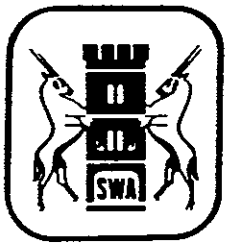
Invasive alien organisms in South West Africa/Namibia

3 authors, including:

Cj Brown
Namibian Chamber of Environment
12 PUBLICATIONS **383** CITATIONS
SEE PROFILE

Ian A W Macdonald
47 PUBLICATIONS **1,517** CITATIONS
SEE PROFILE



Invasive alien organisms in South West Africa/Namibia

Edited by C J Brown, I A W Macdonald and S E Brown

This report results from a workshop organized by the Directorate of Nature Conservation and Recreation Resorts in Windhoek, and is produced in conjunction with the Council for Scientific and Industrial Research

A report of the National Programme for Environmental Sciences

Produced as part of the South African contribution to the international SCOPE project on the Ecology of Biological Invasions

SOUTH AFRICAN NATIONAL SCIENTIFIC PROGRAMMES REPORT NO

119

Issued by
Foundation for Research Development*
Council for Scientific and Industrial Research
P O Box 395
PRETORIA
0001
from whom copies of reports in this series are available on request

Printed in 1985 in the Republic of South Africa

ISBN 0 7988 3800 0

Editors' addresses:

Mr C J Brown
Directorate of Nature Conservation and Recreation Resorts
Private Bag 13306
WINDHOEK
9000

Mr I A W Macdonald
Percy FitzPatrick Institute of African Ornithology
University of Cape Town
RONDEBOSCH
7700

Mrs S E Brown
South West Africa Herbarium
Directorate of Agriculture and Forestry
Private Bag 13184
WINDHOEK
9000

*previously Cooperative Scientific Programmes

CHAPTER 3 INVASIVE ALIEN PLANTS IN THE ETOSHA NATIONAL PARK

K Nott

INTRODUCTION

The Etosha National Park (22 270 km^2) is situated in the north of SWA/ Namibia, bordering on Owambo (Map 3). The saline Etosha Pan (6 133 km^2) occupies the central and north-western sector of the Park (Berry 1972) and is surrounded by dwarf shrub savanna fringe, while the rest of the Park falls within the mopane savanna region (Giess 1971) (Bioclimatic regions 9 and 10, cf Map 2). The Park receives between 300 and 500 mm of rain per annum, the western parts being more arid than the east. Only two climatic seasons are recognised; a dry (April to October) and a wet (November to March) season. Three large tourist camps have been constructed within the Park; Okaukuejo, Halali and Namutoni. These are served by a network of gravel roads which are confined mainly to the south and western regions bordering the Etosha Pan.

Several alien invasive plant species were recorded by le Roux (1980) in his vegetation classification studies in Etosha National Park. The control of alien invasive plants began in 1980 in the Namutoni area.

The following invasive aliens have been recorded in the Park, outside tourist camps and residential areas: Bidens biternata, Datura innoxia, Nicotiana glauca and Opuntia ficus-indica. In addition the following aliens occur within tourist camps and residential areas within the Park: Agave spp, Argemone ochroleuca, Datura spp, Lantana camara, Melia azedarach, Nicotiana glauca, Opuntia spp, Prosopis spp, Ricinus communis and other aliens which could cause a threat of invasion.

SPECIES ACCOUNTS

Bidens biternata (Map 5). This species is recorded as occurring in isolated horse camps, waterholes, rubbish dumps and probably occurs throughout the Park. It was recorded by le Roux (1980). The known infestations are localized and, as yet, no control has been undertaken. The potential rate of spread and the ecological impact of this species are unknown. It is thought to have spread into the Park from adjoining farmlands.

Datura innoxia (Map 8). This species occurs in localized areas near Okaukeujo, at Gemsbokvlakte and Eindpaal. Localized areas which can become waterlogged and drainage lines throughout the Park provide potential habitat for these plants. As yet, no control measures have been taken.

Nicotiana glauca (Map 13). This species has not yet been recorded within the Park itself, but it has been necessary to control plants found growing within 100 m of Anderson Gate in a disturbed area resulting from road building activities. These plants were growing on the piles of soil dumped along the new road. In the near future the road building activities will be extended into the Park. The potential habitat of this species extends throughout the Park. Approximately 47 plants < one metre in height and 35 plants > one metre in height, occurring within a 12 m X 30 m area were removed. Plants were chopped out and their roots removed. The plant material was then burned.

Opuntia ficus-indica (Map 14). This species occurs in the vicinity of the Okaukeujo camp, the Aroe area near Namutoni and the Halali rubbish dump. This species was probably introduced into the Park by police during the early occupation of Namutoni, as well as by the staff living in the camps. It may also have spread from the neighbouring farms. The exact time of introduction is unknown. These infestations have been restricted to relatively small areas (60 plants near Okaukeujo and 90 plants near Namutoni). The potential habitat of these plants extends throughout the Park.

Control measures were initiated in 1980 but unfortunately no detailed information is available. Any O ficus-indica plants found in the Park are immediately chopped out and burned. Roots of the smaller plants are removed, but this is often difficult with the larger individuals. Since areas of infestation are small and all known plants have been removed, this species does not appear to present a threat to indigenous species, provided control operations are continued. Many of these plants still exist in the camps, and these should be removed and destroyed to remove the remaining sources of seed and prevent further infestation.

ALIEN PLANTS IN CULTIVATED AREAS

Agave spp, Argemone ochroleuca, Datura spp, Lantana camara, Melia azedarach, Nicotiana glauca, Opuntia spp, Prosopis spp, Ricinus communis and other aliens occur in tourist camps and residential areas. These species have either been planted for shade, fruit or as ornamentals in gardens, or have become established on areas which have been disturbed due to construction operations within the camps. Their eradication is discussed below.

CONCLUSION

The following policy is proposed for the control and monitoring of invasive alien plants in the Etosha National Park:

Within the Park excluding tourist camps and residential areas:

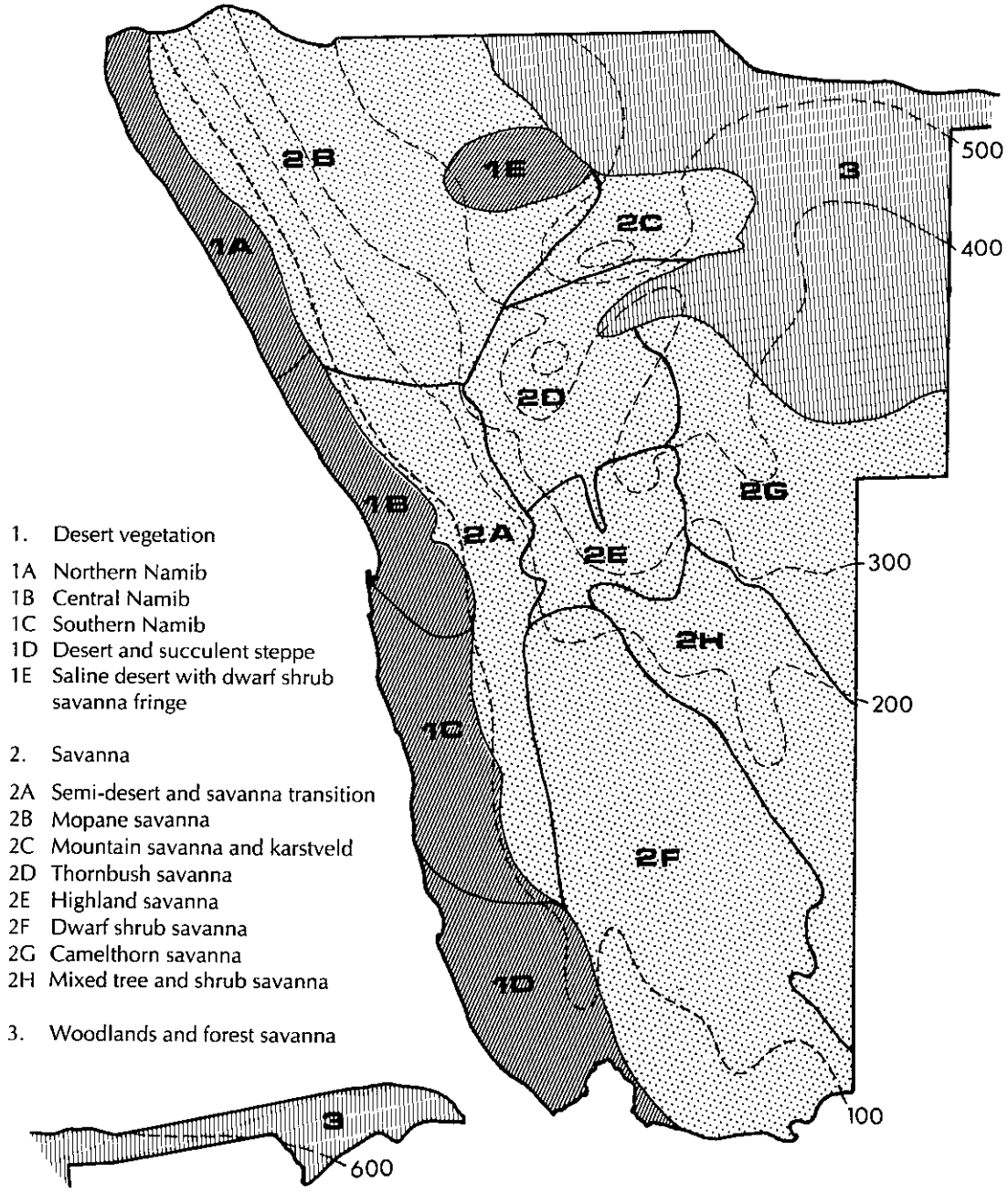
(a) A form has been compiled which enables nature conservators to record all alien invasive plants in their areas.

(b) All recorded observations of alien plants are reported to the park's botanist. Control measures are then selected and implemented.

(c) All imported fodder must be investigated for the presence of seeds of invasive alien plants.

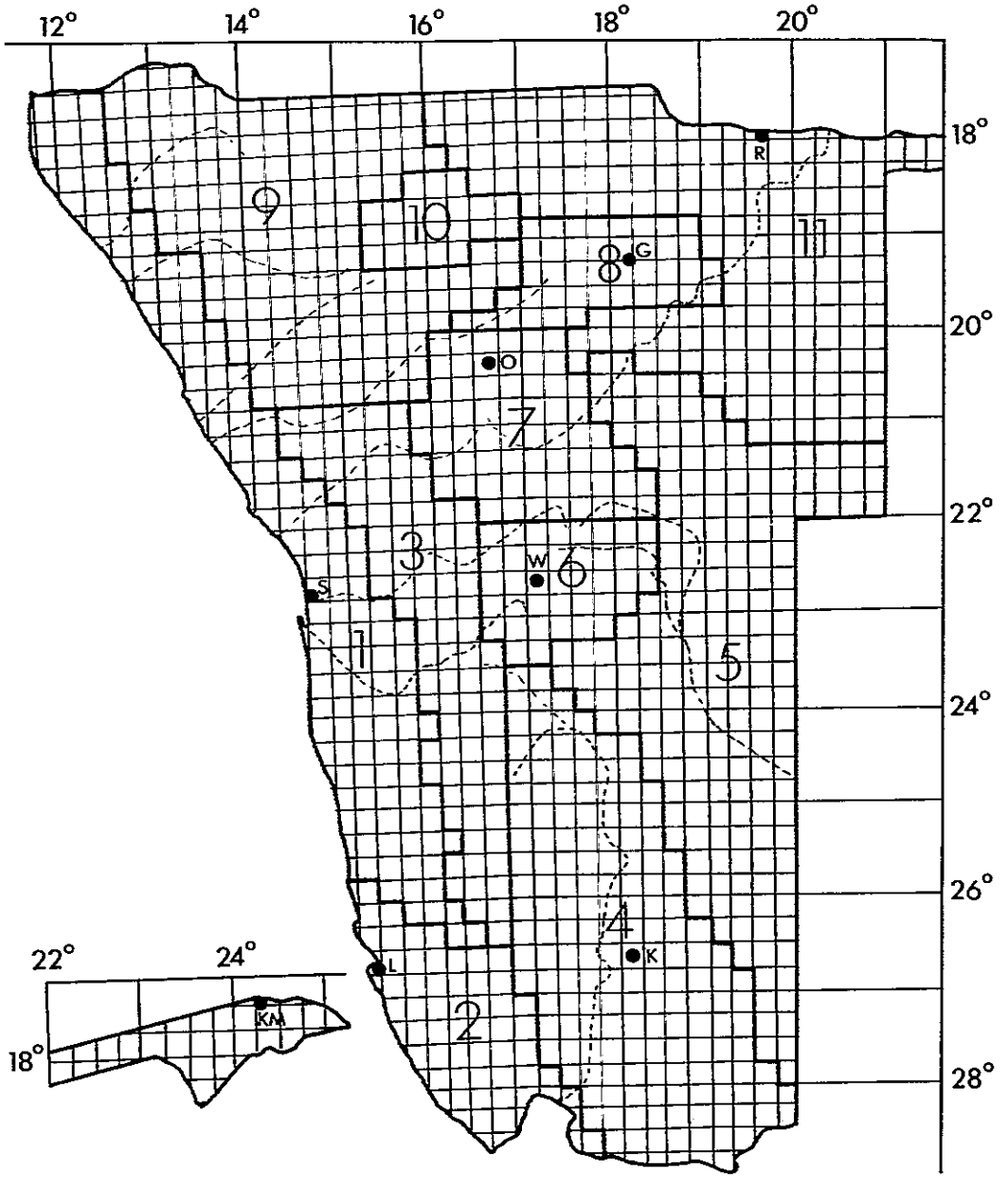
Within tourist camps and residential areas:
All the species listed above must be removed. A close watch should be kept on other alien species planted in gardens so that any of these exibiting invasive tendencies can be checked before any major problems arise. Cryptostegia grandiflorus must be assessed and evaluated as a possibly invasive species. When aliens are removed from gardens a suitable replacement should be supplied.

MAP 1. The vegetation zones (after Giess 1971) and the mean annual rainfall isohyets in South West Africa/Namibia.

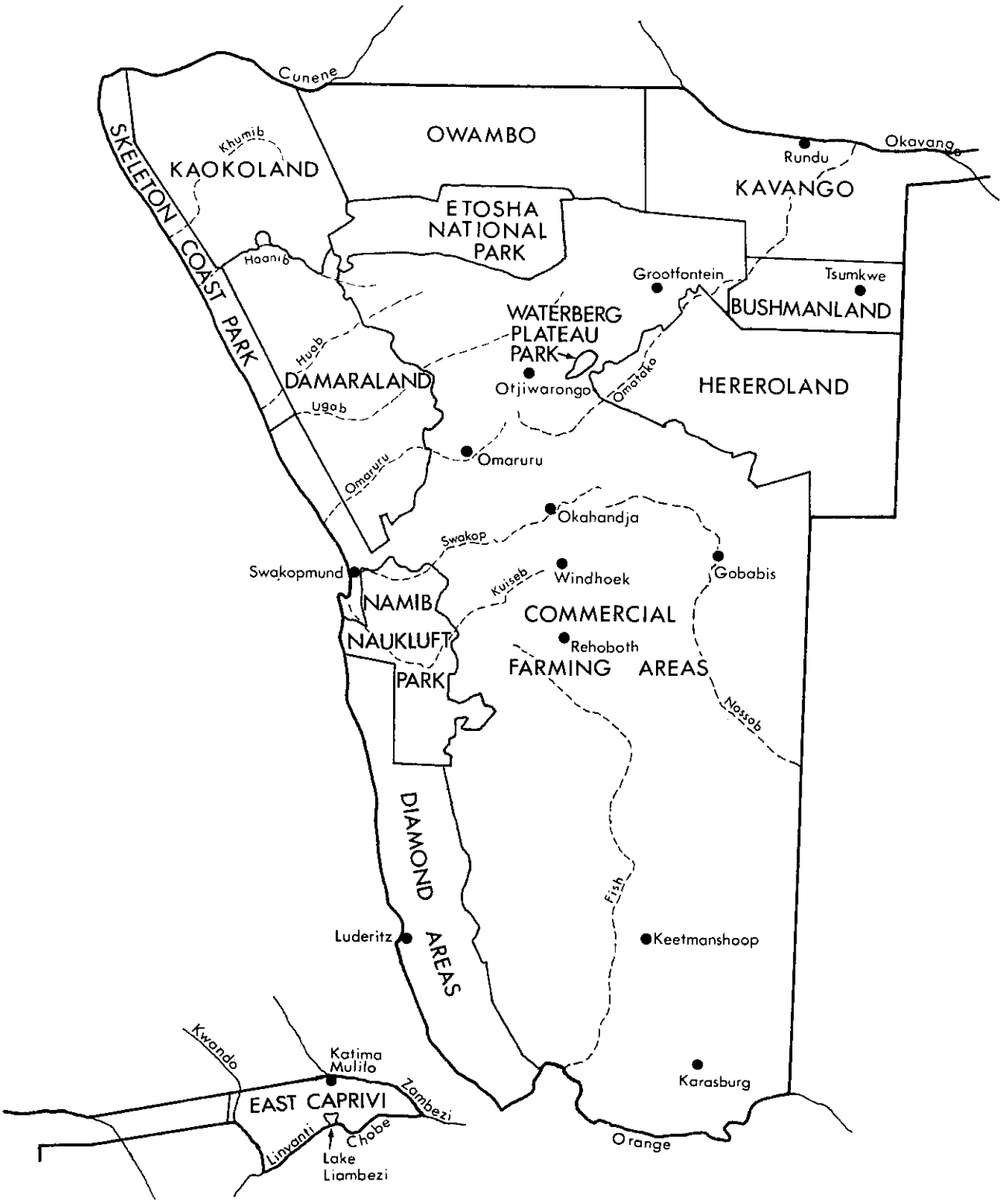


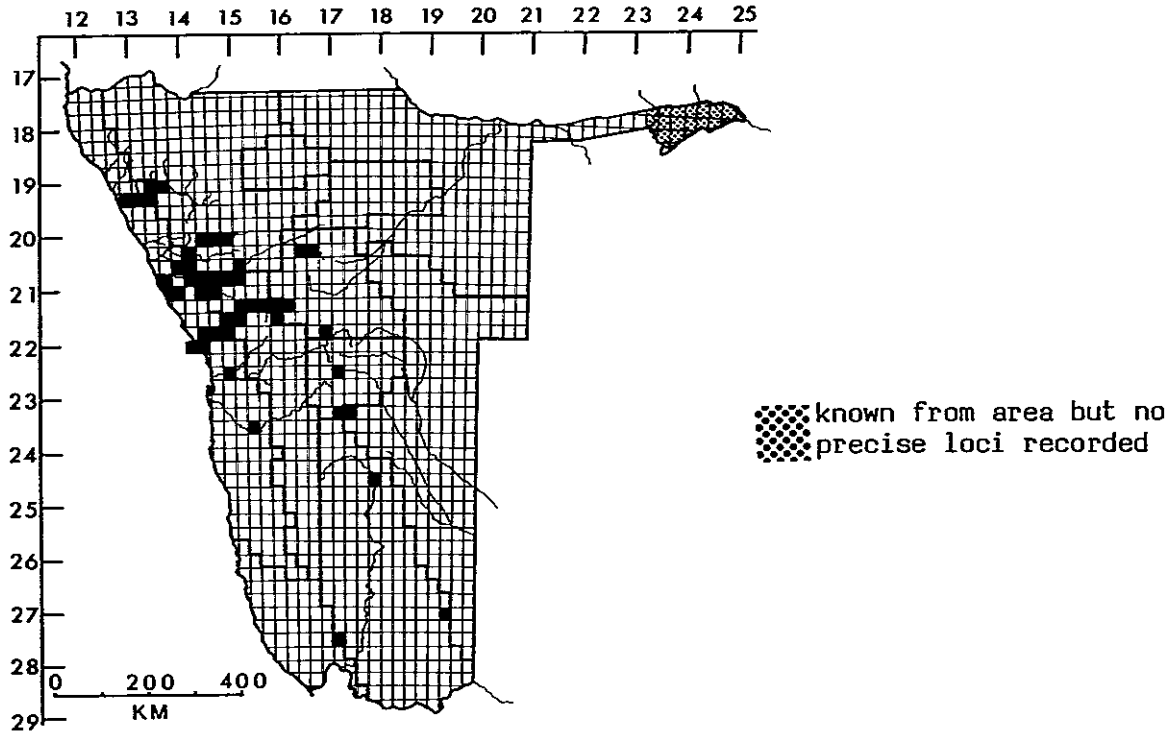
MAP 2. Bioclimatic map showing regions, quarter-degree squares, major rivers and major towns.

Region 1 Namib Desert, summer rainfall; 50 mm
2 Namib Desert, winter rainfall; 50 mm
3 Semi-desert and savanna transition; 50-150 mm
4 Dwarf shrub savanna; 50-200 mm
5 Kalahari Acacia savanna; 150-400 mm
6 Highland savanna; 250-400 mm
7 Thornbush savanna; 350-450 mm
8 Mountain savanna; 450-600 mm
9 Mopane savanna; 100-400 mm
10 Saline pans with dwarf shrub fringe
11 Forest savanna and woodland; 400-700 mm

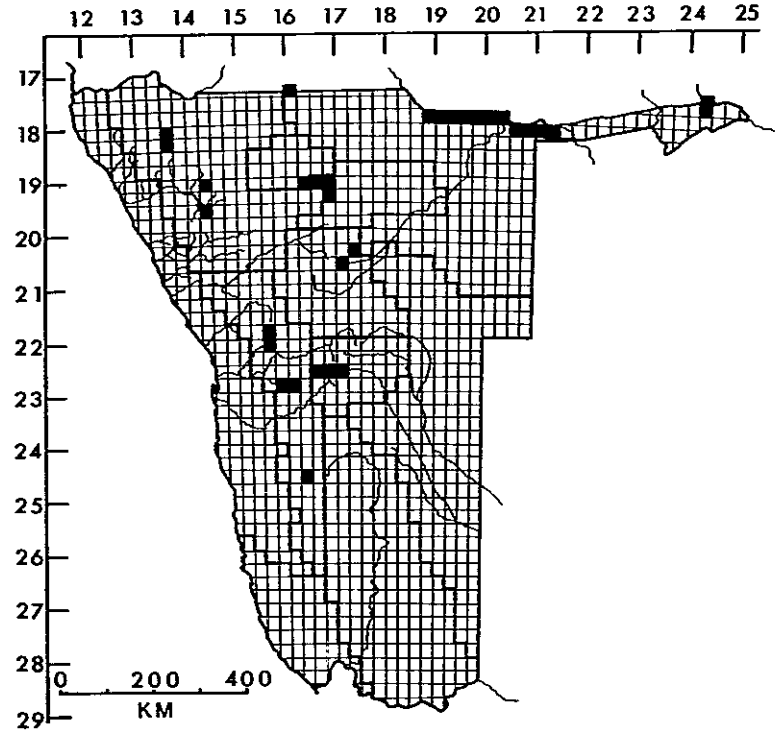


MAP 3. South West Africa/Namibia showing main place names mentioned in text.

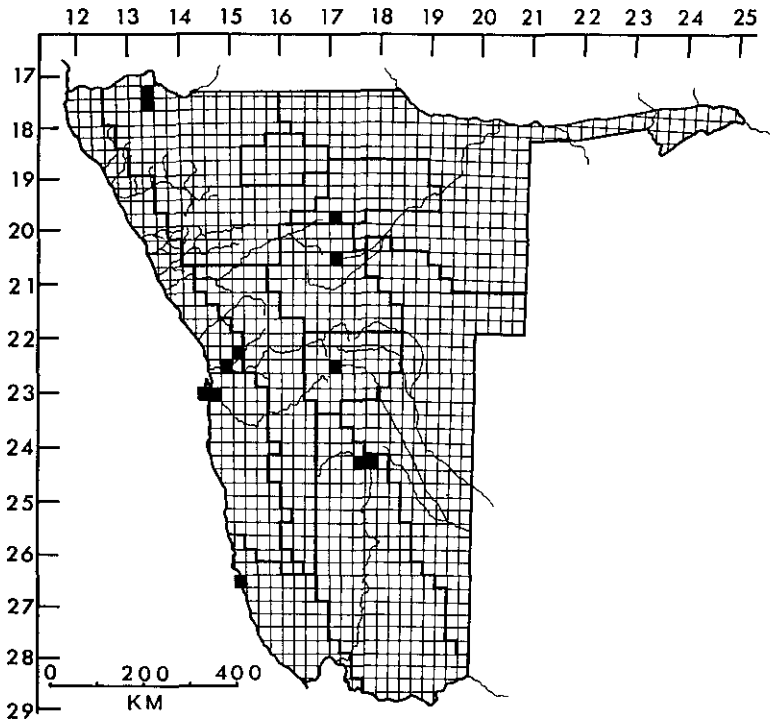




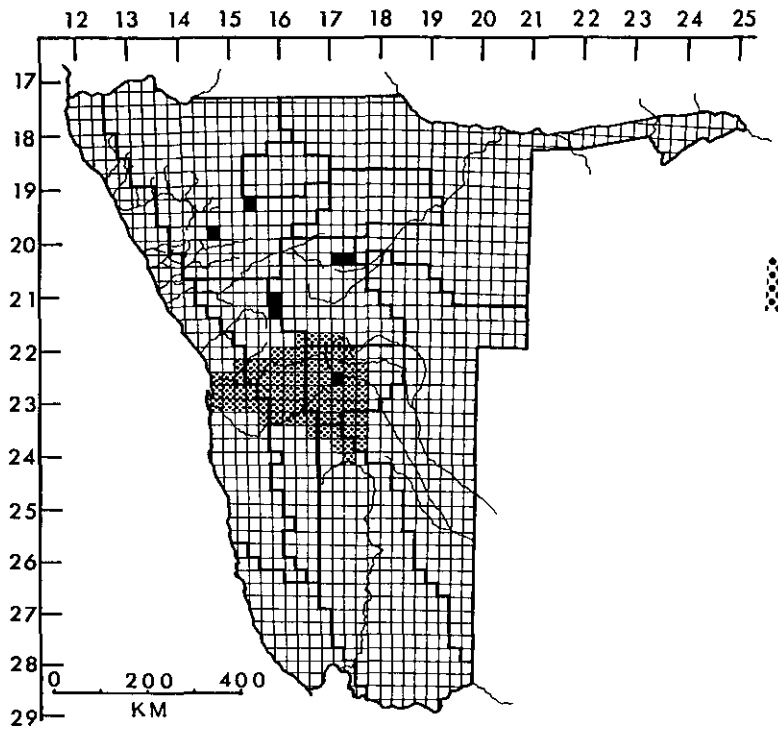
MAP 4. Distribution map of Argemone ochroleuca.



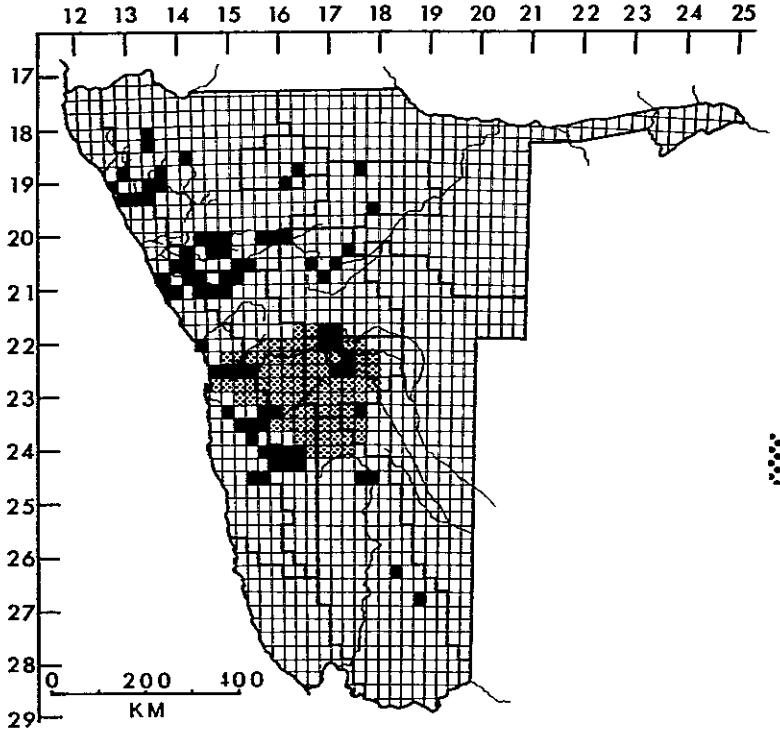
MAP 5. Distribution map of Bidens biternata.



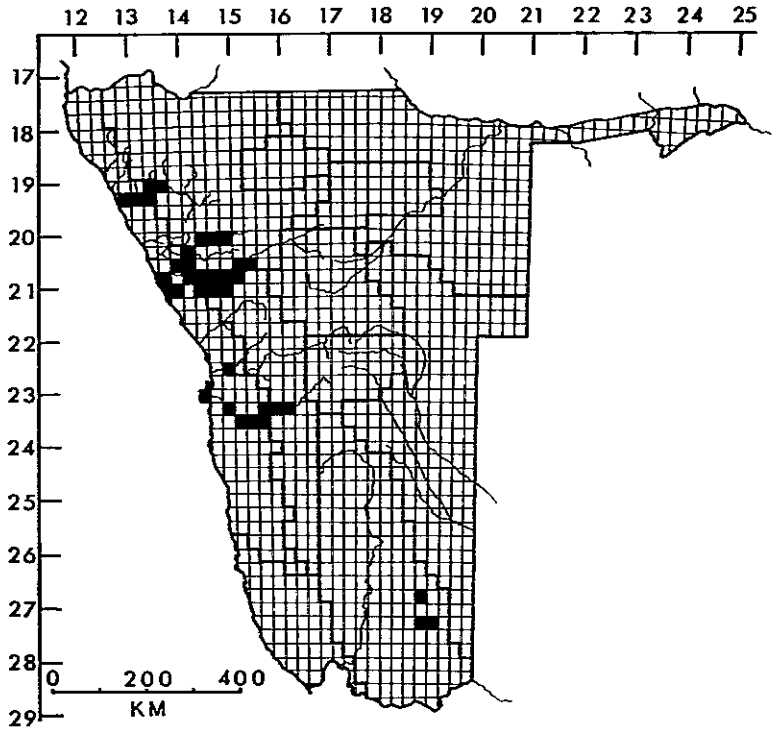
MAP 6. Distribution map of Chenopodium ambrosioides.



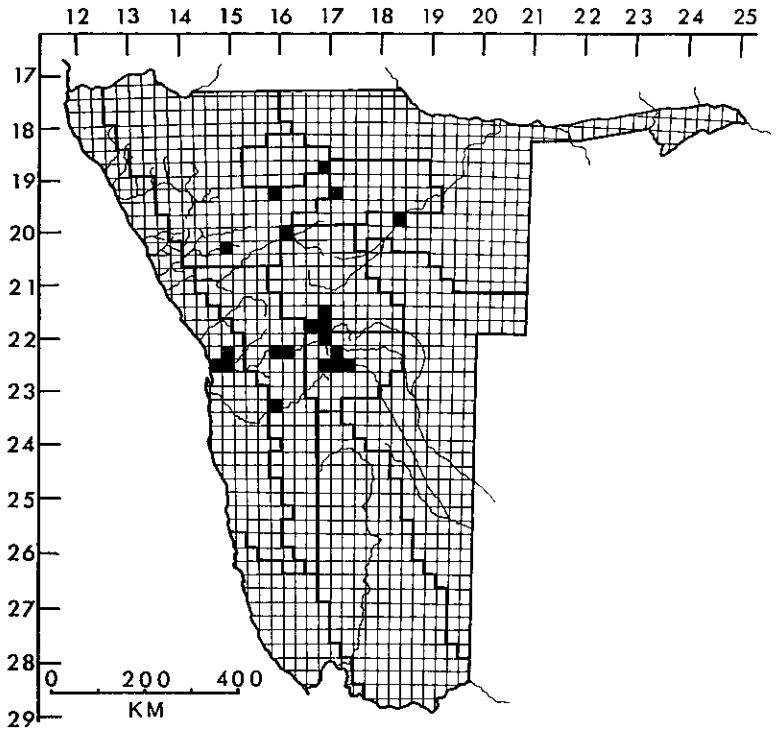
MAP 7. Distribution map of Datura ferox.



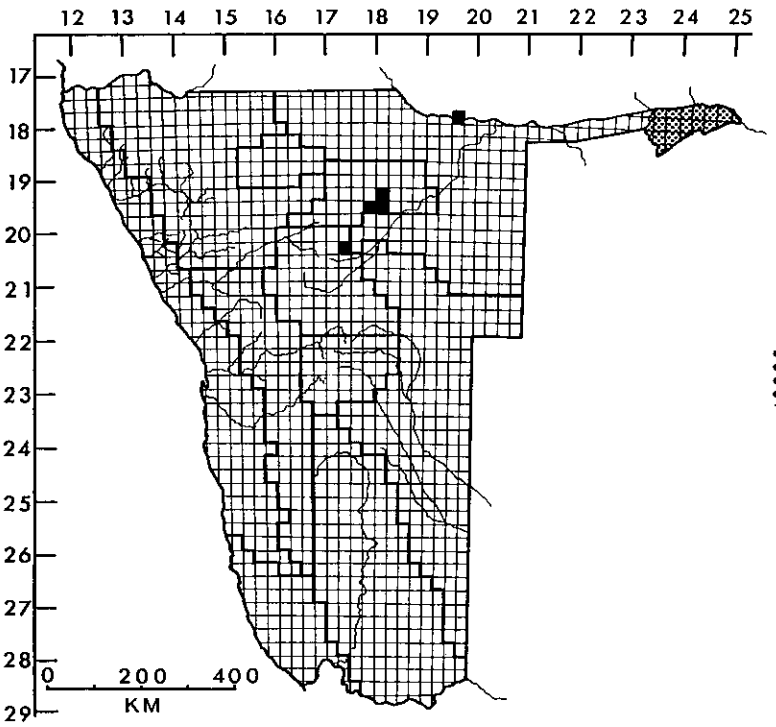
MAP 8. Distribution map of Datura innoxia.



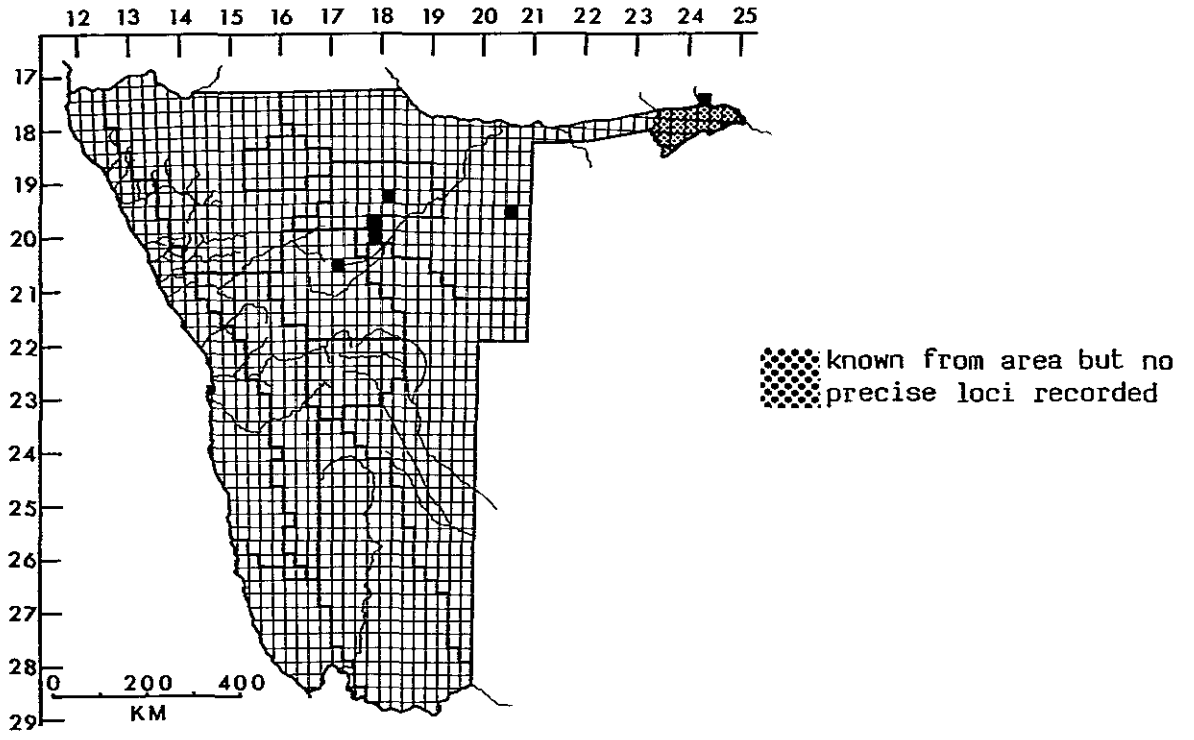
MAP 9. Distribution map of Datura stramonium.



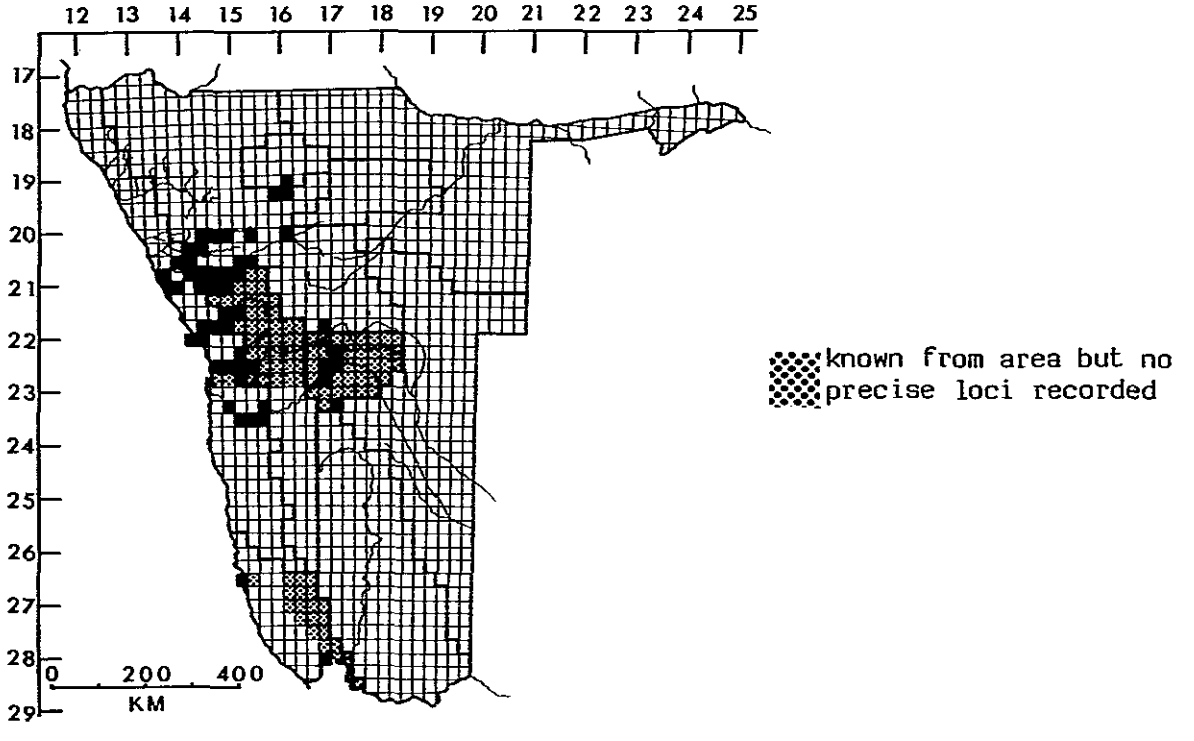
MAP 10. Distribution map of Flaveria bidentis.



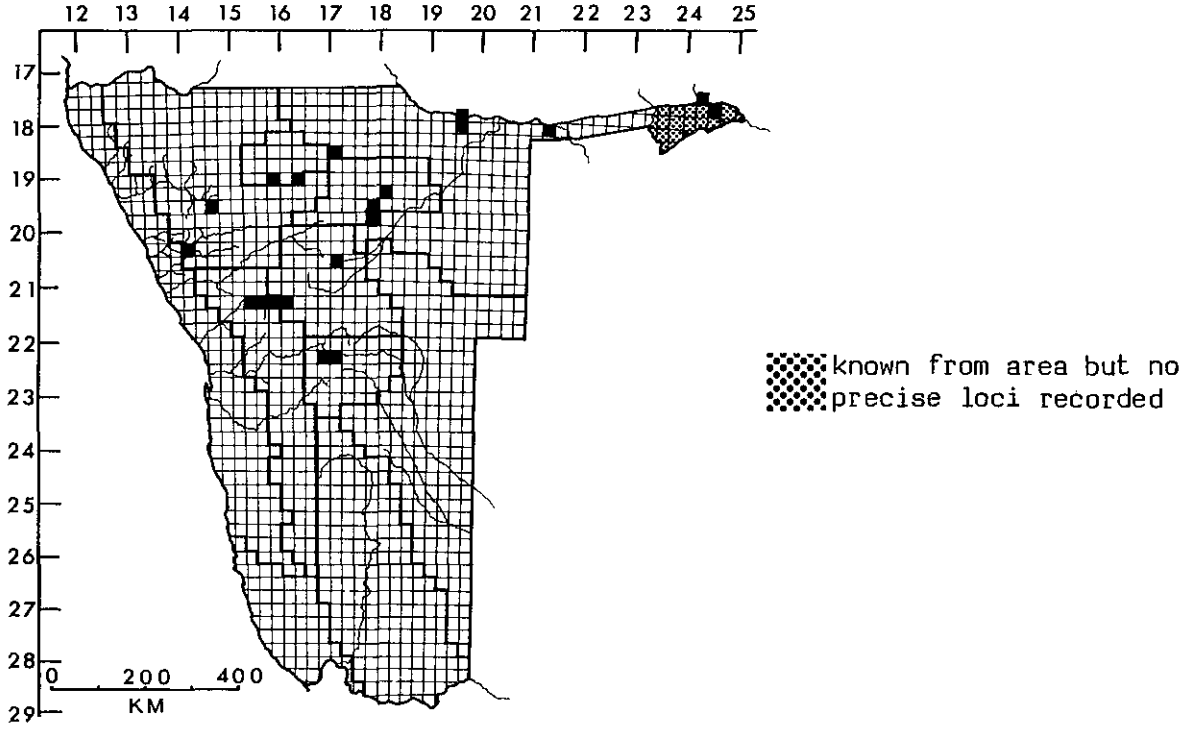
MAP 11. Distribution map of Lantana camara.



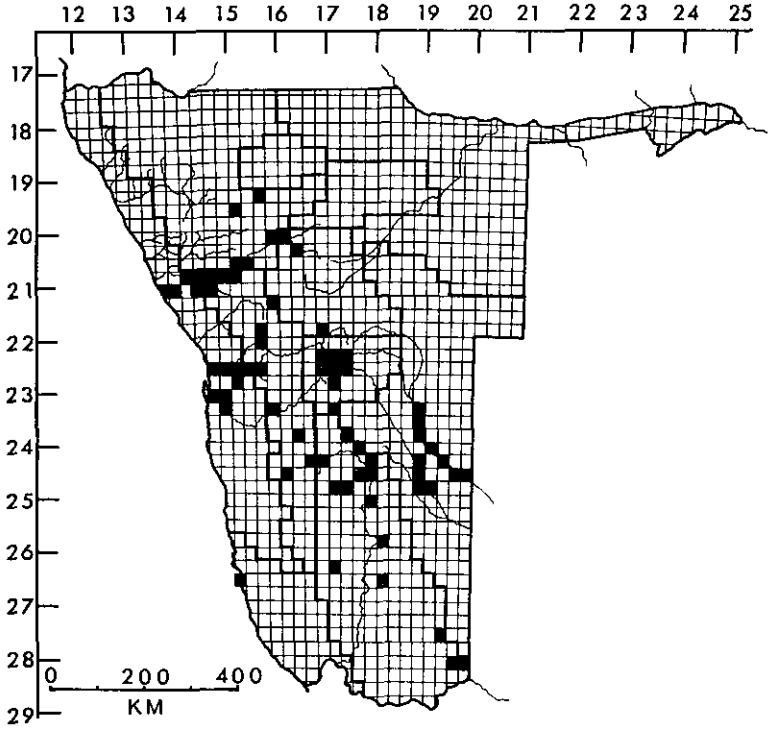
MAP 12. Distribution map of Melia azedarach.



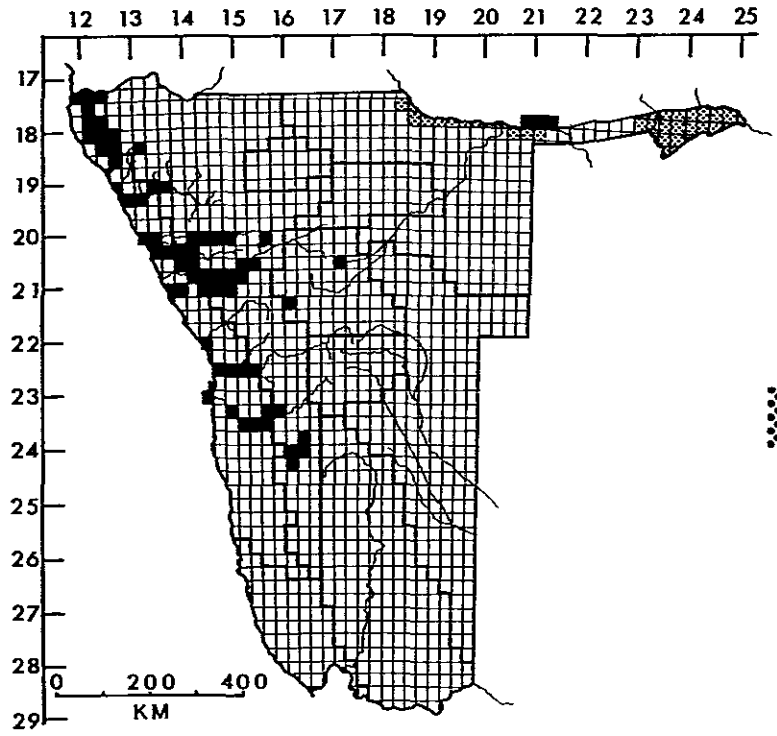
MAP 13. Distribution map of Nicotiana glauca.



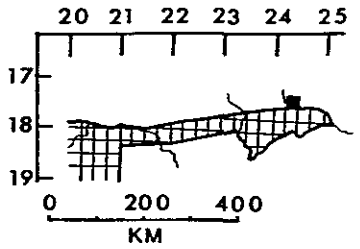
MAP 14. Distribution map of Opuntia ficus-indica.



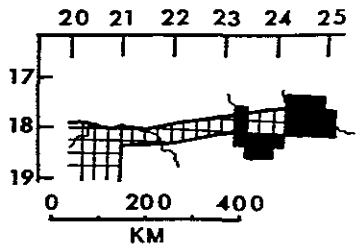
MAP 15. Distribution map of Prosopis spp.



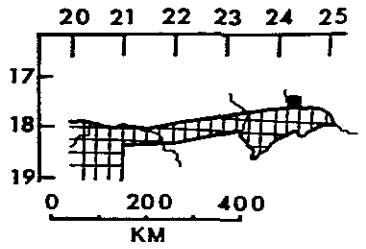
MAP 16. Distribution map of Ricinus communis.



Bambusa balcooa

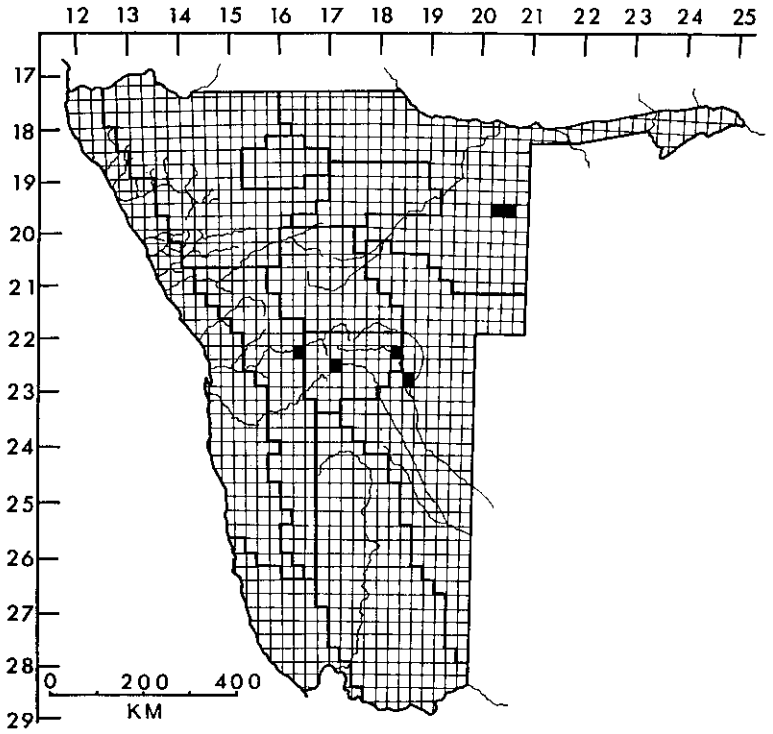


Salvinia molesta

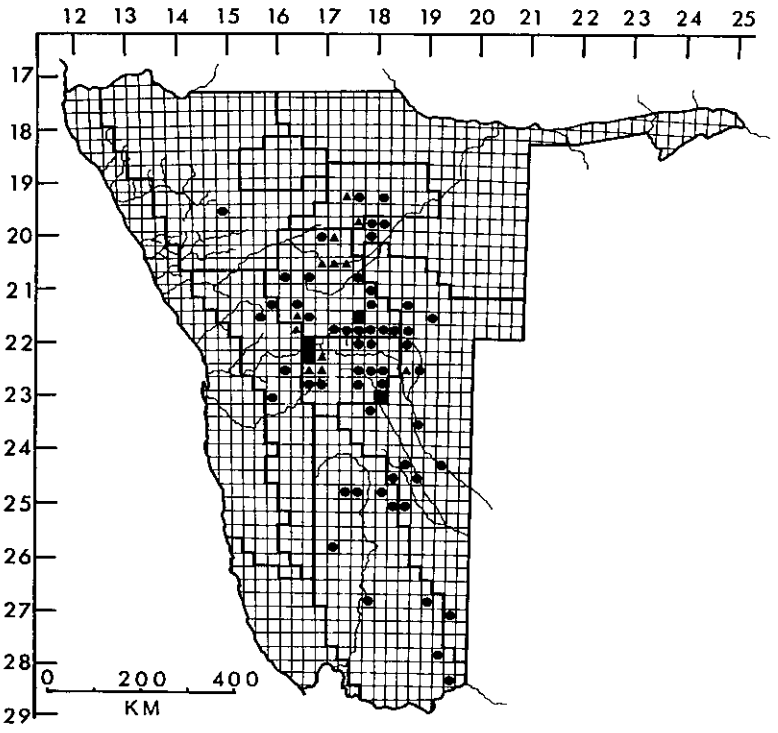


Solanum mauritianum

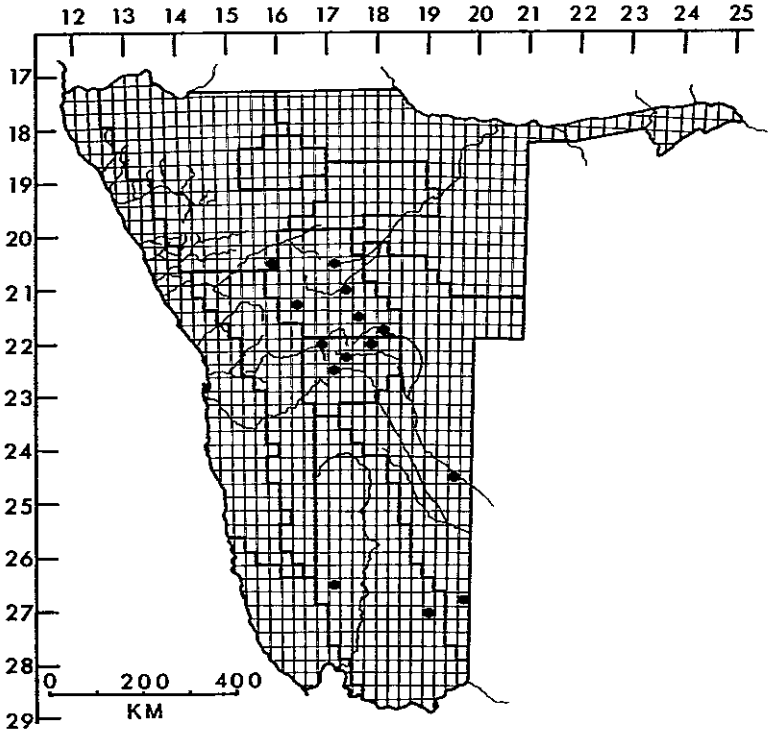
MAP 17. Distributions of three alien plant species known only from the Caprivi Strip.



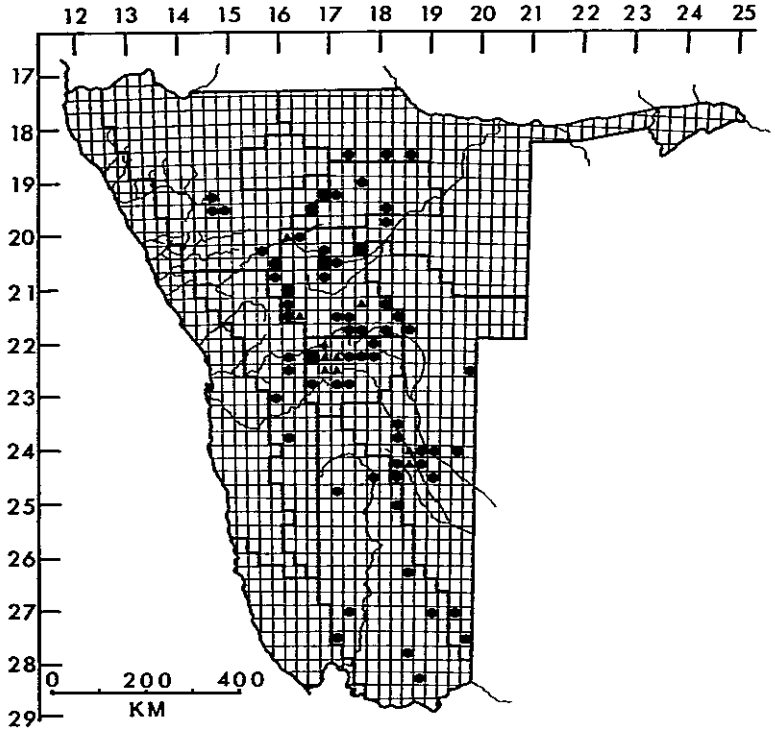
MAP 18. Distribution map of Xanthium spinosum.



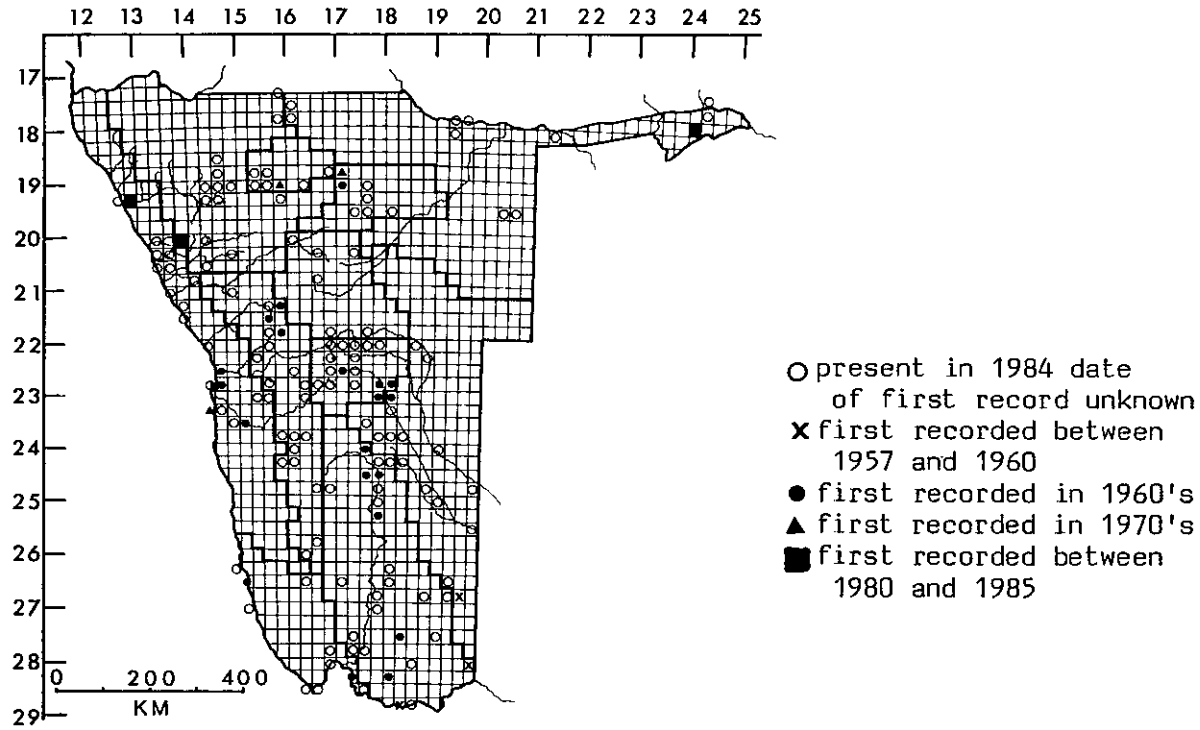
MAP 19. Distribution map of Cyprinus carpio.



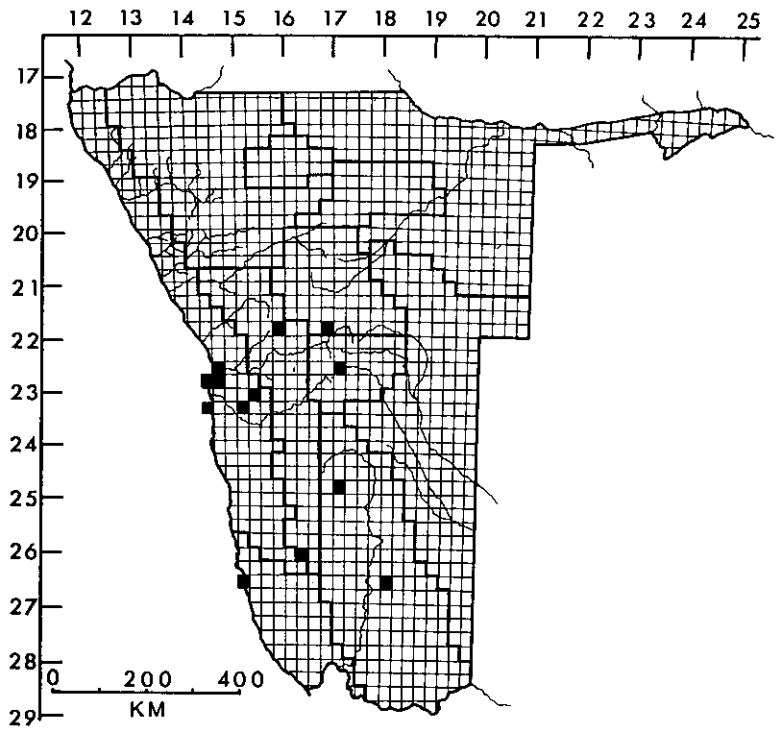
MAP 20. Distribution map of Micropterus salmoides.



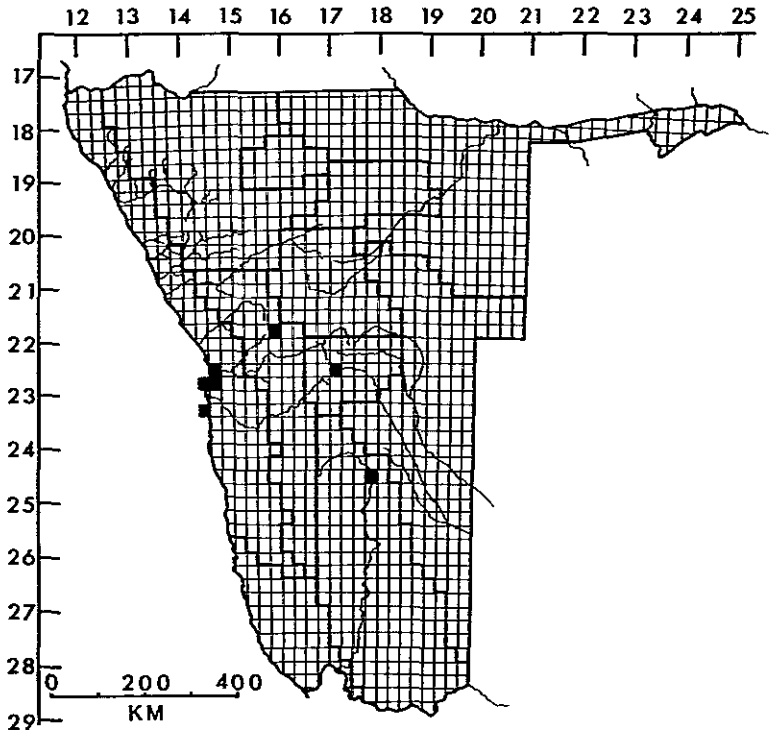
MAP 21. Distribution map of Oreochromis mossambicus.



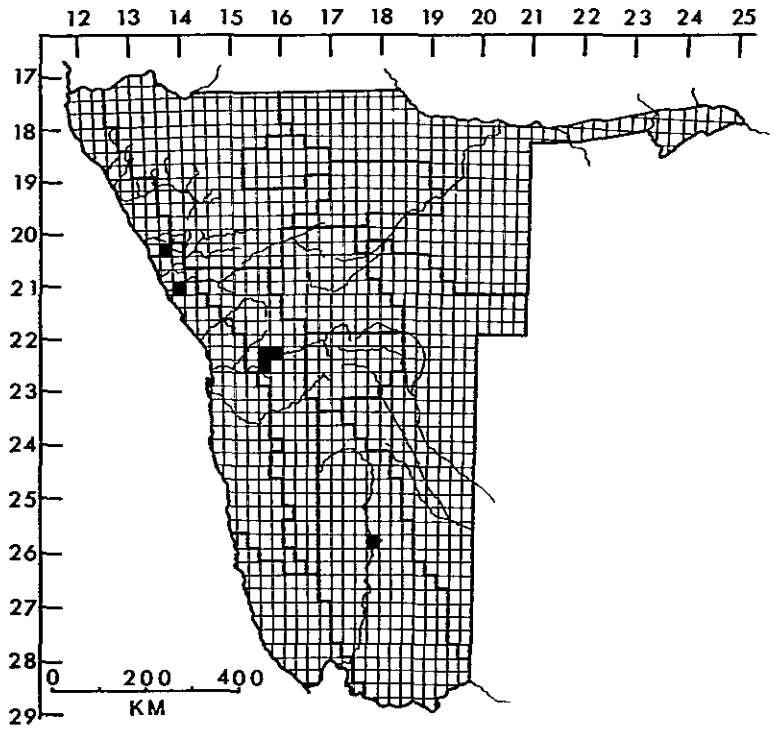
MAP 22. Distribution map of Passer domesticus.



MAP 23. Distribution map of Mus musculus.



MAP 24. Distribution map of Rattus rattus.



MAP 25. Distribution map of known feral population Capra hircus.