

## OPSOMMING

Die swartwitpens is een van die indrukwekendste bokke in Afrika met hulle sabelagtige horings. Hulle status word huidiglik as kwesbaar beskou. Weens hulle ekonomiese en estetiese waarde het verskeie privaat- en regeringsinstansies in Suid-Afrika 'n aktiewe poging aangewend om die bestaande swartwitpens bevolking te bewaar en te vermeerder.

Die doel van die studie was om die interaksie tussen swartwitpens en hulle (nuwe) habitat en ander wildspesies te bestudeer om die mees effektiewe bestuursplan te verseker. Die volgende aspekte is bestudeer: voorkeur vir habitat tipes, voedingsvoorkeure, bevolkingsamestelling en interaksie, interspesie interaksie en kompetisie vir hulpbronne en ruimte.

Die Vrystaatse Departement van Omgewingsake en Toerisme het gedurende 1995 en 1996 onderskeidelik 27 en 18 swartwitpense in die Vetrivier-Noord en Vetrivier-Suid bestuursgebiede in die Sandveld Natuureservaat hervestig. Die getalle in die Vetrivier-Noord bestuursgebied het aangegroei tot 66 in September 1999, met 12 vrektes wat voorgekom het. In die Vetrivier-Suid bestuursgebied het slegs een vrekte voorgekom en die getal het aangegroei tot 62 swartwitpense tot en met September 1999.

Twee teeltroppe is onderskei in die Vetrivier-Noord bestuursgebied wat onderskeidelik uit 43 (slegs die trop is intensief bestudeer) en 12 individue bestaan. Een trop vrygesel bulle en drie territoriale bulle kom in die Vetrivier-Noord bestuursgebied voor. Een teel trop, drie vrygesel bulle en een territoriale bul kom in die Vetrivier-Suid bestuursgebied voor.

Dominansie vertoon soos die stywe nek vertoon, sydelingse intimidasie vertoon, skyn gevegte en fisiese gevegte is tussen die swartwitpense waargeneem.

Tipiese paringsgedrag is waargeneem. Paring het regdeur die jaar plaasgevind met 'n pieke gedurende die maande Januarie tot Februarie en Junie tot Julie. Geboortes is

regdeur die jaar aangeteken met 'n pieke gedurende Februarie tot Maart en September tot Oktober. Kalwers is vir ongeveer 'n week versteek na geboorte voordat hul weer by die res van die trop aangesluit het. Jong bulle ongeveer 18 tot 24 maande is van die trop verjaag deur die territoriale bul.

Die habitat wat voorkeur geniet in die Sandveld Natuurreservaat is soortgelyk aan dit wat waargeneem is in vorige studies, hulle het 'n voorkeur vir savanna boomveld plantegroei. In die Sandveld Natuurreservaat konsentreer die swartwitpens hoofsaaklik in die *Acacia erioloba-Stipagrostis uniplumis* plantgemeenskap.

Die swartwitpens is hoofsaaklik 'n grasvreter, maar het wel in die droë wintermaande vrugte en blare van boom-, struik-, kruid- en biesiespesies benut. Gedurende die studie is 33 plantspesies benut, waarvan 25 grasspesies was. *Urelytrum agropyroides* (varkstert gras) en *Cynodon dactylon* (kweek) het onderskeidlik 28% en 26% van die dieet uitgemaak. Ander grasspesies wat benut was is *Antephora pubescens*, *Themeda triandra*, *Eragrostis lehmanniana* var. *lehmanniana*, *Brachiaria nigropedata*, *Heteropogon contortus*, *Setaria sphacelata*, *Sporobolus fimbriatus* en *Panicum stapfianum*. Die boom-, struik- biesie en kruidspesies wat benut was is *Acacia erioloba*, *Grewia flava*, *Lycium cinereum*, *Lycium hirsutum*, *Protasparagus* sp., *Bidens pilosa*, *Mariscus indecorus* en die riet *Phragmites australis*.

Natuurlike lekke wat langs die dam voorkom is gereeld besoek. Sommige mismonsters van die swartwitpens wat ontleed is het 'n fosfaat inhoud van 1.9g/kg, 1.6 g/kg en 1.58g/kg gehad wat laer as die vereiste 2.2 g/kg is, wat die gereelde besoek aan die natuurlike lekke verklaar. Tydens 'n nadoodse ondersoek op 'n kalf wat weens blousuur vergifting gevrek het is die voorpoot van 'n erdvark in die pens gevind wat bevestig dat osteofagie wel plaasvind as gevolg van 'n tekort aan fosfaat. Aanvulling van fosfaat is dus noodsaaklik.

Swartwitpense is afhanklik van water, die trop het selde verder as 0.6 km van die drinkplekke af wegbeweeg.

Die veldtoestand van die voedingsgebiede van die swartwitpens is bepaal deur die botaniese samestelling, die smaaklikheid van die grasse, basale bedekking,

grondbedekking en fittomassa van die gebiede te bepaal. Die veld verkeer in 'n redelike tot uitstekende toestand. Die gemiddelde drakrag wat vir die gebiede bepaal was is 12.29 ha/GVE.

Die teeltrop in hierdie studie is selde saam met ander wild waargeneem. Enkele blouwildebeeste (*Connochaetes taurinus*), rooihartbeeste (*Alcelaphus buselapus*), springbokke (*Antidorcas marsupialis*), kameelperde (*Giraffa camelopardalis*), sebra (*Equus burchelli*) en bastergemsbokke (*Hippotragus equinus equinus*) is saam met hulle waargeneem. Die vrygesel bulle het meer kontak met ander wildspesies gehad. Die territoriale bulle is meestal alleen waargeneem. Hewige gevegte tussen die territoriale swartwitpens bul en territoriale bastergemsbok bul is gedurende paringstyd waargeneem. Geen gevegte met ander wild is aangeteken nie.

Betuurstuursaanbevelings, rakende wildgetalle, voeding, bosverdigting en veldtoestand is bespreek, wat gebaseer is op bevindinge van hierdie studie en vorige studies.

## SUMMARY

The sable antelope is one of the most majestic antelope of Africa with their sabelike horns. They are currently considered as vulnerable. Because of their economic and aesthetic value, several private and government organisations in South Africa are actively attempting to conserve and increase the existing populations of sable antelope.

The purpose of this study was to determine the interaction between the sable antelope and its (new) habitat and other game species to ensure the most effective management plan. The following aspects were studied: habitat preferences, feeding preferences, population dynamics and interaction, interspecies interaction and competition for resources and space.

The Free State Department of Environmental Affairs and Tourism relocated respectively 27 and 18 sable antelope in the Vet River-North and Vet River-South management areas in the Sandveld Nature Reserve. The sable numbers in the Vet River-North management area has grown to 66 in September 1999, 12 deaths occurred. In the Vet River-South management area the sable numbers have grown to 62 in September 1999 and only one death occurred.

Two breeding herds were distinguished in the Vet River-North management area. The biggest herd consisted of 33-43 individuals (this herd was studied intensively) and the smaller herd consisted of 10-12 individuals. One bachelor herd and three territorial males were found in the Vet River-North management area. In the Vet River-South management area one breeding herd, three bachelor males and one territorial male were distinguished.

Several dominance displays like the stiff-neck display, the lateral intimidation display, bluff fighting and physical fighting were observed in the sable population.

Typical mating behaviour was observed. Mating occurred throughout the year with peaks during the months of January till February and June till July. Births were

recorded throughout the year with peaks during the months of February till March and September till October. Calves were hidden for approximately a week after birth before rejoin the rest of the herd. Young males of approximately 18 to 24 months were chased from the herd by the territorial male.

Like in previous studies the sable antelope in the Sandveld Nature Reserve had a preference for savannah bushveld. In the Sandveld Nature Reserve the sable antelope was mostly found in the *Acacia erioloba-Stipagrostis uniplumis* vegetation

The sable antelope is mainly a grazer, but did utilized tree, shrub, reed and herbaceous species during the dry months. During the study 33 plant species were utilized of which 25 were grass species. *Urelytrum agropyroides* (quinine grass) and *Cynodon dactylon* (couch grass) comprised respectively 28% en 26% of the diet. Other grassspecies which were utilized are *Antephora pubescens*, *Themeda triandra*, *Eragrostis lehmanniana*, *Brachiaria nigropedata*, *Heteropogon contortus*, *Setaria sphacelata*, *Sporobolus fimbriatus* and *Panicum stapfianum*. The tree, shrub, reed and herbaceous species that were utilized are *Acacia erioloba*, *Grewia flava*, *Lycium cinereum*, *Lycium hirsutum*, *Protasparagus* sp., *Bidens pilosa*, *Mariscus indecorus* and *Phragmites australis*.

Natural licks located close to the dam were visit regularly. Some of the faeces samples from the sable antelope that were analysed showed a phosphate content, 1.9g/kg, 1.6 g/kg and 1.58g/kg, lower than the required 2.2g/kg, which explains the regular visits to the natural licks. During a post-mortem examination on a calve, a frontleg of an antbear was found in the stomach.

Sable appeared to be water dependend and were seldom seen more than 0.6 km from waterpoints.

The veld condition of the feeding areas of the sable were assesed. The veld is in a fair to excellent condition. The average grazing capacity for the feeding areas is estimated at 12.29 ha/LSU.

The breeding herd was seldom seen with other game, few blue wildebeest (*Connochaetes taurinus*), redhartbeest (*Alcelaphus buselapus*), springbuck (*Antidorcas marsupialis*), zebra (*Equus burchelli*), giraffe (*Giraffa camelopardalis*) and roan antelope (*Hippotragus equinus equinus*) were seen with them. The bachelor males were seen more regularly with other game. The territorial males were seen only once or twice with other game. Heavy fights between the sable territorial male and the roan territorial male were recorded during mating periods. No other fights with other game species were recorded.

Management recommendations concerning, game numbers, feeding, veld condition and bush encroachment, were discussed, based on findings of this study and previous studies.

BYLAAG 1. Die wetenskaplike name van soogdiere in die Sandveld  
Natuurreservaat.

**Orde Chiroptera**

**Suborde Microchiroptera**

**Familie Vespertilionidae**

**Subfamilie Vespertilioninae**

Kaapse dakvlermuis *Eptesicus capensis*

**Familie Nycteridae**

Gewone spleetneusvlermuis *Nycteris thebarca*

**Orde Primate**

**Suborde Haplorhini**

**Familie Cercopithecidae**

**Subfamilie Cercopithecinae**

Blouaap *Cercopithecus aethiops*

**Orde Rodentia**

**Familie Leporidae**

Vlakhaas *Lepus capensis*

Kolhaas *Lepus europaeus*

**Familie Hystertricidae**

Ystervark *Hysterix africae australis*

**Familie Pedetidae**

Springhaas *Pedetes capensis*

**Familie Sciuridae**

Waaierstertmeerkat *Xerus inauris*

**Familie Muridae**

**Subfamilie Murinae**

Streepmuis *Rhabdomys pumilio*

Vaalveldmuis *Mastomus natalensis*

**Subfamilie Gerbillinae**

Bosveldse nagmuis *Tatera leucogaster*

Hoëveldse nagmuis *Tatera brantsii*

**Subfamilie Cricetomyinae**

Wangsakmuis *Saccostomus campestris*

**Subfamilie Dendromurinae**

Bakoormuis *Malacothrix typica*

**Orde Carnivora**

**Familie Protelidae**

Aardwolf *Proteles cristatus*

**Familie Hyaenidae**

Bruin hiena *Parahyaena brunnea*

**Familie Felidae**

**Subfamilie Felinae**

Vaalboskat *Felis lybica*

Klein gekolde kat *Felis nigripes*

**Familie Canidae**

Rooijakkals *Canis mesomelas*

**Familie Viverridae**

**Subfamilie Viverrinae**

Kleinkolmuskeljaatkat *Genetta genetta*

**Subfamilie Herpestinae**

Stokstermeerkat *Suricata suricata*

Witkwasmuishond *Cynictis penicillata*

Swartkwasmuishond *Galerella sanguinea*

Kommetjiegatmuishond *Atilax paludinosus*

**Orde Tubulidentata**

**Familie Orycteropodidae**

Aardvark *Orycteropus afer*

**Orde Hydracoidea**

**Familie Procaviidae**

Klipdassie *Procavia capensis*

**Orde Perissodactyla**

**Familie Rhinocerotidae**

Witrenoster *Ceratotherium simon*

**Familie Equidae**

Bontsebra *Equus burchelli*

**Familie Suidae**

Vlakvark *Phacochoerus africanus*



**Familie Giraffidae**

Kameelperd *Giraffa camelopardalis*

**Familie Bovidae**

**Subfamilie Alcelaphinae**

Swartwildebees *Connochaetes gnou*

Blouwildebees *Connochaetes taurinus*

Rooihartbees *Alcelaphus buselapus*

Tsessebe *Damaliscus lunatus*

**Subfamilie Cephalophinae**

Gewone duiker *Sylvicapra gimmia*

**Subfamilie Antilopinae**

Springbok *Antidorcas marsupialis*

Steenbok *Raphicerus campestris*

**Subfamilie Aepycerotinae**

Rooibok *Aepyceros melampus melampus*

**Subfamilie Hippotraginae**

Bastergemsbok *Hippotragus equinus equinus*

Swartwitpens *Hippotragus niger niger*

Gemsbok *Oryx gazella*

**Subfamilie Bovinae**

Buffel *Syncerus caffer*

Koedoe *Tragelaphus strepsiceros*

Eland *Taurotragus oryx*

BYLAAG 2. Die plantspesies (alfabeties gelys) in die Sandveld Natuurresewaat.

## **Liliopsida**

### **Alliaceae**

*Tulbaghia cf. T. leucantha* Bak.

### **Amaryllidaceae**

*Boophane disticha* (L.f.) Herb

*Gethyllis spiralis* (Thunb.) Thunb.

*Nerine lacticoma* (Ker.) Dur. & Schinz

### **Asparagaceae**

*Protasparagus africanus* (Lam.) Oberm.

*Protasparagus laricinus* (Burch.) Oberm.

*Protasparagus suaveolens* (Burch.) Oberm.

*Protasparagus rubicundus* (Berg.) Oberm.

### **Asphodelaceae**

*Anthericum angulicaule* Bak.

*Bulbine abyssinica* A. Rich.

*Trachyandra laxa* (N.E. Br.) Oberm

*Trachyandra* sp.

### **Commelinaceae**

*Commelina africana* L.

*Commelina erecta* L.

## **Cyperaceae**

*Carex glomerabilis* Krecz.

*Cyperus eragrostis* Lam.

*Cyperus esculentus* L.

*Cyperus* cf. *C. imbricatus* Retz.

*Cyperus longus* L.

*Cyperus margaritaceus* Vahl

*Cyperus marginatus* Thunb.

*Cyperus obtusiflorus* Vahl var. *obtusiflorus*

*Cyperus sphaerospermus* Schrad.

*Eleocharis palustris* R. Br.

*Fuirena* cf. *F. pubescens* (Poir.) Kunth

*Isolepis costata* (Boeck.) A. Rich. var. *macra* (Boeck.) B.L. Burt

*Kyllinga alba* Nees

*Kyllinga erecta* Schumach

*Mariscus congestus* (Vahl) C.B. Cl.

*Mariscus indecorus* (Kunth) Podlech

*Schoenoplectus muricinix* (C.B.Cl.) J. Raynal

*Schoenoxiphium lanceum* (Thunb.) Kuckenth.

*Scirpus burkei* C.B. Cl.

*Scirpus dioecus* (Kunth) Boeck

## **Eriospermaceae**

*Eriospermum cooperi* Bak.

## **Hyacinthaceae**

*Albuca setosa* Jacq.

*Dipcadi* sp.

*Ledebouria marginata* Bak. Jessop

## **Hydrocharitaceae**

*Lagarosiphon muscoides* Harv.

## **Hypoxidaceae**

*Hypoxis acuminata* Bak.

*Hypoxis hemerocallidea* Fisch. & C.A. Mey.

## **Iridaceae**

*Babiana hypogea* Burch.

*Gladiolus permeabilis* Delaroche.. subsp. *edulis* (Burch. Ex Ker-Gawl.) Oberm.

*Homeria pallida* Bak.

## **Juncaceae**

*Juncus effusus* L.

*Juncus oxycarpus* E. Mey. ex Kunth

*Juncus rigidus* Desf.

## **Typhaceae**

*Typha capensis* (Rohrb.) N.E. Br.

## **Poaceae**

*Agrostis lachnantha* Nees var. *lachnantha*

*Andropogon appendiculatus* Nees

*Andropogon eucomus* Nees

*Anthephora pubescens* Nees

*Aristida adscensionis* L.

*Aristida congesta* Roem. & Schult. subsp. *congesta*

*Aristida junciformis* Trin. & Rupr. subsp. *galpinii* (Stapf) De Winter

*Aristida junciformis* Trin. & Rupr. subsp. *junciformis*  
*Aristida meridionalis* Henr.  
*Aristida mollissima* Pilg. subsp. *mollissima*  
*Aristida stipitata* Hack. subsp. *graciliflora* (Pilg.) Meld.  
*Arundinella nepalensis* Trin.  
*Brachiaria eruciformis* (J.E. Sm.) Griseb.  
*Brachiaria nigropedata* (Fical. & Hiern) Stapf  
*Brachiaria serrata* (Thunb.) Stapf  
*Chloris virgata* Swartz  
*Cymbopogon plurinodis* (Stapf) Stapf ex Burtt Davy  
*Cynodon dactylon* (L.) Pers.  
*Cynodon hirsutus* Stent  
*Cynodon* sp.  
*Digitaria eriantha* Steud.  
*Digitaria tricholaenoides* Stapf  
*Echinochloa holubii* (Stapf) Stapf  
*Echinochloa stagnina* (Retz.) Beauv.  
*Elionurus muticus* (Spreng.) Kunth  
*Enneapogon scoparius* Stapf  
*Eragrostis biflora* Hack. ex Schinz  
*Eragrostis curvula* (Schrud.) Nees  
*Eragrostis echinochloidea* Stapf  
*Eragrostis gummiflua* Nees  
*Eragrostis lappula* Nees  
*Eragrostis lehmanniana* Nees var. *lehmanniana*  
*Eragrostis pallens* Hack.  
*Eragrostis planiculmis* Nees  
*Eragrostis x pseud-obtusa* De Winter  
*Eragrostis superba* Peyr.  
*Eragrostis trichophora* Coss. & Dur.  
*Eustachys paspaloides* (Vahl) Lanza & Mattei  
*Hemarthria altissima* (Poir.) Stapf & C.E. Hubb.  
*Heteropogon contortus* (L.) Roem. & Schult.  
*Imperata cylindrica* (L.) Raeuschel

*Leersia hexandra* Swartz  
*Melica decumbens* Thunb.  
*Panicum coloratum* L.  
*Panicum kalaharensis* Mez  
*Panicum gilvum* Launert  
*Panicum maximum* Jacq.  
*Paspalum dilatatum* Poir.  
*Paspalum distichum* L.  
*Perotis patens* Gand.  
*Phragmites australis* (Cav.) Steud.  
*Pogonarthria squarrosa* (Roem. & Schult.) Pilg.  
*Polypogon monspeliensis* (L.) Desf.  
*Schmidtia pappophoroides* Steud.  
*Setaria sphacelata* (Schumach.) Moss  
*Setaria verticillata* (L.) Beauv.  
*Sporobolus fimbriatus* (Trin.) Nees  
*Sporobolus rangei* Pilg.  
*Stipagrostis uniplumis* (Licht.) De Winter  
*Themeda triandra* Forssk.  
*Tragus koelerioides* Aschers.  
*Trichoneura grandiglumis* (Nees) Ekman  
*Triraphis andropogonoides* (Steud.) Phill.  
*Tristachya rehmanii* Hack.  
*Urelytrum agropyroides* (Hack.) Hack.  
*Urochloa panicoides* Beauv.

## **Magnoliopsida**

### **Acanthaceae**

*Barleria macrostegia* Nees

### **Aizoaceae**

*Gisekia pharnacioides* L  
*Limeum fenestratum* (Fenzl) Heimerl  
*Limeum pterocarpum* (Gay) Heimerl  
*Pharnaceum brevicaule* (DC.) Bartl.  
*Plinthus sericeus* Pax

### **Amaranthaceae**

*Aerva leucura* Moq.  
*Achyranthes aspera* L.  
*Alternanthera nodiflora* R. Br.\*  
*Alternanthera pungens* H.B.K.\*  
*Gomphrena celosioides* Mart.  
*Sericorema remotiflora* (Hook.f.) Lopr.

### **Anacardiaceae**

*Rhus ciliata* Licht. ex Schult.  
*Rhus lancea* L.f.  
*Rhus pyroides* Burch.

### **Asclepiadaceae**

*Asclepias fruticosa* L.  
*Orthanthera jasminiflora* (Decne.) Schinz  
*Pentarrhinum insipidum* E.Mey.

### **Asteraceae**

*Ambrosia artimisiifolia* L.\*  
*Arctotis venusta* T.Norl.  
*Berkheya radula* (Harv.) De Wild.  
*Bidens bipinnata* L.\*  
*Chrysocoma obtusata* (Thunb. ) E. Bayer

*Cirsium vulgare* (Savi) Ten. \*  
*Conyza bonariensis* (L.) Cronq.  
*Cotula anthemoides* L.  
*Dicoma anomala* Sond.  
*Dicoma macrocephala* DC.  
*Dicoma schinzii* O. Hoffm.  
*Epaltes gariepina* (DC.) Steetz  
*Felicia muricata* (Thunb.) Nees subsp. *muricata*  
*Gazania krebsiana* Less. subsp. *arctotoides* (Less.) Rösssl.  
*Gazania krebsiana* Less. subsp. *serrulata* (DC.) Rösssl.  
*Geigeria obtusifolia* L. Bol.  
*Geigeria ornativa* O. Hoffm.  
*Gnaphalium declinatum* L.f.  
*Haplocarpha scaposa* Harv.  
*Helichrysum argyrosphaerum* DC.  
*Helichrysum caespititium* (DC.) Harv.  
*Helichrysum cerastioides* DC.  
*Helichrysum dregeanum* Sond. & Harv.  
*Helichrysum nudifolium* (L.) Less.  
*Helichrysum paronychioides* DC.  
*Helichrysum zeyheri* Less.  
*Hertia pallens* (DC.) Kuntze  
*Nidorella hottentotica* DC.  
*Nidorella resedifolia* DC. subsp. *resedifolia*  
*Nolletia ciliaris* (DC.) Steetz  
*Osteospermum muricatum* E. Mey. ex DC.  
*Pentzia globosa* Less.  
*Pseudognaphalium luteo-album* (L.) Hilliard & Burt  
*Pseudognaphalium oligandrum* (DC.) Hilliard & Burt  
*Senecio burchellii* DC.  
*Senecio consanguineus* DC.  
*Senecio coronatus* (Thunb.) Harv.  
*Sonchus dregeanus* DC.  
*Tagetes minuta* L. \*



*Tarchonanthes camphoratus* L.

*Verbesina encelioides* (Cav.) Benth & Hook. var. *encelioides*\*

*Vernonia oligocephala* (DC.) Sch. Bip. ex Walp.

### **Boraginaceae**

*Ehretia rigida* (Thunb.) Druce

*Heliotropium ciliatum* Kaplan

*Heliotropium steudneri* Vatke

*Lithospermum cinereum* DC.

### **Capparaceae**

*Boscia albitrunca* (Burch.) Gilg. & Ben.

*Cadaba aphylla* (Thunb.) Wild

*Cleome gynandra* L.

*Cleome rubella* Burch.

### **Campanulaceae**

*Wahlenbergia androsacea* A. DC.

*Wahlenbergia denticulata* (Burch.) A. DC.

### **Caryophyllaceae**

*Dianthus* sp. cf. *D. micropetalus* Ser.

*Polycarpon tetraphyllum* L.f.

*Silene undulata* Ait.

### **Celastraceae**

*Maytenus heterophylla* (Eckl. & Zeyh.) N.K.B. Robson

### **Chenopodiaceae**

*Atriplex semibaccata* R. Br.  
*Chenopodium botryodes* Sm.  
*Chenopodium murale* L.  
*Salsola glabrescens* Burt Davy

### **Convolvulaceae**

*Convolvulus ocellatus* Hook. f. var. *ornatus* (Engl.) A. Meeuse  
*Ipomoea bathycolpos* Hallier f. var. *bathycolpos*  
*Ipomoea obscura* (L.) Ker-Gawl. var. *fragilis* (Choisy) A. Meeuse  
*Ipomoea ommaneyi* Rendle  
*Merremia tridentata* (L.) Hallier f. subsp. *angustifolia* (Jacq.) Van Ooststr.  
*Seddera capensis* (E. Mey. ex Choisy) Hallier f.  
*Turbina oblongata* (E. Mey. ex Choisy) A. Meeuse

### **Crassulaceae**

*Crassula capitella* Thunb. subsp. *nodulosa* (Schonl.) Tölken  
*Crassula muscosa* L.  
*Crassula scaba* L.

### **Brassicaceae**

*Coronopus integrifolius* (DC.) Spreng.  
*Lepidium bonariense* L.

### **Cucurbitaceae**

*Acanthosicyos naudinianus* (Sond.) C. Jeffrey  
*Citrullus lantanus* (Thunb.) Matsumura & Nakai  
*Coccinia sessilifolia* (Sond.) Cogn.  
*Cucumis myriocarpus* Naud.

*Kedrostis foetidissima* (Jacq.) Cogn.

### **Dipsacaceae**

*Scabiosa columbaria* L.

### **Ebenaceae**

*Diospyros lyciodes* Desf. subsp. *lyciodes*

### **Elatinaceae**

*Bergia polyantha* Sond.

### **Euphorbiaceae**

*Acalypha caperonioides* Baill.

*Euphorbia inconstantia* R.A. Dyer

*Euphorbia* sp.

### **Fabaceae**

*Acacia erioloba* E. Mey.

*Acacia hebeclada* DC. subsp. *hebeclada*

*Acacia karroo* Hayne

*Acacia mellifera* (Vahl) Benth. subsp. *detinens* (Burch.) Brenan

*Caesalpinia gilliesii* (Wall. ex Hook.) Benth.

*Cassia abbreviata* Oliv. subsp. *beareana* (Holmes) Brenan

*Chamaecrista mimosoides* (L.) Greene

*Crotalaria sphaerocarpa* Perr. ex. DC.

*Elephanthorrhiza elephantina* (Burch.) Skeels

*Indigofera costata* Guill. & Perr. subsp. *macra* (E. Mey.) Gillett

*Indigofera crypthantha* Benth. ex Harv.

*Indigofera daleiodes* Benth. ex Harv.

*Indigofera dimidiata* Vogel ex Walp.

*Indigofera flavicans* Bak. *Indigofera heterotricha* DC.

*Indigofera holubii* N.E. Br.

*Lessertia depressa* Harv.

*Lotononsis platycarpa* (Viv.) Pichi Serm.

*Rhynchosia confusa* Burt Davy

*Rhynchosia holosericea* Schinz

*Rhynchosia vernulosa* (Hiern) K. Schum.

*Tephrosia lupinifolia* DC.

*Tephrosia semiglabra* Sond.

*Vigna angustifoliolata* Verdc.

*Vigna vexillata* (L.) A. Rich.

*Zornia milneana* Mohlenbr.

### **Gentianaceae**

*Sebaea grandis* (E. Mey.) Steud.

### **Geraniaceae**

*Monsonia angustifolia* E. Mey. ex A. Rich.

### **Illecebraceae**

*Pollichia campestris* Ait.

### **Lamiaceae**

*Acrotome inflata* Benth.

*Salvia disermas* L.

### **Lobeliaceae**

*Lobelia neglecta* Roem. & Schult.

*Lobelia thermalis* Thunb.

## **Malvaceae**

*Hibiscus microcarpus* Garcke

*Hibiscus pusillus* Thunb.

*Pavonia leptocalyx* (Sond.) Ulbr.

*Sida ovata* Forssk.

## **Meliaceae**

*Melia azedarach* L.\*

## **Mesembryanthemaceae**

*Chasmatophyllum musculinum* (Haw.) Dinter & Schwant.

*Delosperma herbeum* (N.E. Br.) N.E. Br.

*Delosperma roseopurpureum* Lavis

*Mestoklema arboriforme* (Burch.) N.E. Br. Ex Glen

*Ruschia hamata* (L. Bol.) Schwant.

*Ruschia semidentata* (Salm-Dyck) Schwant.

## **Neuradaceae**

*Grielum humifusum* Thunb.

## **Oleaceae**

*Menodora africana* Hook.

*Olea europaea* L. subsp. *africana* (Mill.) P.S. Green

## **Onagraceae**

*Ludwigia stolonifera* (Guill. & Perr.) Raven

*Oenothera indecora* Cambess. subsp. *bonariensis* Dietr.

*Oenothera rosea* L'Hérit. ex Ait.

*Oenothera tetraptera* Cav.

### **Oxalidaceae**

*Oxalis* sp.

### **Papaveraceae**

*Argemone ochroleuca* Sweet subsp. *ochroleuca* \*

*Papaver aculeatum* Thunb.

### **Pedaliaceae**

*Harpagophytum procumbens* (Burch.) DC. ex. Meissn. subsp. *procumbens*

*Pterdiscus speciosus* Hook.

### **Polygonaceae**

*Emex australis* Steinh.

*Oxygonum delagoense* Kuntze

*Polygonum kitaibelianum* Sadler

*Polygonum plebeium* R. Br.

*Rumex lanceolatus* Thunb.

### **Ranunculaceae**

*Clematis oweniae* Harv.

*Ranunculus meyeri* Harv.

*Ranunculus multifidus* Forssk.

### **Rhamnaceae**

*Ziziphus mucronata* Willd.

## **Rosaceae**

*Potentilla supina* L.

## **Rubiaceae**

*Anthospermum rigidum* Eckl. & Zeyh.

*Kohautia cynanchica* DC.

## **Selaginaceae**

*Hebenstretia integrifolia* L.

*Selago welwitschii* Rolfe var. *holubii* (Rolfe) Brenan

*Walafrida densiflora* (Rolfe) Rolfe

## **Scrophulariaceae**

*Aptosimum decumbens* Schinz

*Diclis petiolaris* Benth.

*Manulea parviflora* Benth.

*Nemesia fruticans* (Thunb.) Benth.

*Striga elegans* Benth.

*Striga gesnerioides* (Willd.) Vatke ex Engl.

*Sutera aurantiaca* (Burch.) Hiern

## **Solanaceae**

*Lycium cinereum* Thunb.

*Lycium hirsutum* Dun.

*Solanum chenopodioides* Lam.

*Solanum incanum* L.

*Solanum supinum* Dun.

## **Sterculiaceae**

*Hermannia quartiniana* A. Rich subsp. *stellulata* (K. Schum.) De Wint.

*Hermannia tomentosa* (Turcz.) Schinz ex Engl.

*Melhania burchellii* DC.

### **Thymelaeaceae**

*Gnidia polycephala* (C.A. Mey.) Gilg

### **Ulmaceae**

*Celtis africana* Burm. f.

### **Tiliaceae**

*Corchorus asplenifolius* Burch.

*Grewia flava* DC.

*Grewia flavescens* Juss.

### **Vahliaceae**

*Vahlia capensis* (L.f.) Thunb.

### **Verbenaceae**

*Lantana rugosa* Thunb.

*Plexipus hederaceus* (Sond.) R. Fernandes var. *hederaceus*

*Verbena bonariensis* L.\*

*Verbena officinalis* L.\*

### **Viscaceae**

*Viscum rotundifolium* L.f.



**Vitaceae**

*Cyphostemma hereroense* (Schinz) Descoings ex Wild & Drumm.

**Zygophyllaceae**

*Tribulus terrestris* L.

\* Uitheemse spesies