



SUMMARY

**AN ECOLOGICAL STUDY OF THE PLANT COMMUNITIES OF
MARAKELE NATIONAL PARK**

by

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MAGISTER SCIENTIAE

In order to manage and conserve any national park, a profound knowledge of the ecology is a prerequisite, and to achieve that an inventory of the biotic and abiotic components of that national park must be undertaken. As a contribution to such a program this information was collected for a chosen area in Marakele National Park.

The study area covers 290,51 km² in the southwestern part of the Northern Province between 27° 30' and 27° 45' east and 24° 15' and 24° 30' south. The underlying parent rock of the study area is sandstone of the Matlabas Subgroup, Aasvoëlkop Formation in the south-western and southern parts; shale and mudstone of the Matlabas Subgroup Aasvoëlkop Formation, Groothoek Mudstone Member; a conglomerate outcrop of the Matlabas Subgroup, Aasvoëlkop Formation in the west and with the biggest part of the study area consisting of sandstone of the Kransberg Subgroup, Sandriviersberg Formation.

The soils that have developed on these parent materials range from shallow to deep sandy soils on sandstone and clayey soils on diabase and mudstone. The rainfall varies from 556 mm to 630 mm per annum and occurs mainly during the summer months. The study area



experiences warm, wet summers with temperatures of up to 32° C and cool dry winters with frost in the lowlying areas.

The vegetation of the study area was classified in a hierarchical, plant sociological system by using the Braun-Blanquet technique. The floristic data from 130 relevés were classified to identify five major plant communities, 16 plant communities and six variations. These plant communities were ecologically interpreted by habitats, and a vegetation map was compiled. A list of all plant species that occur in the study area was included.

The vegetation structure at each sample plot was assessed on the basis of the broad-scale structural classification system adapted from Edwards (1983). Three height classes and five cover classes were used.

The grazing capacity and grazing potential of 10 plant communities were determined. A wildlife management plan for MNP was developed from the veld condition assessment, rainfall data and annual game counts. The management plan includes a burning program, road maintenance and construction, fencing maintenance, water management, erosion control and problem plant control.

5. To Dr. U. de V. Pienaar, previous Chief Executive of the National Parks Board and Dr. D. Ackerman, previous head of Nature Parks, for their faith in me and their friendship throughout all the years.
6. To Dr. A. Hoff-Martin, previous Director Conservation Services, for his encouragement, guidance, friendship and inspiration throughout all the years.
7. To Dr. G.A. Robinson, previous Chief Executive of South African National Parks, for his guidance and encouragement during the execution of the project.
8. The Section Rangers and Field Rangers from MNP for their help with the field work, without them this project would not have been completed.
9. To the staff of the H.G.W.J. Schweikhart Herbarium, University of Pretoria and the National Herbarium, N.B.I. for the identification of plant specimens.
10. To Dr. H. Bezuidenhout for his help and guidance throughout this project.
11. To all my friends for their encouragement during the execution of this project.

ACKNOWLEDGEMENTS

Any research project can only be successful with the help that the researcher gets from people and authorities. With this study it was no exception and it is therefore a privilege for me to thank the following people and authorities:

1. My supervisor Prof. Dr. G.J. Bredenkamp of the Department of Botany, University of Pretoria, for guidance, patience, and friendship and valuable criticism throughout the project.
2. My co-supervisor Prof. Dr. N. van Rooyen for his guidance, encouragement and friendship when I needed it the most.
3. To Prof. Dr. J. du P. Bothma of the Centre for Wildlife Management for his encouragement and friendship when I needed it the most.
4. To South African National Parks in whose service I stood during the execution of the project.
5. To Dr. U. de V. Pienaar, previous Chief Executive of the National Parks Board and Dr. D. Ackerman, previous head of Inland Parks, for their faith in me and their friendship throughout all the years.
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CURRICULUM VITAE

12. I wish to record my heartfelt gratitude to my wife, Assi, and children, Carissa and Pieter, for their encouragement and sacrifices to make the completion of this project possible.

13. Finally no project can be completed without the blessing from Him, to whom we owe everything.

He completed high school at Edinburg, North-West province in 1966. In 1974 he obtained a

in 1960 he obtained his B.Sc. degree at the University of South Africa with Botany and Zoology as major subjects. In 1967 he obtained his B.Sc.(Hons) in Wildlife Management at the University of Pretoria.

In 1969 he was transferred from Kruger National Park to develop a new National Park in the Thabanebi district in the Waterberg Mountain Range, called the Marikopa National Park. Work on his M.Sc. thesis started in 1968 as part of the development and management plan for NNP.

He was married in 1979 and two children were born out of the marriage.

CURRICULUM VITAE

Petrus Johannes van Staden was born on the 2nd July 1951, in Brakpan, Gauteng Province.

He completed high school at Stilfontein, North-West province in 1969. In 1974 he obtained a Teachers Higher Educational Diploma at the Potchefstroom College of Education with History and Physical Training as major subjects. He started as a school teacher at Skukuza Primary School, Kruger National Park in 1975. On 1st January 1976 he started as a clerk at the Human Resources Department, Skukuza, Kruger National Park. In 1977 he became a Junior Game Ranger stationed at Shangoni in the Kruger National Park.

In 1983 he obtained his B.Sc. degree at the University of South Africa with Botany and Zoology as major subjects. In 1987 he obtained his B.Sc.(Hons) in Wildlife Management at the University of Pretoria.

In 1988 he was transferred from Kruger National Park to develop a new National Park in the Thabazimbi district in the Waterberg Mountain Range, called the Marakele National Park. Work on his M.Sc thesis started in 1989 as part of the development and management plan for MNP.

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OSMUNDACEAE

0000090 Osmunda L.
100 O. regalis L.

SCHIZAEACEAE

0000100 Anemia Swartz
200 A. zinnii Tardieu

0000120 Mahonia Swartz
100 M. californica (L.) Decr. var. californica

HYMENOPHYLLACEAE

0000170 Trichomanes L.
000 T. rigidum Swartz

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