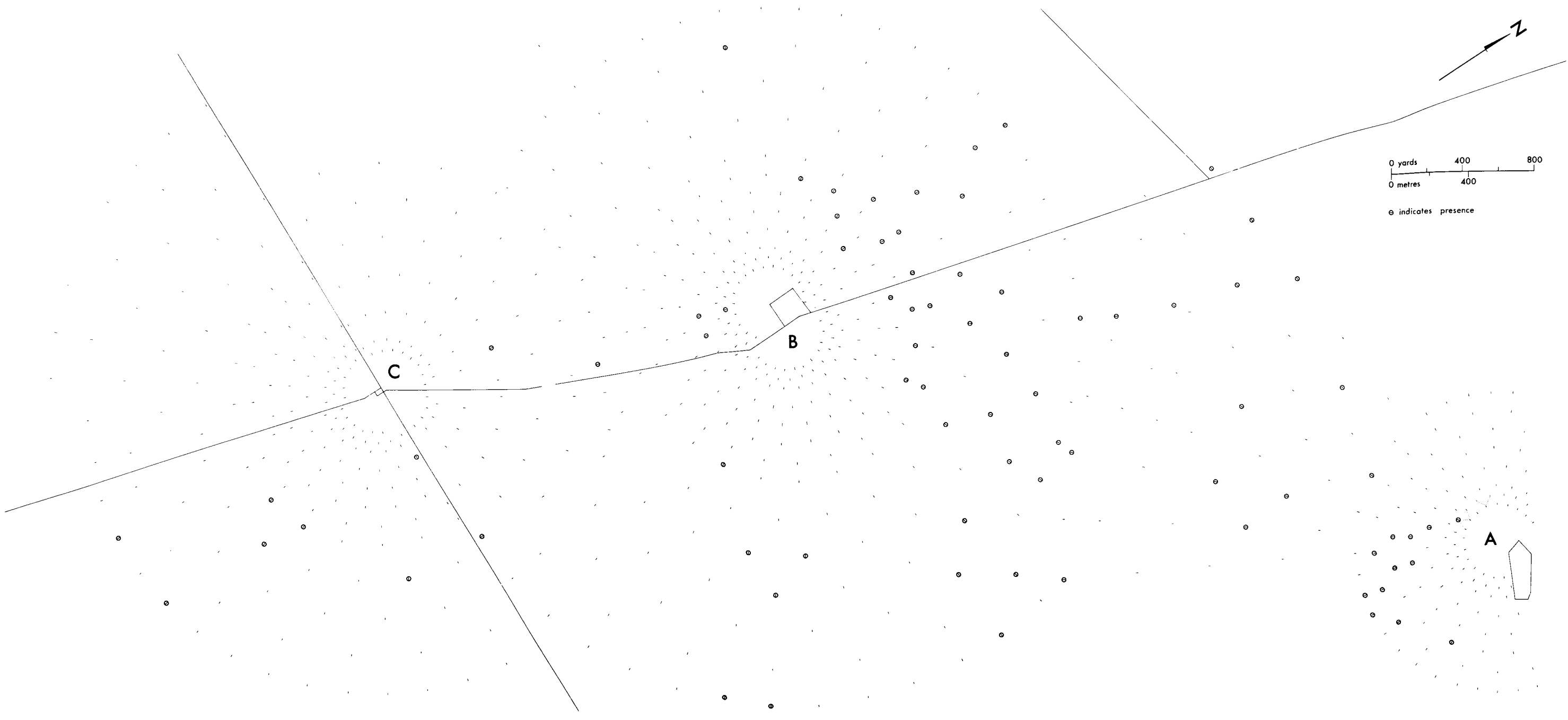
Two-Mile - Winter Flat total data: incidence of  
*Bassia sclerolaenoides*



MAP 33

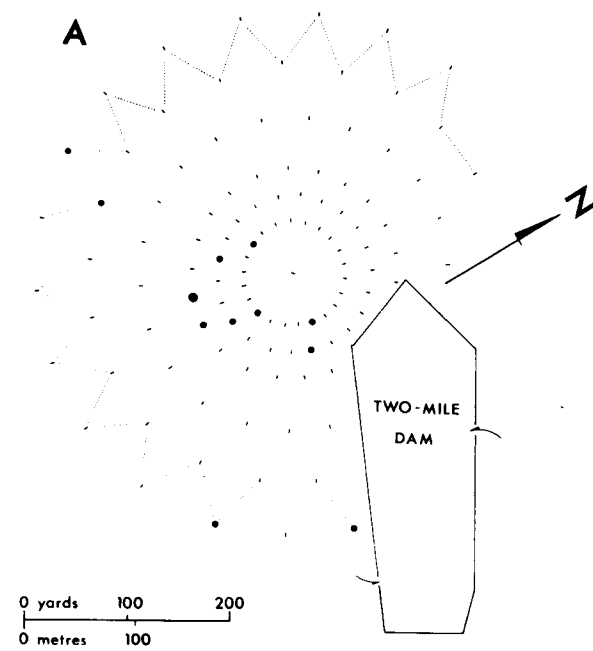
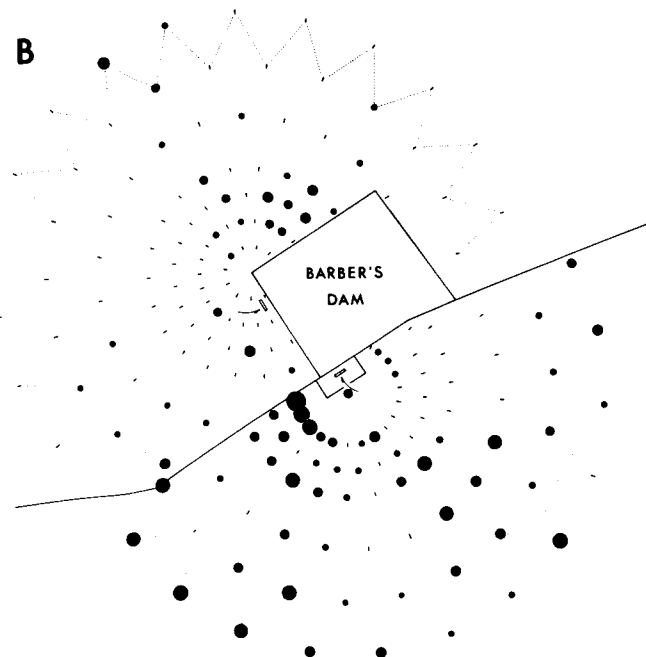
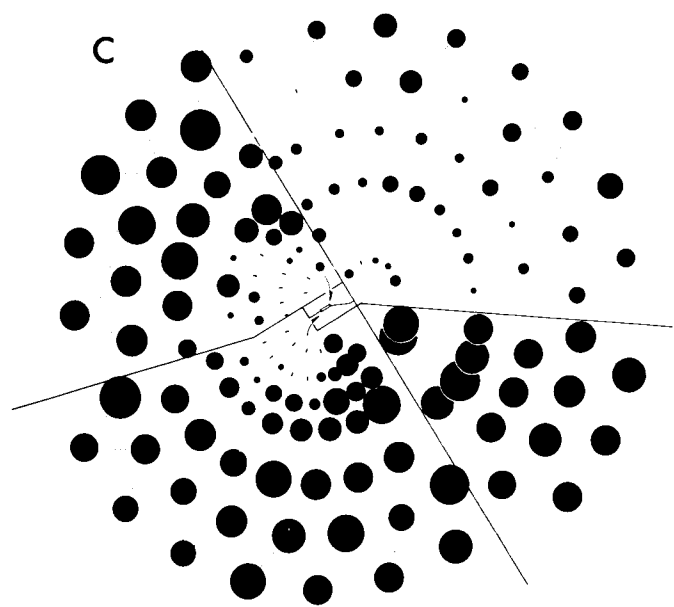
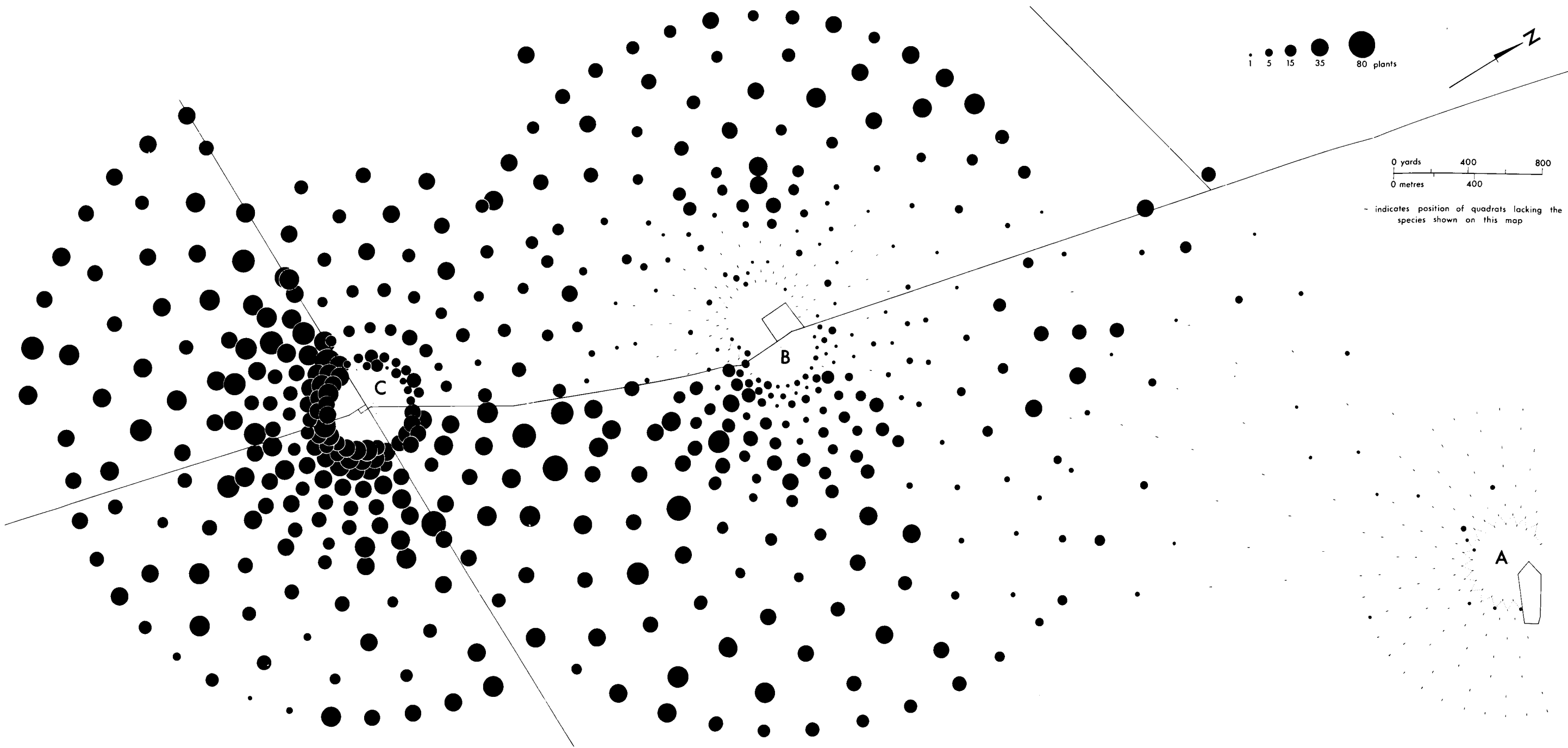
Two-Mile - Winter Flat total data: incidence of  
*Kochia excavata*





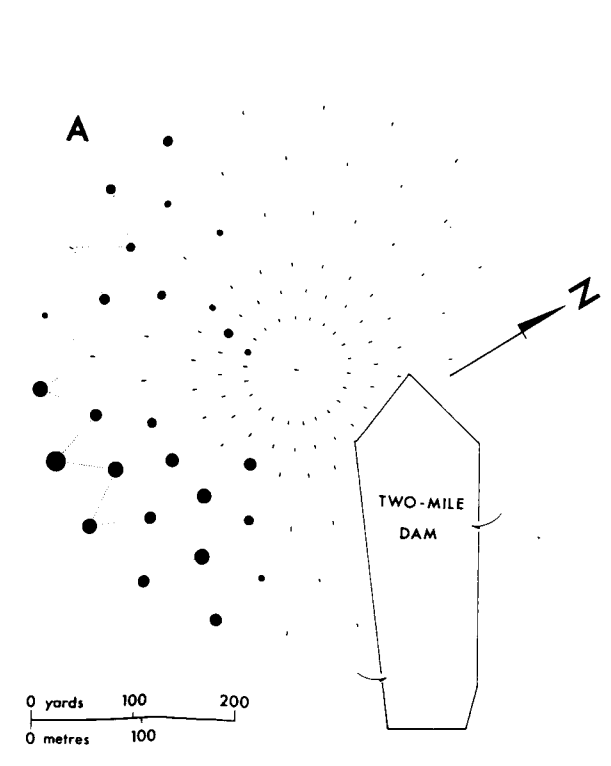
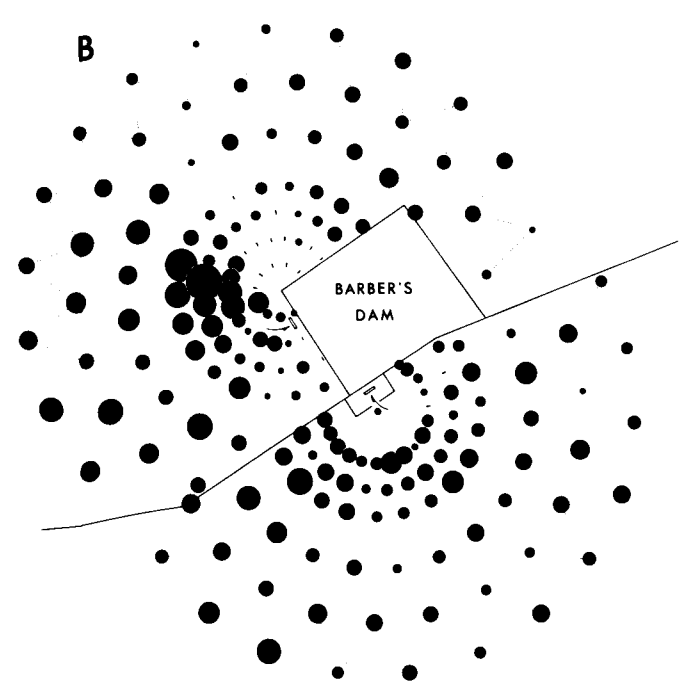
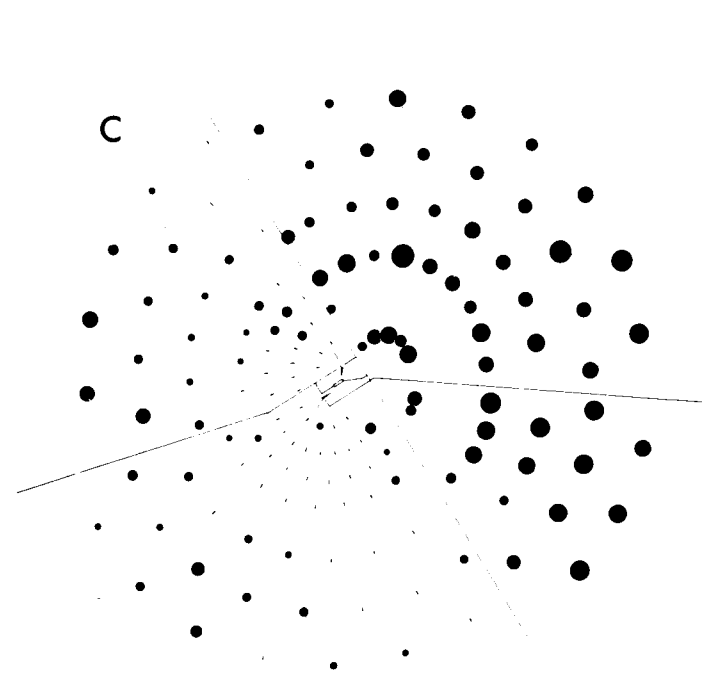
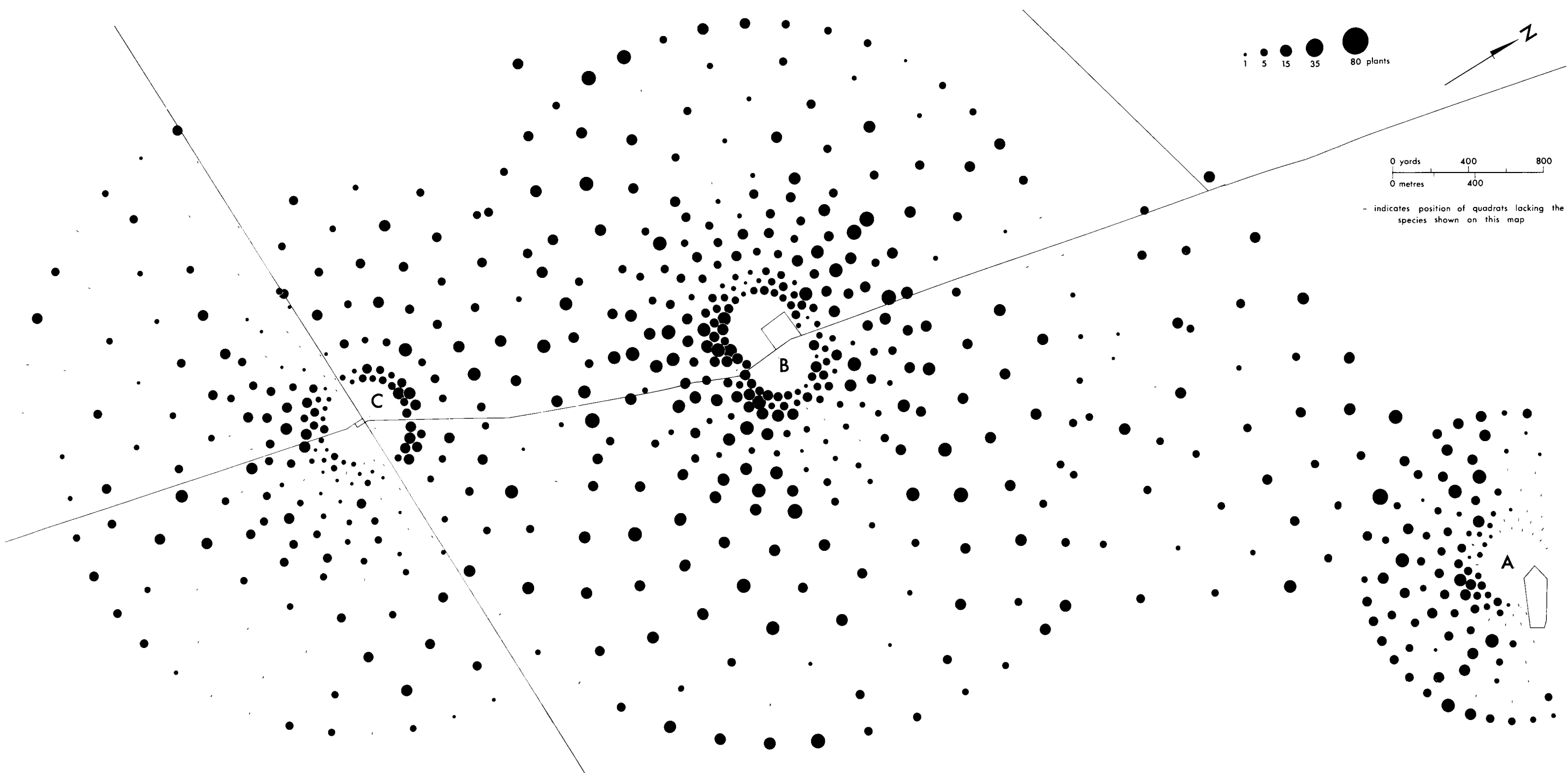
MAP 34

Two-Mile - Winter Flat total data: population densities of  
*Atriplex vesicaria*



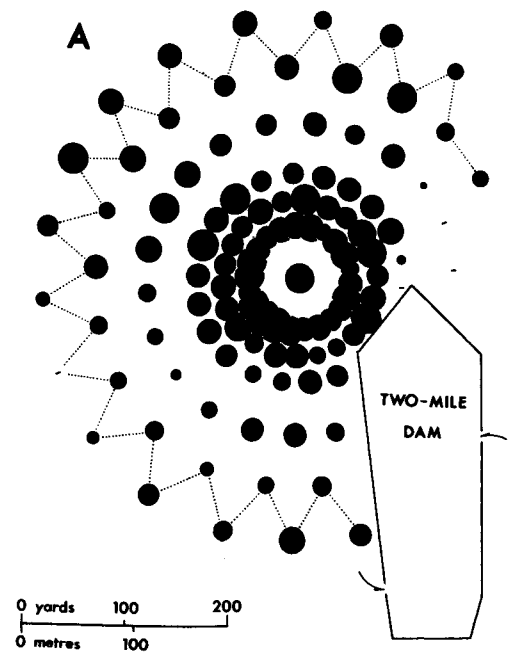
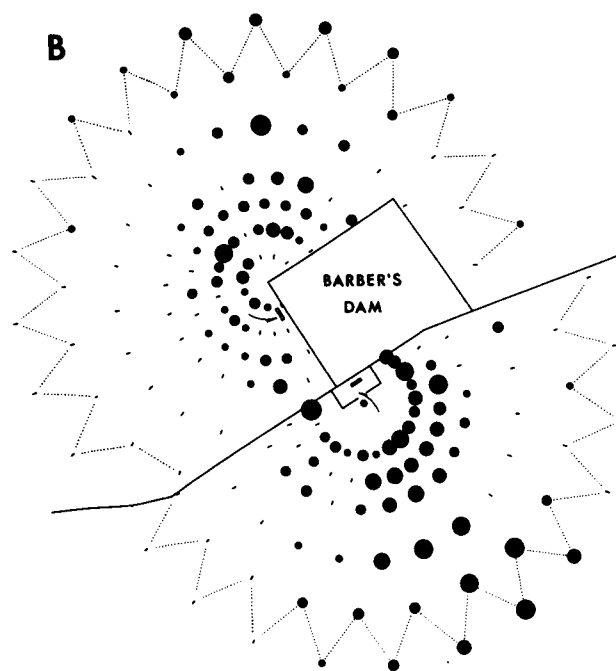
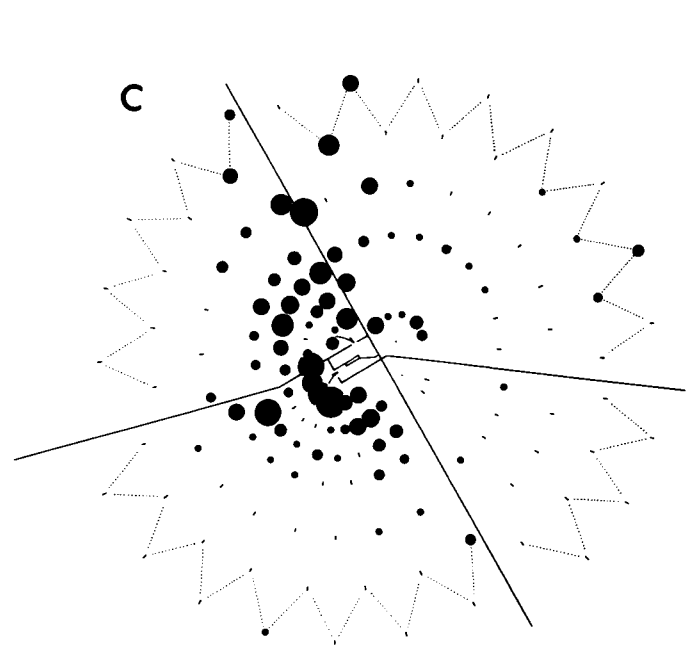
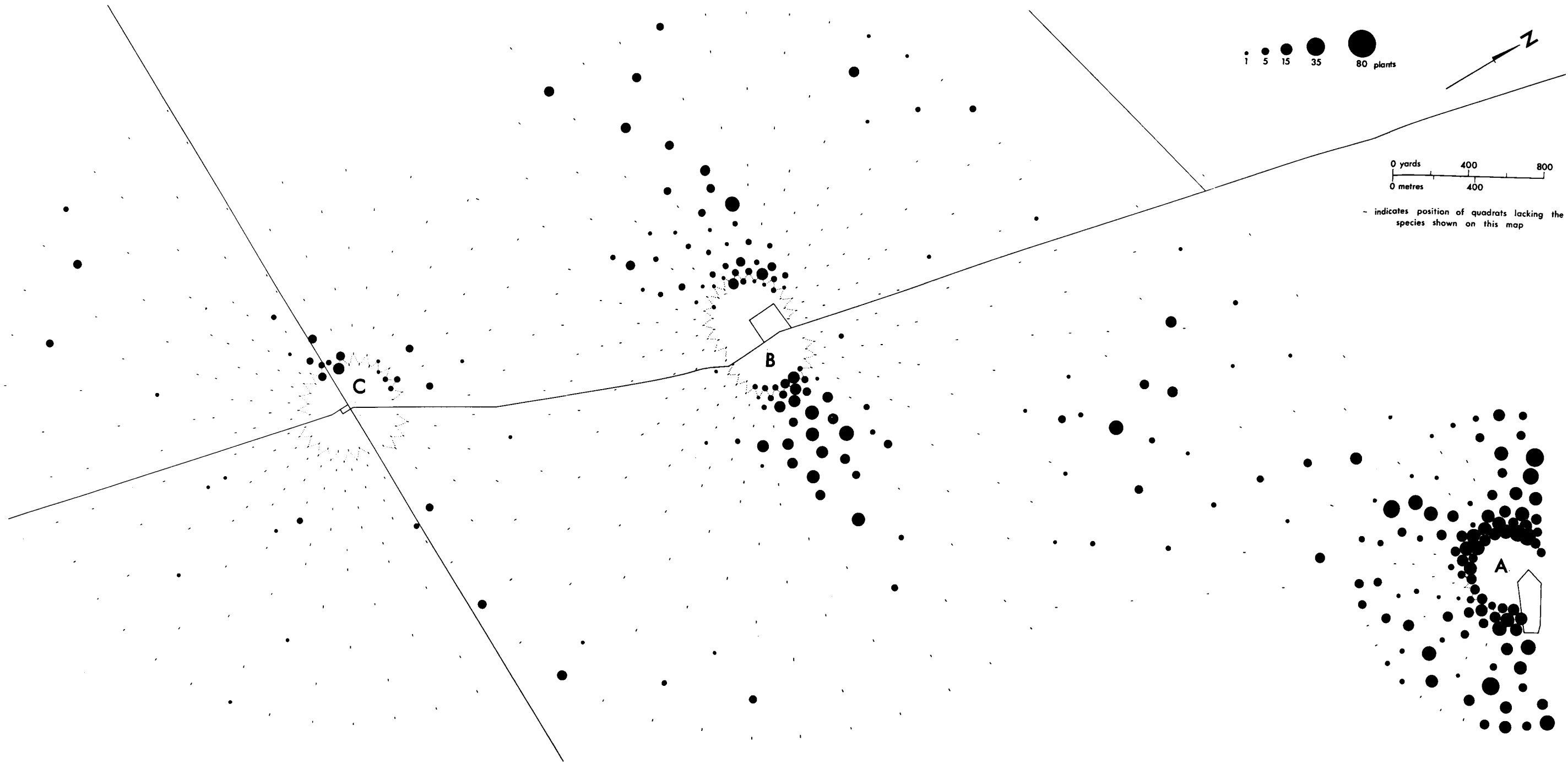
MAP 35

Two-Mile - Winter Flat total data: population densities of  
*Kochia sedifolia*



MAP 36

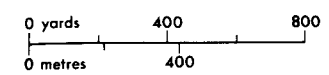
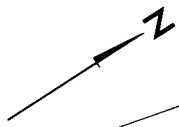
Two-Mile - Winter Flat total data: population densities of  
mature plants of *Kochia pyramidata*



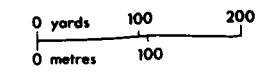
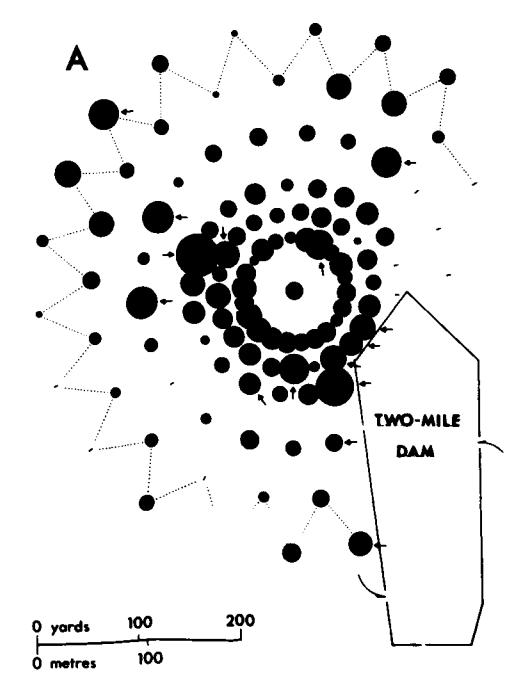
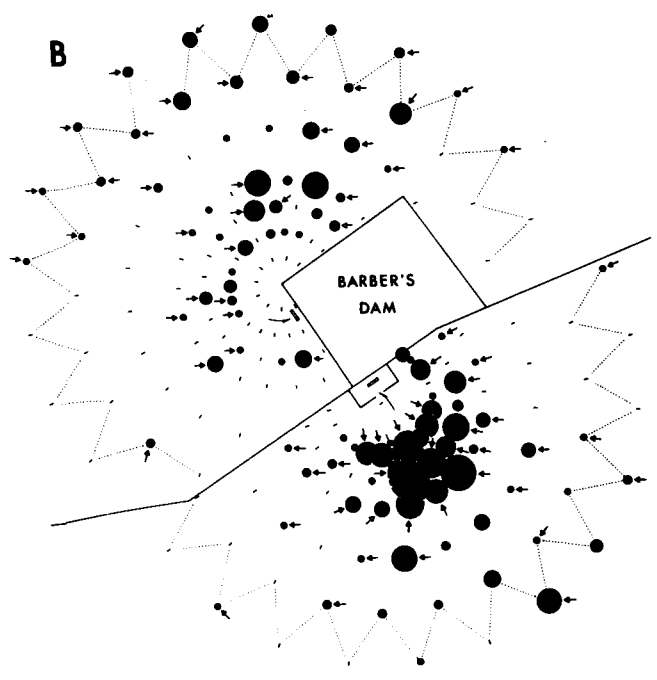
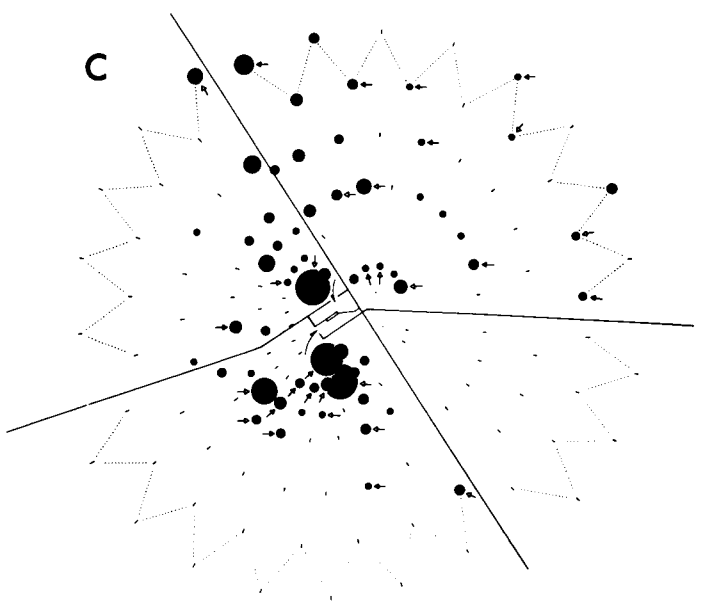
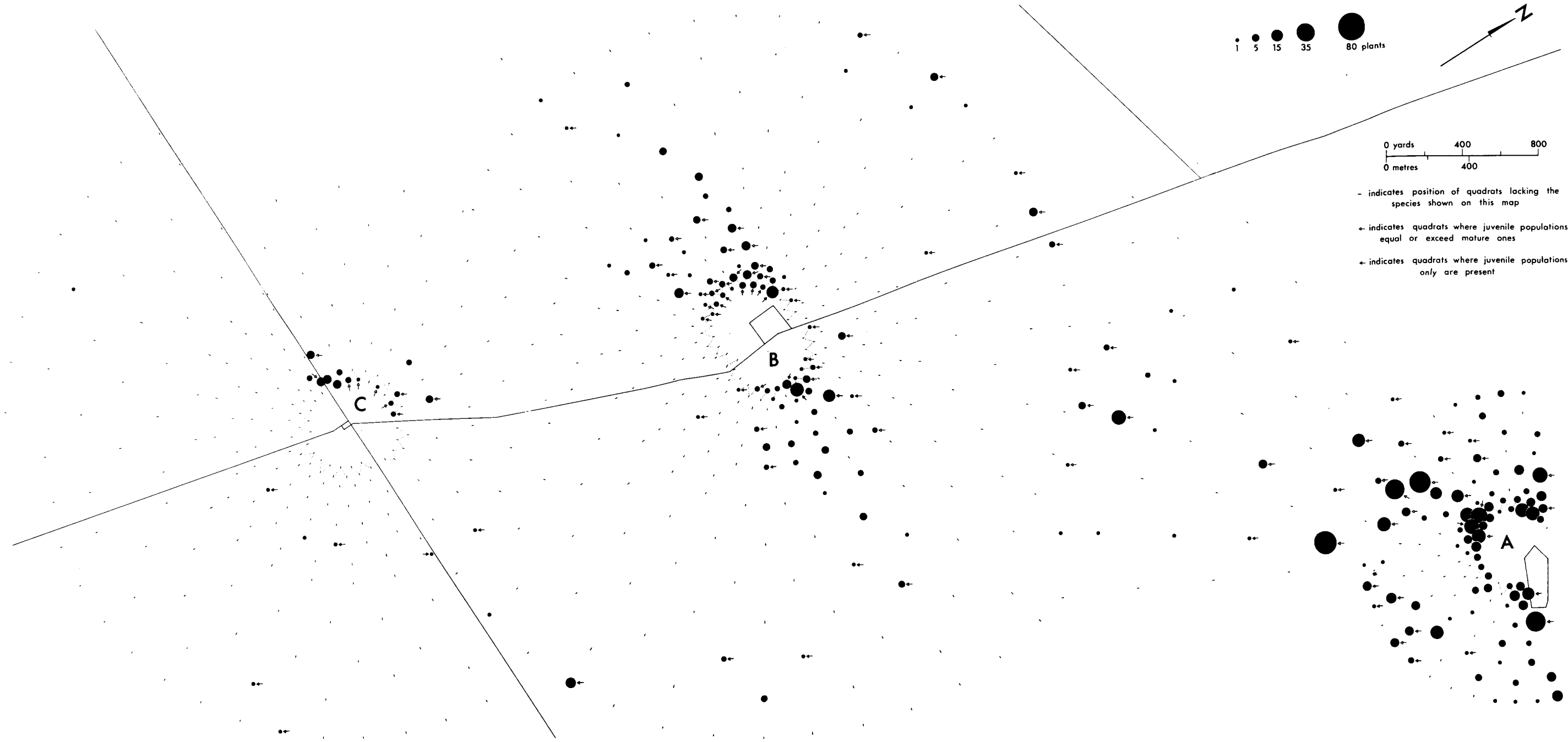
MAP 37

Two-Mile - Winter Flat total data: population densities of  
young plants of *Kochia pyramidata*



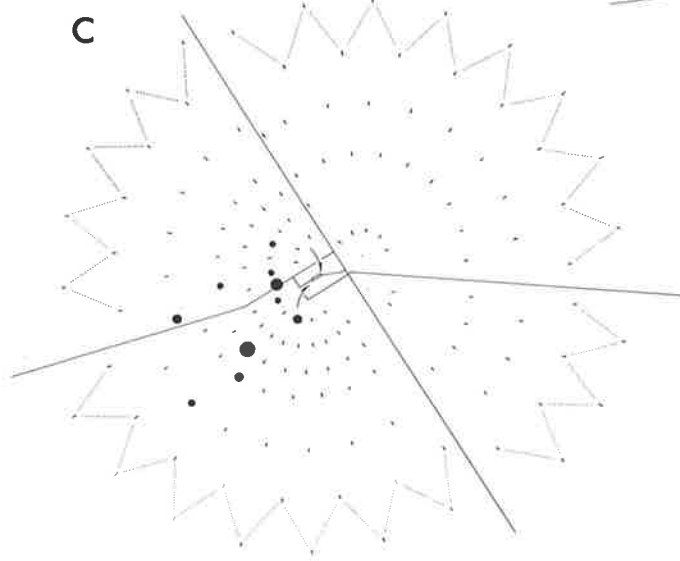
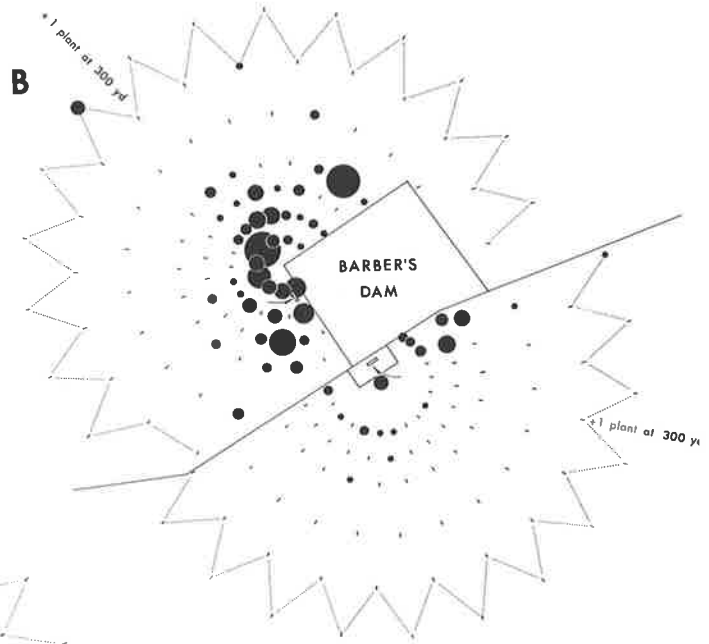
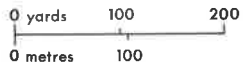
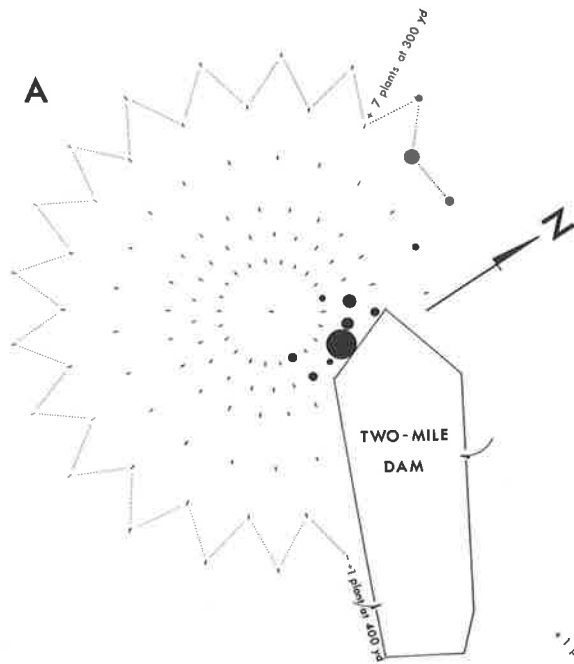


- indicates position of quadrats lacking the species shown on this map
- ↔ indicates quadrats where juvenile populations equal or exceed mature ones
- ↔ indicates quadrats where juvenile populations only are present



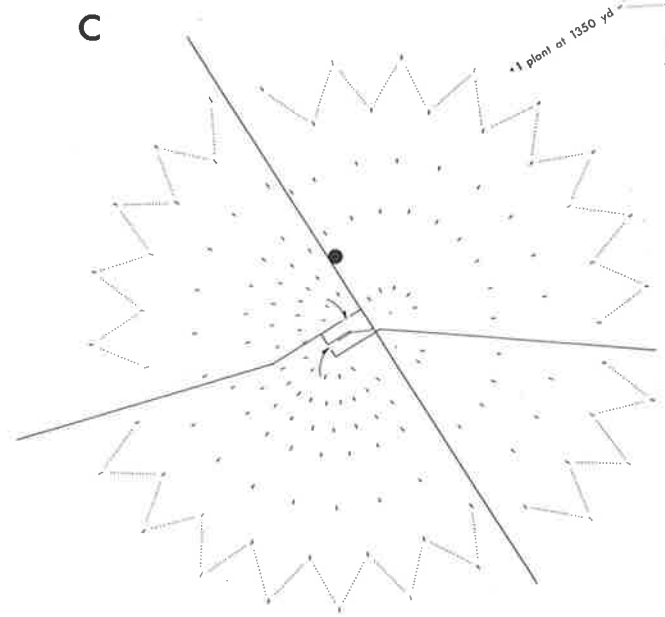
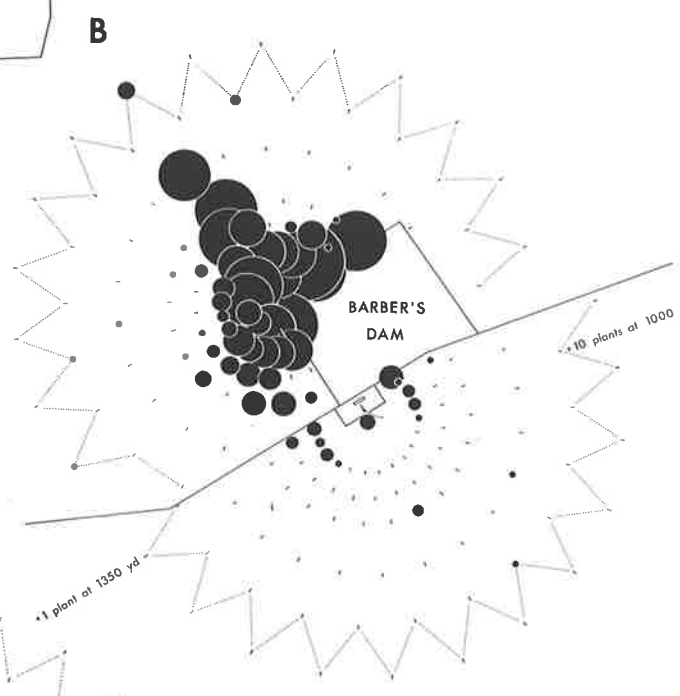
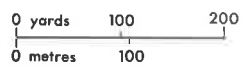
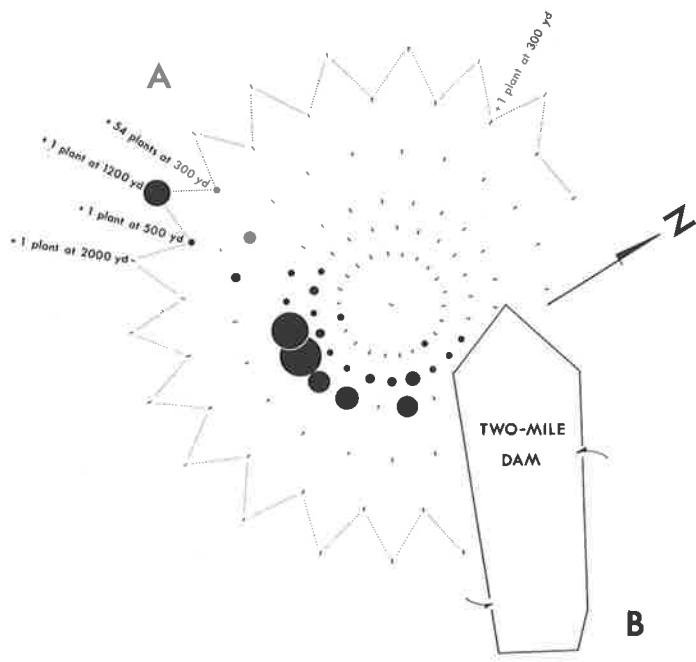
MAP 38

Two-Mile - Winter Flat total data: population densities of  
*Kochia brevifolia*



MAP 39

Two-Mile - Winter Flat total data: population densities of  
*Marrubium vulgare*



MAP 40

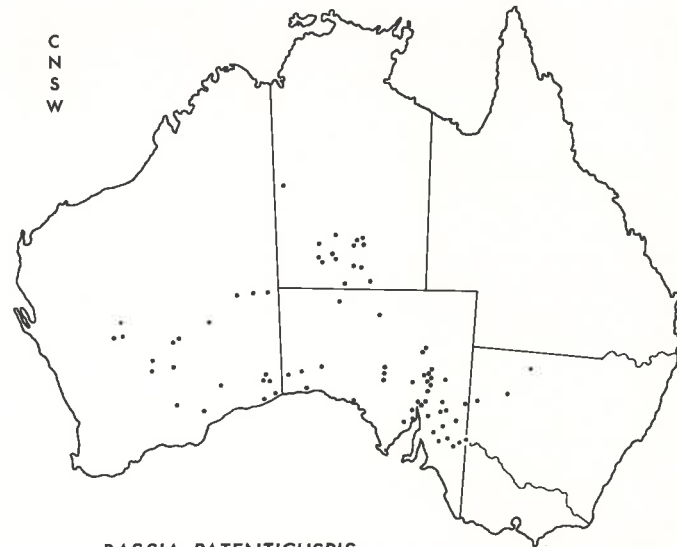
Australian distribution of some piosphere species

Sources of information shown on maps:-

- C - Herbarium of C.S.I.R.O. Division of Plant Industry,  
Canberra
- N - Herbarium of the Northern Territory, Arid Zone Research  
Institute, Alice Springs
- Q - Queensland Herbarium, Indooroopilly
- S - State Herbarium of South Australia, Adelaide
- W - Western Australian Herbarium, South Perth



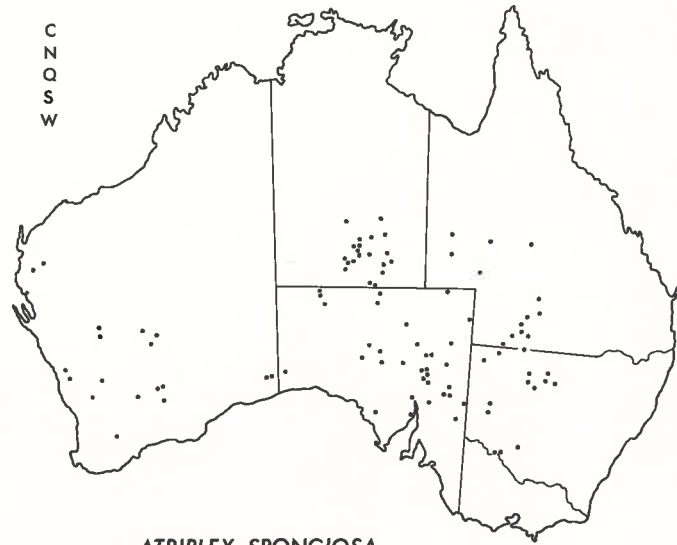
*BASSIA PARADOXA*



*BASSIA PATENTICUSPIS*



*ATRIPLEX EARDLEYAE*



*ATRIPLEX SPONGIOSA*

MAP 41

Australian distribution of some piosphere species

Sources of information shown on maps:-

- C - Herbarium of C.S.I.R.O. Division of Plant Industry, Canberra
- H - Hall, specht and Eardley (1964)
- N - Herbarium of the Northern Territory, Arid Zone Research Institute, Alice Springs
- Q - Queensland Herbarium, Indooroopilly
- S - State Herbarium of South Australia, Adelaide
- W - Western Australian Herbarium, South Perth





*ATRIPLEX STIPITATA*



*KOCHIA BREVIFOLIA*



*KOCHIA PYRAMIDATA*



*MARRUBIUM VULGARE*