Thicket

ecosystem management plan: western cape

Prepared for:

Western Cape Conservation Stewardship Association (WCCSA) & CapeNature

By:

The Nature Conservation Corporation

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This Ecosystem Management Plan forms part of a set of 7, with an EMP Guide Tool for the implementation of these, all available from C.A.P.E. at Kirstenbosch, Cape Town.

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Cover photograph: Southern Cape Valley Thicket along the Lower Breede River, near Cape Infanta.

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introduction

The Albany Thicket Biome, centred in the Eastern Cape Province, is a species rich vegetation type. The two units in the Western Cape Province are no exception – having links, both geographically as well as floristically with strandveld, fynbos and succulent karoo vegetation.

Unlike in the Eastern Cape where Thicket is the dominant vegetation type over large areas, the Western Cape representatives form rather discrete patches where the habitat is suitable. In most cases these are steep inaccessible slopes along rivers or valleys. This has not precluded them from abuse as one of the units has perceived high forage value. The other is subject to infestation by invasive alien plants that because of the terrain, are difficult to eradicate.

In the Fynbos Biome, Thickets are fascinating dynamic relics of a previous climate regime and yet few people are aware of its presence or even that they are mis-managing and abusing it.

In this Ecosystem Management Plan, we hope to create awareness of the presence of this Biome in the Western Cape as well as emphasise the sensitivity of this Biome to the incorrect use of fire and over-utilisation by small stock, especially goats.

ecosystem description

landscape features

The Western Cape representatives of the Albany Thicket Biome are found on steep slopes of deeply incised rivers as well as undulating to steep hills and their valleys. The soils are loamy and often rocky.

vegetation

The table below lists the vegetation units incorporated in this Thicket Ecosystem Management Plan. The remainder of the units occur in the Eastern Cape.

Table 1 List of Thicket Vegetation Units in the Western Cape Province

Reference [1]	VEGETATION TYPE & UNITS	Status [2]	Target [3]
	Albany Thicket Biome		
AT 1	Southern Cape Valley Thicket	VU	19%
AT 2	Gamka Thicket	LT	19%

Thicket is a dense, woody, semi-succulent and thorny vegetation type with a mosaic of lower growing fine- and broad-leaved shrubs as well as dwarf succulents, herbs and grasses.

Thicket has a wide range of growth forms – leaf and stem succulents, evergreen, deciduous and semi-deciduous woody shrubs and small (stunted) trees as well as various annuals, bulbous plants, herbaceous perennials and grasses. The understorey is typically host to a myriad of dwarf succulents and succulent shrubs as well as bulbs and the edges are rich in grass species e.g. guinea grass *Panicum maximum*. Climbing and scrambling plants e.g. spantou *Sarcostemma viminale* are common in the bush clumps.

The wide range of growth forms and species in the Albany Thicket Biome is a reflection of it being an interface between forest, sclerophyllous shrublands, karoo and grasslands.

AT 1 Southern Cape Valley Thicket

Lower Goekoe River, Gouritz River, Breede River as well as near Mossel Bay

Dense thicket, see photographs 4 and 5 below, three to five metres tall, composed of sclerophyllous, often spiny shrubs and stunted trees such as crossberry *Grewia occidentalis*, pendoring *Gymnosporia buxifolia*, doringtaaibos *Rhus longispina* and milkwood *Sideroxylon inerme* with an admixture of small-leaved shrubs (*Athanasia*, *Elytropappus* and *Stoebe*) with aloes being prominent, especially bitter aloe *Aloe ferox* and cliff aloe *A. arborescens*. The regal paintbrush *Scadoxus puniceus*, a semi-evergreen to evergreen bulbous plant is often encountered in the herbaceous understorey. The dwarf succulent flora is well-developed and represented by bontaalwyn *Gasteria carinata* var. *verrucosa* and gemsboksuring *Anacampseros telephiastrum* amongst others.

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[1] Sourced from The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford 2006)

[2] **Conservation Status of vegetation units defined as** LT = Least Threatened; VU = Vulnerable; EN = Endangered and CR = Critically Endangered

[3] The national target for securing representative vegetation for its conservation

Climbers and scramblers are particularly well-represented e.g. rank malva *Pelargonium peltatum*, bokhoring *Cynanchum obtusifolium* and katdoring *Asparagus africanus*. The grasses such as oulandgras *Karoochloa curva*, bokbaardgras *Merxmuellera stricta* and guinea grass *Panicum maximum* occur in relatively dense aggregations around and between the bush clumps.

AT 2 Gamka Thicket

Little Karoo: Groot Swartberg to Outeniqua Mountains

In its pristine form this unit is dominated by spekboom *Portulacaria afra* and in areas that haven't been utilised by domestic livestock such as around Huisrivier Pass, this is still the case. However in most areas this unit is present as a low growing open succulent thicket and generally devoid of spekboom *Portulacaria afra,* see photograph 6 below. Shrubs are abundant but grasses are sparse.

Soetdoring *Acacia karoo* is present as a small tree and tall growing bitter aloe *Aloe ferox* is prominent. The dense bush clumps consist of karoo num-num *Carissa haematocarpa*, gwarrie *Euclea undulata*, sand-olive *Dodonaea viscosa*, firethorn *Putterlickia pyracantha* and koeniebos *Rhus glauca*. The succulent matrix consists of amongst others *Portulacaria afra*, silver dollar *Crassula ovata*, geelmelkhoutbos *Euphorbia mauritanica*, *Zygophyllum flexuosum, Z. foetidum* and *Z. fulvum*. Small-leaved shrubs include asbossie *Pteronia incana* and witgatbossie *P. pallens*, wild rosemary *Eriocephalus africanus* and renosterbos *Elytropappus rhinocerotis.* Low growing shrubs are found in the spaces between including *Crassula tetragonia*, draaibossie *Felicia fillifolia* and herbs are prominent e.g. Cape weed *Arctotheca calendula* and *Dianthus bolusii.*

key issues

fauna interaction

Herbivory is an essential process in thicket and drives the species composition and structure of the vegetation. In areas where the succulent component, especially spekboom *Portulacaria afra*, has been over-utilised by domestic goats the effect is similar to opening the edge of a forest – tender plants that were in the shade are exposed and die off. These bare patches are then invaded by flammable grasses and fine-leaved shrubs.

Historically, large herbivores shaped the thicket patches by opening pathways and thus creating a mosaic of vegetation. The sensitive understorey component was never exposed because the intense browsing pressure was mostly from large herbivores that fed from the top down. In doing so, they stimulated especially spekboom to proliferate which subsequently produces an apron of branches lower down. This protected the margin of the thicket clump from fire and protected the understorey flora.

fire frequency and intensity

Gamka Thicket is not fire-prone vegetation in its natural state i.e. where the succulent component is intact. Where it has been destroyed due to over-utilisation, the danger of fire consuming what is essentially fire-retarding vegetation becomes a reality.

Southern Coast Valley Thicket (SCVT) lacks the spekboom component and is more fire-prone than any other Thicket vegetation. This is exacerbated by its proximity to fynbos and renosterveld vegetation types. There is no doubt that the ecotone and edge would have burned in the past and fire most likely consumed the grass and small-leaved shrub component well into the thicket. This would account for its patchiness where it does not occur in fire-safe habitats.

Invasive alien vegetation, especially rooikrans *Acacia cyclops* in SCVT, poses a real threat to Thicket by increasing the fuel load. This renders it prone to hot fires that will severely damage if not destroy the succulent and tree component.

management objectives

"Sensitive, vulnerable, highly dynamic or stressed ecosystems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure" (National Environmental Management Act, 1998).

site environmental management plan

objective: *To have a site specific Environmental/Conservation Management Plan in place, to guide management actions required on a site scale.*

management actions:

- Commission a site specific EMP to be compiled;
- Use monitoring, observations and site specific requirements to inform further management actions required;
- Make recommendations for revision and highlight areas of under performance;
- Review site EMP as/when required, as defined in the EMP.

funding

objective: *To have an environmental management budget in place that allows for the implementation of this EMP and a site-specific EMP, through the development of a site Annual Plan of Operation (**APO**).*

management actions:

The landowner/manager is to prepare an APO. The APO will consist of the required operating and capital expenditure as well as planned funding sources through external agencies and programmes. The APO will consist of:

- A sustainable budget that is costed annually to allow for the implementation of the EMP;
- Complete an APO, using the template provided in the EMP Guide Tool, by year end of each year.

Opportunities for external funding and assistance do exist; see EMP Guide Tool for funding opportunities.

vegetation management

alien vegetation

objective: *To remove all invasive alien vegetation from the natural areas by the most cost-effective methods with the least amount of damage to the natural environment. Invasive alien vegetation transforms and replaces indigenous vegetation, adds to the fuel load, increasing the fire frequency and intensity, transforms the riparian zones, affects the functioning of aquatic ecosystems by altering water quality and flow, and unnaturally supports an increase in rooikat* Felis caracal.

See the **Best Practice Guideline: Alien Vegetation Management** provides the information required for control of the invasive alien flora.

Before any clearing of alien vegetation is initiated, it must be understood that when the programme starts, it must be implemented until completion. There is no value in *ad hoc* clearing, with no follow-up program.

management actions:

- Obtain an aerial photograph of the area whenever an official survey is undertaken, to assess plant growth and extent of alien infestation;
- Identify areas for clearing to ensure compliance with the Conservation of Agricultural Resources Act (CARA) regulations;
- Demarcate areas that will not be cleared of alien plant species initially (ensuring that the CARA regulations are complied with at all times);
- Removal of all invasive alien plant species from the natural areas, excluding those identified above;
- Regular assessment of invasive species control and intensity of invasion.

It may be necessary to contract certain tasks such as extensive alien vegetation clearing to private contractors if there is insufficient capacity within the staff establishment or if it is economically beneficial. All private contractors on site must however be strictly controlled.

natural vegetation

objective: *To ensure that the remaining areas of natural vegetation are best managed so as to contribute towards biodiversity conservation, retaining representative samples of our natural vegetation so as to allow for biodiversity and ecological processes to persist.*

management actions:

- Identify the vegetation type/s present on your property;
- Familiarise yourself with best conservation management practices for the particular vegetation type e.g. prescribed ecological burns as per appropriate fire regime;

See the **Best Practice Guideline: Fire Management & Prevention** for more detail.

- Develop a plant species checklist;
- Contribute records of rare and threatened species and localities to SANBI;
- Map the location of rare and threatened plant species to inform management activities e.g. road/path placement;
- Make provision for seasonal monitoring, during spring and autumn months, of rare and threatened flora on site (where possible comment should be made on numbers of individuals and locality);
- A reintroduction plan must be prepared if areas are to be rehabilitated, stating species to be reintroduced and the source of material.

fauna management

objective: *To promote the conservation of indigenous fauna (the big and hairy and small and slimy alike), as an important component contributing to and maintaining ecosystem functioning.*

management actions:

- Develop faunal species lists including mammals, birds, reptiles, amphibians, arachnids and scorpions, and other invertebrates;
- Conduct at least *ad hoc* monitoring of faunal populations and maintain recordkeeping;
- Apply best management practice regarding stocking rates and forage utilisation;

See the **Best Practice Guideline: Sustainable Utilisation of Natural Resources** for more detail.

- Contribute significant records and localities of fauna to the Atlas databases at the Animal Demography Unit (**ADU**) at University of Cape Town (**UCT**);
- Ensure that management and recreational activities do not impact on sensitive species;
- Implement responsible problem animal management, where necessary, ensuring to be in possession of the relevant permits;
- Eradicate invasive exotic faunal species, where necessary, ensuring to be in possession of the relevant permits;
- Limit the impact (competition and predation) by domestic animals on indigenous species. Where residential estates abut natural areas, it may be necessary to compile a policy on pets. It is preferable to be proactive in this regard.
- Compile a policy on introduction (accidental or deliberate) of potentially invasive species (e.g. wildfowl) or wild animals previously kept as pets e.g. tortoises which could genetically pollute local races or harbour geographically isolated diseases.
- Commission a reintroduction policy and plan for species that used to occur in the area and the suitable carrying capacities. Investigate the potential for reintroductions, specifically small game, which may have previously occurred naturally in the area. Herbivores are essential for biodiversity and ecosystem processes to persist.

Before **reintroduction** the following points need to be considered:

- Was the desired species naturally resident in the area?
- Why did the animal become extinct in the area?
- Is that causal factor still a threat?
- Is the habitat still suitable for the species?
- What are the potential negative effects of the reintroduction?
- Where is the nearest existing population?

The careful reintroduction of species can enhance the conservation value of the area and increase the marketability of the site. All reintroductions must be based on sound ecological principles. CapeNature must be consulted on the translocation and reintroduction of all fauna.

access management

objective: *To inform the best placement and management of access points and pathways, avoiding sensitive process areas such as steep slopes, prevent excessive path braiding and consequent erosion.*

management actions:

- Conduct an audit of the siting and condition of existing access points and pathways;
- Identify suitable access points and pathways, and decommission those in sensitive process areas;
- Maintain pathways/boardwalks to ensure its use and not the making of alternative routes;
- Implement a rehabilitation programme, where this is required.

use of living resources

objective: *To ensure sustainable use of natural resources and minimise adverse effects on biodiversity and ecosystem processes.*

See the **Best Practice Guideline: Sustainable Utilisation of Natural Resources** for more detail.

recreation & tourism management

objective: *To ensure the appropriate use of natural areas for recreation and tourism and minimise detrimental impact on biodiversity and sensitive processes.*

See the **Best Practice Guideline: Recreation & Tourism Use** for more detail.

road maintenance & erosion control

objective: *To ensure that geomorphological processes and soils are adequately understood and impacts thereon duly minimised, avoiding the consequent loss of natural resources and habitat.*

management actions:

- Identify and understand erosion sources;
- Prioritise erosion problems requiring control efforts;
- Where the terrain has sustained damage due to excessive trampling and/or past access by vehicles, implement a rehabilitation programme. Have measures in place to prevent further erosion damage;
- Road and footpath erosion control must be monitored and managed on an ongoing basis;
- Records should be kept (preferably photographs) of previous erosion management, in order to measure effectivity;

See the **Best Practice Guideline: Sensitive Development** for more detail.

signage & awareness

objective: *To inform of the sensitivity and value of biodiversity features and ecosystem processes, and to facilitate the appropriate use thereof.*

management actions:

- In order to achieve the above, three types of signage need to be considered: **directional**, **informational** and **interpretational**. The first guides visitors to and around the area, while the second provides information on some aspects of the area and management (such as erosion control). Interpretation of the environment, the third form of signage, would focus on aspects such as functioning of the ecosystem in the natural areas, emphasising the unique biodiversity and ecological processes.
- Where necessary, a signage policy and manual should be compiled;
- Signs indicating the name of the site should be erected at all vehicular and pedestrian access points;
- Signage must be set up to inform of areas being rehabilitated;
- Awareness programmes must be initiated for the purpose of informing and educating residents and visitors regarding environmental sensitivity and interaction (e.g. snake encounters, the value of biodiversity, biological monitoring and rehabilitation)

fencing

objective: *Where necessary, fence areas for access control and management.*

While a definite demarcation of the boundary of natural areas helps visually establish such areas as being of conservation value, rather than simply vacant open space, fencing also limits the natural transit of wildlife and therefore ecosystem processes. It is apparent that continuity of best practice conservation management is required across cadastral boundaries in order for the broader ecosystem to best benefit from holistic management.

management actions:

- Where possible, internal and common cadastral fencing should be removed to allow for connectivity;
- Appropriate fencing should be used, and where possible jackal-proof and electric fencing should be avoided;
- Public road-side boundaries should be well demarcated for access control and to prevent wildlife road kill;
- All roads not for public vehicular access must have locked gates;
- Stiles may be placed over fences to allow access along approved pedestrian paths;
- Where fencing hinders the natural transit of wildlife, provision must be made for thoroughfare e.g. bottom fence strand raised for tortoises;
- Fence line and access gates should be regularly inspected.

archaeological and heritage features

objective: *To ensure that the archaeological and heritage aspects of the site are protected as defined in the Natural Heritage Resources Act 25 of 1999.*

management actions:

- Inform SAHRA of potential heritage features on site and acquire advice on protection measures. These features may be of significant archaeological importance and damage to these features would lower their archaeological value and possibly their tourism value;
- Keep record of heritage features on site;
- Prevent any damage to these features.

monitoring and recordkeeping

objective: *To evaluate management actions of the site as well as monitor biodiversity components and ecological processes. Data can contribute towards regional conservation plans and initiatives and further highlight conservation priorities.*

management actions:

- It is critical that sites collect baseline information (rainfall and resource inventory) as a priority;
- Establish a plan of action/objective for monitoring of specific features, components and processes;
- Describe methods used and maintain these;
- Map fixed monitoring sites or features to be monitored, preferably with a GPS;
- Keep data safe and have duplicates;
- All research activities (external studies) are to be controlled i.e. written permission granted with the condition that a copy of the final research report is provided;
- Manager to compile monthly report, incorporating all incidents, significant events and findings and operations that have taken place.

staff training and skills development

objective: *To continually capacitate and train staff in environmental knowledge and a range of skills and enhance their capacity.*

management actions:

- Staff training should include the following:
  - Regular fire training and fire exercises
  - Use of appropriate machinery, tools and technology
  - Public relations and interactions
  - Ecosystem components
  - Management training
  - Waste management & recycling
  - Use of herbicide application
  - Methods for alien vegetation control

ecological connectivity

objective: *Identify suitable corridors or expansions for connecting natural and protected areas to improve the overall resilience of the protected area and allow processes to function at an appropriate scale and so allow for holistic management of the ecosystem.*

management actions:

- Liaise with CapeNature Regional Office regarding expansion and connectivity opportunities;
- Approach and liaise with neighbours in this regard;
- Draw up a Memorandum of Understanding or contractual agreement between neighbours detailing areas of responsibility amongst others.

voluntary conservation

objective: *Consider proclaiming natural areas for conservation in perpetuity, via the CapeNature Stewardship program.*

management actions:

- Familiarise with the three levels of **stewardship options** i.e. Voluntary Conservation Site, Biodiversity Agreement and Contract Nature Reserve;
- Landowner should contact local CapeNature stewardship coordinator to discuss options and benefits.