

OPSOMMING

FITOSOSIOLOGIE EN VELDBESTUUR VAN DIE OOSTELIKE KALAHARI DORINGVELD

deur

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Voorgelê ter vervulling van 'n deel van die vereistes vir die graad

MAGISTER SCIENTIAE (NATUURLEWEBESTUUR)

Die primêre doel van die studie was om die plantegroeitipes van die oostelike Kalahari Doringveld te identifiseer, klassifiseer en aan die hand van habitat ekologies te interpreteer en te beskryf. Die sekondêre doel van dié studie was om karteerbare eenhede te identifiseer en te karteer en om die veldtoestand, drakragte (weidingskapasiteit) en mate van bosverdigting van elk van dié karteerbare eenhede te bepaal.

Die studiegebied is in die suidoostelike gedeelte van die Kalahari, binne die grense van Suid-Afrika, geleë en beslaan die oostelike gedeelte van die Kalahari Doringveld en Struikbosveld. Die studiegebied is tussen 25°20' en 29°10' Suid en 22°00' en 25°45' Oos geleë en beslaan 'n oppervlakte van ongeveer 114 391 km².

Die studiegebied is in die klimaatstreek Noordelike Steppe (sn) soos deur die Suid-Afrikaanse Weerburo aangedui, geleë (Schulze 1965; 1979) en word as 'n halfdorre gebied met 'n gemiddelde jaarlikse reënval van ongeveer 250 mm in die weste, en 550 mm in die ooste beskryf. Die

temperatuur wissel van uiterstes van 41,2°C in die somer tot -10,6°C in die winter. Ryp kom in die winter voor en die gemiddelde tydsduur van die rypperiode varieer van 61 tot 90 dae in die noorde tot noordweste en van 91 tot 120 dae in die res van die studiegebied.

Die studiegebied was gestratifiseer op grond van hoof kenmerke soos landtipes, geologie, topografie, fisonomie en dominante spesies. Omgewingsdata wat by elke monsterperseel aange-teken is sluit hoogte bo seespieël, gronddiepte, erosie, aspek, helling, klipbedekking, geologie en landtipe in. Ten einde al die verskillende stratifikasie-eenhede in te sluit, is 'n totaal van 1 071 monsterpersele op 'n ewekansige wyse in die studiegebied uitgeplaas. 'n Floristiese opname volgens die Braun-Blanquet-metode, tesame met 'n habitat opname, is by elke monsterperseel uit-gevoer. Dié data is met behulp van TWINSPAN geklassifiseer en daarna deur die toepassing van Braun-Blanquet-prosedures verfyn.

Die klassifisering van die floristiese data het vyf verskillende fitososiologiese tabelle tot gevolg gehad. Elkeen van dié tabelle verteenwoordig die vyf hoof plantegroeitipes, naamlik:

- A. *Acacia mellifera* - *Eragrostis lehmanniana* geslote struikveld van die diep sandvlaktes
- B. *Acacia erioloba* - *Eragrostis lehmanniana* bosveld van die vlakker sandvlaktes
- C. *Tarchonanthus camphoratus* - *Eragrostis lehmanniana* geslote struikveld van die klipperige vlaktes
- D. *Tarchonanthus camphoratus* - *Aristida diffusa* geslote struikveld van die koppies en heuwels
- E. *Acacia karroo* - *Panicum coloratum* geslote struikveld van die riviere

'n Totaal van 5 Klasse, 9 Ordes, 27 Alliansies, 62 Assosiasies en 4 Sub-assosiasies is op grond van floristiese- en strukturele samestelling geïdentifiseer en informeel benaam. Al die geïdentifiseerde plantgemeenskappe is ekologies geïnterpreteer, beskryf en karteer. 'n Volledige plantspesielys is saamgestel. Die belangrikste skaars-, bedreigde-, endemiese- en giftige plantspesies word ook aangedui.

'n Totaal van 24 karteringseenhede is geïdentifiseer en karteer. Braun-Blanquet-data is aangewend om met behulp van die Ekologiese Indeks Metode die veldtoestand en drakragte van elke

karteringseenheid te bepaal. Hierdie waardes is met dié van vorige navorsers vergelyk. Die mate van bosverdigting is ondersoek en potensiële areas van bosverdigting is bepaal.

SUMMARY

PHYTOSOCIOLOGY AND VELD MANAGEMENT OF THE EASTERN KALAHARI THORNVELD

by

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MAGISTER SCIENTIAE (WILDLIFE MANAGEMENT)

The primary objectives of this study were to identify, classify, describe and map the major vegetation types of the eastern Kalahari Thornveld as well as the ecologically interpretation of the data by using habitat properties. The grazing capacity and state of bush encroachment were determined for each mapping unit.

The study area is situated in the south-eastern part of the Kalahari in the Republic of South Africa and consists of the eastern part of the Kalahari Thornveld and Shrub Bushveld (Veld type 16, Acocks 1953; 1988). This area is situated between latitude 25°20' and 22°10' S and longitude 22°00' and 25°45' E and covers an area of approximately 114 391 km².

The study area falls under the Northern Steppe (sn) climatic region of the South African Weather Bureau (Schulze 1965; 1979) and have been described as an arid region with a mean annual rainfall of 250 mm in the west and 550 mm in the east. The temperatures can vary from 41.2 °C

in the summer (January) to -10.6°C in the winter (June). Frost generally occurs during the winter for 61-90 days in north to northwest and 91-120 days in the rest of the study area.

The study area was stratified according to land types, geology, topography (land form), physiognomy and dominant plant species. Environmental factors include the following: altitude, soil depth, erosion, aspect, slope, rockiness, geology and land types. To include all the different stratification units a total of 1 071 random sample plots were surveyed throughout the study area. Floristic analysis, according to the Braun-Blanquet-procedures, as well as habitat-analysis, were done at all the sample plots. These data were classified using TWINSpan and refined according to Braun-Blanquet-procedures.

The classification of the floristic data resulted in five different phytosociological tables. Each of the tables represents the following five major vegetation types:

- A. *Acacia mellifera* - *Eragrostis lehmanniana* closed shrubveld of very deep sandy plains
- B. *Acacia erioloba* - *Eragrostis lehmanniana* bushveld of deep sandy plains
- C. *Tarchonanthus camphoratus* - *Eragrostis lehmanniana* closed shrubveld of the rocky plains
- D. *Tarchonanthus camphoratus* - *Aristida diffusa* closed shrubveld of the koppies and hills
- E. *Acacia karroo* - *Panicum coloratum* closed shrubveld of the rivers

A total of 5 Classes, 9 Orders, 27 Alliances, 62 Associations and 4 Sub-associations were identified and informally named according to the floristic and structural composition. All the identified plant communities were ecologically interpreted, described and mapped. A complete species list were compiled. The most important, rare, endangered, endemic and poisonous species were determined.

A total of 24 mapping units were identified and mapped. The application of Braun-Blanquet-data and the Ecological Index Method were used to determine the veld condition and grazing capacity of each mapping unit. These values were compared to results of previous researchers. The potential areas of bush encroachment were identified.

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