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SUMMARY

Phytosociological study of Andrew's field and Tsaba-Tsaba nature reserve,
Bredasdorp district, Western Cape.

by

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The aims of this study were to identify, describe and classify plant communities, and to interpret them ecologically, to delineate management units, identify ecological sensitive areas, to identify bush encroached areas or areas infested with alien plants or degraded areas, all in need of rehabilitation measures, identify the habitats of rare or endangered plant species, identify the habitats of specific animals.

Sample plots were placed in a stratified random way in the study area, within the different homogenous vegetation units, as recognized using orthographic photos of the study area. Sample plots were placed in such a way to ensure that they were both representative of the vegetation as well as homogenous. A total of 171 sample plots, of 10 x 10 m, were used to survey the vegetation of the study area of approximately 979 ha. A floristic survey, according to Braun-Blanquet method was carried out. The resulting data were classified using TWINSpan, and Braun-Blanquet procedures for refinement.

The classification of the floristic data resulted in the identification of two main vegetation groups, ten plant communities, 17 sub-communities, and four variants. All identified communities, sub-communities and variants were classified, described and ecologically interpreted.

The study area is situated within the Fynbos Biome, but elements of the Thicket Biome are also present, forming a mosaic of the Fynbos and Thicket Biomes along the coastline. Various vegetation units and areas of high conservation priority, due to the presence of Red Data List species and limestone endemic species, were identified. The entire study area was identified as an area of high conservation priority, due to an exceptional high percentage of species endemic to the Cape Floristic Region.

OPSOMMING

Fitososiologiese studie van Andrew's field en Tsaba-Tsaba natuurreservaat,
Bredasdorp distrik, Wes-Kaap.

deur

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Die doel van die studie was om plantgemeenskappe te identifiseer, beskryf, klassifiseer en ekologies te interpreteer, om bestuurseenhede te begrens, om ekologies sensitiewe gebiede te identifiseer, om gebiede met bosindringing of gebiede geïnfesteer met uitheemse indringerplante, of gebiede wat agteruitgang toon, wat almal rehabilitasie stappe benodig, te identifiseer, om die habitate van skaars of bedreigde spesies te identifiseer en om die habitate van spesifieke diere te identifiseer.

Monsterpersele is in die studiegebied uitgeplaas op 'n gestratifiseerd-ewekansige wyse, binne die verskillende homogene plantegroei-eenhede, soos geïdentifiseer met behulp van ortofotos van die studiegebied. Plasing van monsterpersele is so gedoen dat die persele beide verteenwoordigend van die plantegroei is, en homogeen is. 'n Totaal van 171 monsterpersele, van 10 x 10 m, is gebruik om die plantegroei-opnames te doen, in die studiegebied van ongeveer 979 ha. 'n Floristiese opname is uitgevoer volgens die Braun-Blanquet metode. Die data is geklassifiseer met behulp van TWINSPAN, en verfynd met behulp van Braun-Blanquet prosedures.

Die klassifisering van die floristiese data het gelei tot die identifisering van twee hoof plantegroei groepe, tien plantgemeenskappe, 17 subgemeenskappe en vier variante. Al die geïdentifiseerde gemeenskappe, subgemeenskappe en variante is geklassifiseer, beskryf en ekologies geïnterpreteer.

Die studiegebied is geleë in die Fynbos Bioom, alhoewel elemente van die Ruigte Bioom ook teenwoordig is, en 'n mosaïk met die Fynbos Bioom langs die kus vorm. Verskeie plantegroei-eenhede en gebiede met hoë bewaringsprioriteit, as gevolg van die teenwoordigheid van Rooi Data gelysde spesies en kalksteen-endemiese spesies, is geïdentifiseer. Die hele studiegebied is geïdentifiseer as 'n hoë bewaringsprioriteit-gebied, as gevolg van die buitengewone hoë persentasie spesies wat endemies tot die Kaapse Floristiese Ryk is.

APPENDIX I

MAMMALS

Amblysomus hottentotus (Hottentot golden mole)
Bathyergus suillus (Cape dune mole) rat
Canis mesomelas (Black-backed jackal)
Felis caracal (Caracal)
Genetta genetta (Small-spotted genet)
Galerella pulverulenta (Small grey mongoose)
Hystrix africaeaustralis (Porcupine)
Ictonyx striatus (Striped polecat)
Mellivora capensis (Honey badger)
Otocyon megalotis (Bat-eared fox)
Pelea capreolus (Grey rhebok)
Raphicerus campestris (Steenbok)
Raphicerus melanotis (Cape Grysbok)
Rhabdomys pumilio (Striped mouse)
Sylvicapra grimmia (Common Duiker)
Tragelaphus strepsiceros (Kudu)

REPTILES

Homopus areolatus (Southern Padloper)
Agama agama (Southern rock agama)
Bitis arietans (Puff adder)
Dispholidus typus typus (Tree snake)
Naja nivea (Cape Cobra)
Psammophylax rhombeatus rhombeatus (Spotted skaapsteker)
Pseudaspis cana (Mole snake)

APPENDIX II

BIRDS

Anthropoides paradiseus (Blue Crane)
Apus caffer (White-rumped Swift)
Arenaria interpres (Ruddy Turnstone)
Ardea cinerea (Grey Heron)
Ardea melanocephala (Black-headed Heron)
Bostrychia hagedash (Hadedda Ibis)
Bubo capensis (Cape Eagle Owl)
Bubulcus ibis (Cattle Egret)
Burhinus capensis (Spotted Dikkop)
Buteo buteo (Steppe Buzzard)
Buteo trizonatus (Forest Buzzard)
Calidris canutus (Red Knot)
Calidris alba (Sanderling)
Charadrius hiaticula (Common Ringed Plover)
Charadrius pallidus (Chestnutbanded Plover)
Charadrius marginatus (Whitefronted Plover)
Ciconia ciconia (White Stork)
Cisticola fulvicapilla (Neddicky)
Colius striatus (Speckled Mousebird)
Colius colius (White backed Mousebird)
Columbia guinea (Rock Pigeon)
Corvus capensis (Black Crow)
Corvus albus (Pied Crow)
Cossypha caffra (Cape Robin)
Dicrurus adsimilis (Forktailed Drongo)
Egretta garzetta (Little Egret)
Elanus caeruleus (Black-shouldered Kite)
Emberiza capensis (Cape Bunting)
Euplectes afer (Golden Bishop)
Euplectes capensis (Yellowrumped Widow)
Eupodotis afra (Southern Black Korhaan)
Falco tinnunculus (Rock Kestrel)
Francolinus capensis (Cape Francolin)
Haematopus moquini (African Black Oystercatcher)
Hirundu rustica (European Swallow)
Hirundu dimidiata (Pearlbreasted Swallow)
Hirundu abyssinica (Lesserstriped Swallow)
Lanius collaris (Common Fiscal Shrike)
Laniarius ferrugineus (Southern Boubou)
Larus dominicanus (Kelp Gull)
Milvus aegyptius (Yellow-billed Kite)
Motacilla capensis (Cape Wagtail)
Nectarinia chalybea (Lesser Doublecollard sunbird)
Neotis denhami (Stanley's Bustard)
Numenius phaeopus (Whimbrel)
Numida meleagris (Helmeted Guinea-fowl)
Onychognathus morio (Redwinged starling)
Passer melanurus (Cape sparrow)
Pelecanus onocrotalus (Eastern White Pelican)

Phalacrocorax carbo (Whitebreasted Cormorant)
Phalacrocorax capensis (Cape Cormorant)
Ploceus capensis (Cape Weaver)
Pluvialis squatarola (Grey Plover)
Prinia maculosa (Spotted Prinia)
Promerops cafer (Cape Sugarbird)
Pycnonotus capensis (Cape Bulbul)
Sarothrura affinis (Striped Flufftail)
Serinus sulphuratus (Bully Canary)
Serinus flaviventris (Yellow Canary)
Serinus albogularis (Whitethroated Canary)
Spreo bicolor (African Pied starling)
Sterna bergii (Swift Tern)
Sterna sandvicensis (Sandwich Tern)
Sterna hirundu (Common Tern)
Sterna balaenarum (Damara Tern)
Streptopelia capicola (Cape Turtle Dove)
Streptopelia senegalensis (Laughing Dove)
Sturnus vulgaris (European Starling)
Telophorus zeylonus (Bokmakierie)
Tchagra tchagra (Southern Tchagra)
Upupa africana (African Hoopoe)
Vanellus coronatus (Crowned Plover)

APPENDIX III
Table 2: Rares

Species	Relevé	Community/sub-community/variant.
<i>Adenocline pauciflora</i>	9, 23, 30, 102	2.2, 2.3, 2.4, 3.3
<i>Aizoon rigidu v. angus</i>	35, 158	2.1, 2.2
<i>Albuca cooperi</i>	110	3.3
<i>Aloe brevifolia</i>	156	4
<i>Anisodonteia scabrosa</i>	53	3.2
<i>Arctotheca calendula</i>	40, 55, 102, 156	2.4, 3.3, 4
<i>Arctotis hirsuta</i>	67, 73	3.2, 3.3
<i>Asparagus setaceus</i>	104, 106, 159	3.2, 3.3, 4
<i>Astephanus triflorus</i>	16, 107, 112	2.1, 3.2, 3.3
<i>Athanasia dentata</i>	151, 152	3.2, 3.3
<i>Babiana montana</i>	50, 55	2.4, 3.5
<i>Bartholina burmanniana</i>	136	3.2
<i>Bulbine lagopus</i>	20	2.1
<i>Brunsvigia orientalis</i>	18, 53	2.1, 3.2
<i>Carpobrotus edulis</i>	15, 24	2.2
<i>Cassytha ciliolata</i>	36, 58, 98	3.1, 3.2, 3.3
<i>Chascanum cernuum</i>	22, 23	2.2, 2.3
<i>Cissampelos capensis</i>	35	3.2
<i>Cliffortia falcata</i>	12, 21	2.2, 2.4
<i>Conicosa pugioniformis s. muiri</i>	70	3.2
<i>Cotula turbinata</i>	43, 53, 54, 56, 67	2.2, 3.2, 3.3
<i>Crassula expansa</i>	136	3.2
<i>Crassula fallax</i>	6, 38	2.1, 2.3
<i>Crassu nudica v. nudic</i>	5, 15	2.1, 2.2
<i>Cyanella lutea</i>	52	3.2
<i>Cynanchum obtusifolium</i>	50, 60	3.5
<i>Dimorphothec pluvialis</i>	108, 113	3.1, 4
<i>Dischisma ciliatum</i>	55, 98, 102, 156	2.4, 3.3, 4
<i>Drimia elata</i>	104	4
<i>Elegia stipularis</i>	96	3.2
<i>Eriocephalus sericeus</i>	23, 66, 118, 156, 160	2.3, 3.4, 3.5, 4
<i>Euphorbia foliosa</i>	70	3.2
<i>Euryops ericoides</i>	6	2.1
<i>Euryops linearis</i>	50, 158	2.2, 3.5
<i>Eustachys paspaloides</i>	114	3.3
<i>Felici amoena s. amoen</i>	36, 60	3.1, 3.2
<i>Felicia nordenstamii</i>	36	3.1
<i>Ficinia nigrescens</i>	50, 53, 61	2.2, 3.2, 3.5
<i>Ficinia secunda</i>	50, 52, 70	3.2, 3.5
* <i>Foeniculum vulgare</i>	45	3.3
<i>Geissorhiza heterostyla</i>	52, 68, 97	2.2, 3.2, 3.3
<i>Geissorhiza inflexa</i>	67	3.3
<i>Gethyllis villosa</i>	32, 67, 114	2.1, 3.3



<i>Gladiolus vaginatus</i>	4, 16, 19	2.1, 2.4
<i>Glottiphyllum depressum</i>	158	2.2
<i>Helichrysum pulchellum</i>	24, 55, 56, 97	2.2, 2.4, 3.3
<i>Heliophila linearis</i>	112, 136, 137, 152	3.2, 3.3
<i>Heliophila macra</i>	13, 23, 31, 47, 50, 56, 151	2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.5
<i>Hermannia ternifolia</i>	59, 110, 114	3.2, 3.3
* <i>Hordeum murinum</i>	102, 107	3.3
<i>Indigofera filicaulis</i>	26, 31	2.4
<i>Ixia orientalis</i>	136	3.2
<i>Jamesbrittenia albomarginata</i>	2, 3, 16, 98, 108	2.1, 2.3, 3.1, 3.3
<i>Jamesbrittenia calciphila</i>	44, 47	2.3, 3.2
<i>Lachenalia muii</i>	30, 136	2.2, 3.2
<i>Lachnaea densiflora</i>	35, 96	3.2
<i>Lampranthus reptans</i>	136	3.2
<i>Lessertia frutescens</i>	24, 32	2.1, 2.2
<i>Leucadendron linifolium</i>	72	3.2
<i>Linum africanum</i>	151	3.3
<i>Lycium afrum</i>	156	4
<i>Massonia pustulata</i>	46, 56, 67, 108	2.2, 2.4, 3.1, 3.3
<i>Metalasia acuta</i>	102	3.3
<i>Muraltia ericoides</i>	156	4
<i>Nylandtia spinosa</i>	26, 28	2.1, 2.4
<i>Oedera imbricata</i>	36	3.1
* <i>Orobanche minor</i>	38, 55, 110, 114	2.3, 2.4, 3.2
<i>Othonna filicaulis</i>	107, 108, 112	3.1, 3.3
<i>Panicum deustum</i>	50	3.5
<i>Pelargonium betulinum</i>	5, 7, 39	2.1, 2.3, 2.4
<i>Pelargonium capitatum</i>	32	2.1
<i>Pelargonium suburbanum</i>	31, 32	2.1, 2.4
<i>Pelargonium triste</i>	55, 65, 70, 73	2.4, 3.2, 3.3
<i>Pentaschistis airoides</i>	96	3.2
<i>Polygala peduncularis</i>	43, 61	2.2
<i>Polygala umbellata</i>	69, 155	3.1, 3.4
<i>Rhus crenata</i>	170	3.4
<i>Rumex lativalvis</i>	54, 56, 67	2.2, 3.3
<i>Satyrion coriifolium</i>	67, 136, 151, 154	2.3, 3.2, 3.3
<i>Selago aspera</i>	96	3.2
<i>Senecio burchellii</i>	68	2.2
<i>Senecio elegans</i>	48, 50, 56, 67, 96	2.2, 3.2, 3.3, 3.5
<i>Senecio hastifolius</i>	108	3.1
<i>Sideroxylon inerme</i>	112	3.3
<i>Silene mundiana</i>	110, 136, 151	3.2, 3.3
<i>Solanum africanum</i>	102	3.3
<i>Struthiola argentea</i>	40	2
<i>Sutera campanulata</i>	19, 23	2.1, 2.3
<i>Syncarpha argyropsis</i>	152	3.2
<i>Tephrosia capensis</i>	32, 151	2.1, 3.3
<i>Thamnochortu guthrieae</i>	56, 70	2.2, 3.2
<i>Trachyandra divaricata</i>	55, 59	2.4, 3.2
<i>Trachyandra revoluta</i>	107, 110	3.3

<i>*Tragus berteronianus</i>	158	2.2
<i>Typha capensis</i>	106, 156	3.3, 4
<i>Viscum capense</i>	114, 152	3.2, 3.3
<i>Wahlenbergia calcarea</i>	151	3.3
<i>Wahlenbergia microphylla</i>	35	2.1
<i>Willdenowia glomerata</i>	113	4
<i>Zaluzianskya muirii</i>	65, 107	3.3

APPENDIX IV
Table 3: Rares

Species	Relevés	Community/sub-community/variant.
<i>Asparagus setaceus</i>	37	5.2.2
<i>Astephanus triflorus</i>	33, 37, 103	5.2.2, 5.6.1, 5.6.2
<i>Aristea glauca</i>	49	5.6.1
<i>Aristida junciformes s. junci</i>	115	5.6.1
<i>Berkheya coriacea</i>	33	5.6.1
<i>Carpobrotus edulis</i>	57	5.2.1
<i>Cerastium capense</i>	119	5.6.1
<i>Chasmanthe aethiopica</i>	57	5.2.1
<i>Cineraria geifolia</i>	101, 120, 125	5.3, 7.1, 7.2
<i>Crassula fallax</i>	33	5.6.1
<i>Crassula glomerata</i>	57, 101, 103, 117	5.2.1, 5.3, 5.6.1, 5.6.2
<i>Cynanchum zeyheri</i>	33	5.6.1
<i>Cynodon dactylon</i>	37	5.2.2
<i>Disparago anomala</i>	49	5.6.1
<i>Ehrharta calycina</i>	119	5.6.1
<i>Falckia repens</i>	33	5.6.1
<i>Ficinia truncata</i>	119	5.6.1
* <i>Foeniculum vulgare</i>	57	5.2.1
<i>Helichrysum litorale</i>	139	7.2
<i>Helichrysum pulchellum</i>	101, 119	5.3, 5.6.1
<i>Hemimeris racemosa</i>	49, 51, 57	5.2.1, 5.6.1, 5.6.2
<i>Hermannia ternifolia</i>	119	5.6.1
<i>Hermannia trifoliata</i>	119	5.6.1
<i>Lachenalia bulbifera</i>	33, 57	5.2.1, 5.6.1
<i>Lobostemon curvifolius</i>	49, 57	5.2.1, 5.6.1
<i>Metalasia erectifolia</i>	119	5.6.1
<i>Morella quercifolia</i>	115	5.6.1
<i>Nylandtia spinosa</i>	33	5.6.1
<i>Pelargonium capitatum</i>	33	5.6.1
<i>Pteronia uncinata</i>	115	5.6.1
<i>Selago fruticosa</i>	33	5.6.1
<i>Senecio burchellii</i>	124	7.2
<i>Stipag zeyher s. seric</i>	119	5.6.1
<i>Thamnochortus guthrieae</i>	116	5.6.1
<i>Trachyandra divaricata</i>	57	5.2.1
<i>Zaluzianskya gracilis</i>	51, 57	5.2.1, 5.6.2

APPENDIX V

Medicinal plants and their occurrence in the vegetation units.

Species	Vegetation units
<i>Arctopus echinatus</i>	2.2, 2.3, 2.4, 3.2, 3.3, 5.3
<i>Bulbine lagopis</i>	2.1
<i>Carissa bispinosa</i>	5.2, 5.6.1
<i>Carpobrotus acinaciformes</i>	2.1-3.3, 4, 5.5, 5.6.1, 7.1
<i>Carpobrotus edulis</i>	5.2.1
<i>Chironia baccifera</i>	2.2-3.5
<i>Chrysanthemoides monilifera</i>	2.2, 4
<i>Cyanella lutea</i>	3.2
<i>Elytropappus rhinocerotus</i>	2.2, 3.3, 3.4, 5.6.1
<i>Helichrysum patulum</i>	2.1-4
<i>Lessertia frutescens</i>	2.1, 2.2, 5.6.2, 7, 9
<i>Lycium afrum</i>	4, 5.6.1
<i>Nylandtia spinosa</i>	2.1, 2.4, 5.6.1
<i>Olea exasperata</i>	3.2-3.5, 4, 5.2, 5.6
<i>Osyris compressa</i>	5.2, 5.4, 5.5
<i>Pelargonium triste</i>	2.4, 3.2, 3.3
<i>Phragmites australis</i>	1
<i>Rhus glauca</i>	2.1-5.6, 7.1
<i>Rhus laevigata</i>	2.1-3.3, 3.5, 5.1, 5.2, 5.4, 5.5, 5.6.1, 7.2
<i>Salvia africana-lutea</i>	2.1, 2.3, 2.4, 3.1-3.4
<i>Senecio elegans</i>	2.2, 3.2, 3.3, 3.5
<i>Sideroxylon inerme</i>	3.3, 5.2.2
<i>Trachyandra divaricata</i>	2.4, 3.2
<i>Viscum capense</i>	3.2, 3.3, 5.6.2

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