Draft Biodiversity Management Plan for the Honeybush species (*Cyclopia subternata and Cyclopia intermedia*)

March 2021

Jointly developed by:

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Definitions

In this BMP, unless the context indicates otherwise, a word or expression defined in the Biodiversity Act or Protected Areas Act or the Norms and Standards for the development of BMPs has the same meaning.

Industry: All organisations and stakeholders involved in the commercial honeybush sector, including *inter alia* industry associations, honeybush farmers and landowners, harvesters, processors, sellers, etc.

IUCN Red Data List means a global or national list providing information on a species' risk of extinction (usually by a taxonomic group) and prepared under the auspices of the International Union for the Conservation of Nature.

Role player means a natural or juristic person(s) who have a direct role to play in the implementation of the Biodiversity Management Plan for the species and whose role is captured in this Biodiversity Management Plan.

Species a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population.

Threat means any action that causes a decline and compromises the future survival of a species or anything that has a detrimental effect on a species.

List of acronyms

ABS	Access and Benefit Sharing
AGRISETA	Agriculture Sector Education Training Authority
AIS	Alien Invasive Species (as defined by NEM:BA)
ARC	Agricultural Research Council
BABS	Bioprospecting, Access and Benefit Sharing
BMP	Biodiversity Management Plan
BMP-S	Biodiversity Management Plan for species
BSA	Benefit-Sharing Agreement
CARA	Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983)
CBA	Critical Biodiversity Area
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Fauna and Flora
COP	Conference of the Parties
CSIR	The Council for Scientific and Industrial Research
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning
DEDEAT	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism
DEFF	Department of Environment, Forestry and Fisheries
DEFF (LACE)	Branch Legal, Authorisation, Compliance and Enforcement of the Department of Environment, Forestry and Fisheries
DEFF (NRM)	Branch Natural Resource Management of the Department of Environment, Forestry and Fisheries
DALRRD	Department of Agriculture, Land Reform & Rural Development
DSI	Department of Science and Innovation
ECPTA	Eastern Cape Parks and Tourism Agency
EIIF	Ecosystem Infrastructure Investment Framework (WC)
ESA	Ecological Support Area
FPA	Fire Protection Association
GDP	Gross Domestic Product
GREF	Garden Route Environmental Forum
HCoP	Honeybush Community of Practice
IDPs	Integrated Development Plans
IUCN	International Union for Conservation of Nature
M&E	Monitoring and Evaluation
NEMBA	South Africa's National Environmental Management: Biodiversity Act 10 of 2004
NDF	Non-Detrimental Findings
NPGRC	The National Plant Genetic Resources Centre of South Africa
SDFs	Spatial Development Frameworks
SAHTA	South African Honeybush Tea Association
SANBI	South African National Biodiversity Institute
SANPARKS	South African National Parks
SCLI	Southern Cape Landowners Initiative
TOPS	Threatened or Protected Species
UCT	University of Cape Town
WCDoA	Western Cape Department of Agriculture

Acknowledgements

Azwinaki Muingi is acknowledged for collating the background information of these species and also compiling the background information document which was synthesised for this Biodiversity Management Plan.

Neil Crouch, Humbu Mafumo, Tebogo Mashua, Mncedisi Cindi, Tasneem Variawa all provided inputs and comments on the first draft background information document.

The authors also wish to acknowledge the many stakeholders who took part in workshops, meetings and calls for comments – for a list of workshop participants please see *Appendix A: List of stakeholder workshops with participants.*

1. Introduction and why the species need a BMP

1.1 Introduction

Honeybush species (members of the genus *Cyclopia* Vent.) are endemic to the Western and Eastern Cape provinces of South Africa. The distribution range of *Cyclopia* extends from the Cedarberg north of Citrusdal, southwards to the Cape Peninsula and eastwards to Port Elizabeth. *Cyclopia* species have been used commercially since the 19th century for the production of honeybush tea, a caffeine-free beverage considered by many to provide a range of health benefits. The tea is generally thought to have a pleasant taste and aroma. Species occur as components of fire-prone fynbos vegetation on both coastal plains and in mountainous regions of the Cape Floristic Region. They are all long-lived perennials, varying from tall, erect, tree-like shrubs to slender, woody subshrubs or small, loose, sprawling shrublets. Adaptations to survive recurrent fires have had a major influence on the life strategies and habit of all the species in the genus (Le Maitre & Midgley, 1992; Schutte *et al*., 1995). Honeybush species have two main fire survival strategies: sprouters (often also referred to as 'resprouters') and non-sprouters (often also referred to as 'reseeders'). Sprouters have a woody rootstock from which new coppice shoots are produced after fire, resulting in a multi-stemmed appearance at ground level. Non-sprouters, on the other hand, lack a woody rootstock. They are obligate reseeders (they can only regenerate from seed after fire) and are easily recognized by the presence of a single main stem, at least at ground level (Schutte, 1997). Of the 23 currently recognised *Cyclopia* species, it is primarily four species, namely *Cyclopia intermedia* ("bergtee"), *Cyclopia subternata* ("vleitee"), *Cyclopia longifolia* ("Van Stadens tea") and *Cyclopia genistoides* ("kustee") that support South Africa's commercial honeybush industry value chain. These species have particular ecological requirements and accordingly require tailored management protocols. *C. genistoides* a small, multi-branched, resprouting woody shrub, is commonly cultivated for commercial purposes and is not the subject of the current BMP-S. This BMP-S focuses on *C. intermedia* and *C. subternata*, which are primarily harvested from the wild. *C. subternata* is a single-stemmed reseeder, whilst *C. intermedia* is a multi-stemmed resprouter.

1.2 The need for a Biodiversity Management Plan for *C. subternata and C. intermedia*

C. subternata and C. intermedia are amongst the *Cyclopia* species that are currently declining in the wild due a number of challenges, including (amongst others); (I) ongoing unlawful harvesting, destined for international trade, within communal lands and protected areas, as well as on private farms where land owners are absent; (II) the removal of excessively large quantities of plant material too frequently, resulting in overharvested and unhealthy populations; (III) expansion of human settlement and agricultural lands into areas where the species occurs, and; (IV) invasive alien plant encroachment by species such as black wattle (*Acacia mearnsii*) and pine (*Pinus* spp.) that shade out indigenous plants such as honeybush (McGregor, 2018). Impacts from these threats may vary across the species distributions. Other wild harvested species affected by the same issues are *C. plicata*, *C. sessiliflora* and *C. maculata.*

In terms of choosing which species to include in this BMP, after extensive stakeholder consultation the decision was made to focus on *C. subternata* and *C. intermedia* in this first iteration of the BMP. The reasons behind this decision can be summarised as follows:

- Together, *C. subternata* and *C. intermedia* make up approximately 95% of the wild harvested honeybush crop (see section 3.1). As such, by focussing on these two species this BMP should address the sustainable use and conservation of the vast majority of wild-harvested honeybush, as well as much of the general environmental impact resulting from wild honeybush harvesting activities.
- *C. subternata* and *C. intermedia* represent the two major fire survival strategies used by *Cyclopia* species (reseeders and resprouter; see section 1.1) which impact on their

sustainable management; as such the management actions outlined for these two species can likely also be applied to the remaining *Cyclopia* species that are harvested in the wild which are not currently included in the BMP.

- In terms of available resources and capacity to implement a BMP, it became clear through the ongoing stakeholder engagement process that the actors that would be responsible for implementation possess very limited capacity and funding to implement the actions contained in the BMP. It was accordingly considered impractical to currently include in the BMP all *Cyclopia* species that are utilised by the honeybush industry.
- It is anticipated that once the updated TOPS regulations are gazetted and implemented that they will support sustainable utilisation of commercial *Cyclopia* species that are not yet included in this BMP.
- A BMP is inherently focussed on the sustainability of wild species in their natural habitat, as opposed to managing species that are currently mostly sourced from cultivated crops, e.g. *C. genistoides* (a notable exception to this is management of the potential genetic contamination of wild populations from cultivated species, which is therefore included in this BMP). In this regard it is anticipated that the BMP and the Sector Development Plan for honeybush that is currently being development will mutually support each other.

2. Aims and objectives of the BMP

2.1 The aim

The aim of this BMP is to ensure the long-term survival of *C. subternata and C. intermedia* populations in the wild, whilst safeguarding and respecting the livelihoods of stakeholders. Specific activities need to be undertaken to enable the sustainable utilisation of the species whilst ensuring that systems are in place to monitor ongoing impacts of commercial extraction.

2.2 The objectives of the management plan:

- To ensure that wild collection of *C. subternata and C. intermedia* is carried out in an ecologically sound and sustainable manner that maintains long-term survival of the species in the wild.
- To ensure that wild collection of *C. subternata and C. intermedia* does not adversely affect the environment, including ecosystem function.
- To ensure that collection and management activities are carried out under legitimate tenure arrangements and comply with relevant laws, regulations and agreements.
- To ensure that through fair and equitable sharing of benefits derived from the biotrade and bioprospecting of *C. subternata* and *C. intermedia,* the conservation and sustainable use of honeybush species is promoted.
- To ensure wild collection of *C. subternata and C. intermedia* is based upon adaptive, practical, participatory and transparent management practices.
- To inform management practices that can rationally be applied to other commercial *Cyclopia* species, whether reseeders or resprouters.
- To ensure the protection/management of genetic *C. subternata* and *C. intermedia* resources.

3. Conservation status and legislative context

3.1 Conservation status

Although *C. subternata and C. intermedia* are commonly used in the commercial tea industry and sourced mostly from the wild, they are both classified as Least Concern (declining) by the Red List of South African Plants in accordance with the International Union for Conservation of Nature's (IUCN) red list criteria (Schutte-Vlok & Raimondo 2016). Honeybush is used as a

tea and/or ingredient in various commercial products and is increasing in popularity such that the rate of demand is likely to exceed the current capacity of supply. The wild harvested crop is still the mainstay of the industry making up 70% of the annual processes honeybush tea crop (G. McGregor, personal communication, 7 December 2020) of 289 tons[1] (McGregor 2017a). *C. subternata* and *C. intermedia* are not presently considered to be threatened with extinction, but they are under pressure from harvesting: *C. intermedia* makes up 85% of the wild harvested crop and *C. subternata* contributes 10% (McGregor 2017a). Ongoing unsustainable harvesting practices are impacting the species and populations of both species are reported to be declining (Schutte-Vlok & Raimondo 2016). Proper management and regulation are needed to ensure that sustainable harvesting and best practise takes place within this sector.

3.2 Legislative context

3.2.1 Applicable international agreements

The following international treaties and conventions to which South Africa is Party are relevant and important to consider (De Villiers & McGregor 2017):

3.2.1.1 The Convention on Biological Diversity (CBD)

This Convention has three main objectives, namely; the conservation of biological diversity; sustainable use of its components; and the fair and equitable sharing of benefits arising from the utilization of genetic resources. South Africa has ratified the CBD in 1995. Although it is a non-enforceable Convention, becoming a Party to the CBD does entail acceptance of the Articles and Objectives of the Convention, which include *inter alia*; establishing methods to monitor and conserve biodiversity and engaging in fair and equitable benefit sharing. Accordingly, South Africa's National Environmental Management: Biodiversity Act, 2004 [(Act no.10 of 2004 (NEMBA)] has been promulgated to enable South Africa to meet its commitments to the Convention. The Conference of the Parties (COP) is the governing body of the CBD and advances implementation of the Convention through the decisions it takes at its periodic meetings.

3.2.1.2 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (ABS)

South Africa ratified this Protocol in 2013. The Nagoya Protocol on ABS is a supplementary agreement to the CBD and provides a legal framework for the effective implementation of the third objective of the CBD, namely the fair and equitable sharing of benefits arising from the utilization of the genetic resources. This protocol also sets out rules for access to genetic resources for both provider and user countries. It also includes specific obligations to support compliance with national legislations and regulations of the countries providing access to genetic resources and their associated traditional knowledge. These compliance provisions contribute in ensuring the sharing of benefits when genetic resources leave the provider countries.

3.2.1.3 The Aichi Biodiversity Targets and biodiversity mainstreaming

The CBD in 2010 adopted the Strategic Plan for Biodiversity 2011-2020 at the 10th Meeting of the Parties (COP) in Nagoya, Japan. To achieve global biodiversity conservation the plan outlines 20 Aichi Targets including Target 12 which is particularly relevant for the purposes of the BMP-S, viz.: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

[1] The average annual production of processed honeybush tea between 2006 and 2019 was 289 tons per year, with a very high average of 542 tons in 2010 to 2012, dropping to 250 tons per year in 2017 to 2019 (McGregor 2017a).

3.2.1.4 Convention on International Trade in Endangered Species of Fauna and Flora (CITES)

Neither *C. subternata* nor *C. intermedia* are included in any of the CITES appendices despite it being an internationally-traded species. This is due largely to there being no evidence to date that trade is causing a significant threat to the survival of these species in the wild.

3.2.2 Applicable National Legislation

The South African environmental policy framework is defined by the Constitution, the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA), the subsidiary Threatened or Protected Species (TOPS) Regulations of 2007 and, the Bioprospecting Access and Benefit Sharing (BABS) Regulations of 2008 as amended in 2015. These are introduced below (De Villiers & McGregor 2017).

3.2.1.5 The Constitution of the Republic of South Africa of 1996

The Constitution provides the starting point from which to consider the administration of environmental law. It is the supreme founding law of the democratic, post-apartheid South Africa that fundamentally defines the country's legal and administrative order and enshrines a Bill of Rights which applies to all law and is binding on all organs of state. In the context of *C. subternata* and *C. intermedia* harvesting, trade and regulation, section 24 of the Constitution stipulates that everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent ecological degradation and secure ecologically sustainable use of natural resources while promoting justifiable economic and social development. In addition, section 33 of the Constitution stipulates that everyone has the right to administrative action that is lawful, reasonable and procedurally fair and, in the event that such rights have been adversely affected by administrative action, the right to be provided with written reasons.

3.2.1.6 The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA)

NEMBA provides for the management and conservation of biological diversity within South Africa, including the use of indigenous biological resources in a sustainable manner and, the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving these indigenous biological resources. This Act also gives effect to ratified international agreements relating to biodiversity which are binding on South Africa. The Minister may, in terms of Section 56 of the NEMBA and by notice in the Government Gazette, publish a list of species that are threatened or in need of national protection (Threatened or Protected Species, TOPS). Section 57 of the NEMBA makes provision for the restriction of activities involving listed TOPS, which is relevant to the harvesting of *C. subternata* and *C. intermedia* in the wild. Section 43 of the NEMBA also makes provision for the development of Biodiversity Management Plans for Species (BMP-S) as a tool to manage high value species such as *C. subternata* and *C. intermedia*.

3.2.1.7 Threatened or Protected Species (TOPS) Regulations – 2007

The initial TOPS regulations published in 2007 did not include reference to *C. subternata* and *C. intermedia*. However, the latest draft list of TOPS regulations, published with amendments to the regulations on 31 March 2015, included the listing of both *C. subternata* and *C. intermedia* as protected species.

To date the Eastern Cape DEDEAT issues provincial permits for various activities relating to wild honeybush harvesting, cultivation and processing, whereas none of the Cyclopia species have a protected status in the Western Cape. However, it is anticipated that once the updated TOPS lists and regulations are published a standardised permitting system will be implemented across both provinces which will then more effectively address unlawful harvesting.

3.2.1.8 Bioprospecting Access and Benefit Sharing (BABS) Regulation of 2008 as amended in 2015.

Chapter 6 of the National Environmental Management: Biodiversity Act (2004) provides a framework for regulating Bioprospecting, Access and Benefit-Sharing in South Africa. Associated with the legislation the Bioprospecting, Access and Benefit Sharing (BABS) Regulations, 2008 as amended in 2015 were gazetted. The purpose of these regulations is to: a) prescribe the notification process for the discovery phase of bioprospecting involving any indigenous genetic and biological resources contemplated in section 81A (2) of the Act; b) prescribe the permit system set out in Chapter 7 of the Act insofar as that system applies to bioprospecting involving any indigenous genetic and biological resources or export from the Republic of any indigenous genetic and biological resources for the purpose of bioprospecting or any other kind of research; c) set out the form and content of, and requirements and criteria for benefit-sharing and material transfer agreements; and d) set out the administration process of the Bioprospecting Trust Fund.

In the absence of a sector-wide benefit-sharing agreement between the holders of traditional knowledge on honeybush and the honeybush industry (such as currently exists for the rooibos industry), there has been a delay in the industry complying with BABS regulations. Compliance with BABS regulations should also lead to advances in the sustainable use and conservation of honeybush species.

3.2.1.9 Protection, Promotion, Development and Management of Indigenous Knowledge Systems Act 6 of 2019

Of significance and relevance to this BMP is the Protection, Promotion, Development and Management of Indigenous Knowledge Systems Act, 2019, which was signed in to law in August 2019. The aim of the act is to prevent the unauthorised use and misappropriation of knowledge developed over time by the country's indigenous communities. It promotes use of the knowledge "in the development of novel, socially and economically applicable products and services." (RSA, 2019) but only with appropriate involvement and compensation for the indigenous knowledge holders. A National Indigenous Knowledge Systems Office (NIKSO) will be established that will be responsible for the management of the rights of indigenous communities. The promulgation of this Act aligns directly with the Aichi Biodiversity Targets 16 and 18 which deal respectively with the fair and equitable sharing of benefits arising from their utilisation (ABS) and legislation for the protection, incorporation and integration of traditional people and their knowledge in biodiversity management.

3.2.1.10 Provincial ordinances that regulate C. subternata and C. intermedia harvesting in the wild

Wild harvesting of *C. subternata* and *C. intermedia* is also controlled by the respective provincial biodiversity conservation authorities in the Eastern Cape and Western Cape provinces. The Eastern Cape authorities rely on the Nature and Environmental Conservation Ordinance 19 of 1974 ('the Ordinance') which has subsequently been published as Western Cape Nature Conservation Laws Amendment Act 3 of 2000 in the Western Cape. No *Cyclopia* species are listed as protected flora in the Western Cape but both *C. subternata* and *C. intermedia* are listed on the protected Schedule 4 of the Ordinance in the Eastern Cape. As of 2012 the Eastern Cape has been the only Province that could provide permits for the honeybush tea industry through registering honey bush tea sellers and growers. As soon as the new TOPS regulations have been published to include honeybush tea species, both Provinces will be able to implement the same set of legislation for the first time, which is important for adequate oversight of the industry. The Western Cape Biodiversity Bill is also currently in the process of being finalised and has already been released for public input.

4. Information pertinent to the conservation of these species

4.1 Taxonomic information

The genus *Cyclopia* Vent. is a member of the tribe Podalyrieae in the Fabaceae (legume) family. This morphologically diverse genus was established by Ventenat in 1808; the most recent taxonomic revision recognised 23 species in five sections (Schutte 1997). Most species are well defined and may be separated using a combination of morphological characters (Schutte 1997). This study acknowledged however, that the taxonomy of some species would benefit from further study, particularly in those taxa in which both sprouting and non-sprouting (reseeding) forms occur. *C. subternata* exhibits little morphological variation across its range, apart from the size of its leaflets and the length of the flower stalks. *C. intermedia* shows considerable variation across the species range in the size of the calyx lobes and bracts.

4.2 Distribution and habitat requirements

C. subternata is widely distributed along the coastal plains and mountain ranges of the southern Cape region (Tsitsikamma, Outeniqua and Langeberg mountains), where it occurs on southern aspects at altitudes between 160 and 1000 m a.s.l. (see map on page 7). *C. intermedia* is the most widespread of all *Cyclopia* species, found at altitudes of between 500 and 1700 m a.s.l. across both inland and coastal mountain ranges that include the Witteberg, Anysberg, Swartberg, Touwsberg, Rooiberg, Kammanassie, Kouga, Baviaanskloof, Langeberg, Outeniqua, Tsitsikamma and Van Stadens mountains (see Figure 1). These two species are long-lived perennials that usually occur in proximity to seeps as well as well-drained, stony and loamy soils with low pH. Plants of *C. subternata* are erect, single-stemmed shrubs up to 3.2 m tall, which do not resprout after fire as they lack a woody rootstock from which to do so. In contrast, plants of *C. intermedia* are robust, multi-stemmed shrubs that are able to sprout from a woody rootstock after fire. They attain a height of up to 2 m (Vlok & Schutte-Vlok, 2010).

4.3 The statement of threats adversely affecting these two species

Threats associated with *C. subternata* and *C. intermedia* include the unsustainable and sometimes unlawful wild harvesting of plants for the honeybush tea and related bioprospecting industries; habitat loss and degradation; alien invasive species (AIS); as well as poor fire management and extended drought periods. These threats have resulted in the decline of the species in some areas (Schutte-Vlok & Raimondo 2016a; Schutte-Vlok & Raimondo 2016b) and display a varying degree of impacts on the natural occurrence of healthy *C. subternata* and *C. intermedia* populations. Some information on each threat is presented below.

4.3.1 Lack of control of harvesting and over harvesting

This occurs in areas characterized by communal land ownership, absentee landlords and a lack of policing in easily accessible formally-protected areas, or in the form of poaching in out-of-sight areas on farms and protected areas. The unsustainable or overly frequent harvesting of biomass, or unplanned harvest intervals, leads to a decline in *C. subternata* and *C. intermedia* plant abundance and biomass. This in turn leads to a decline in seed set and soil seed banks, resulting in less seeds available for regeneration after fires.

4.3.2 Land transformation

This refers mainly to the expansion of agricultural activities, infrastructure development and urban sprawl into areas where *C. subternata* and *C. intermedia* would naturally grow. Examples include the development of fruit orchards and plantations as well as settlements and tourist resorts across the species' distribution range. An emphasis on strengthening law enforcement capacity and facilitation to enable legal compliance (with e.g. NEMA and CARA is needed.

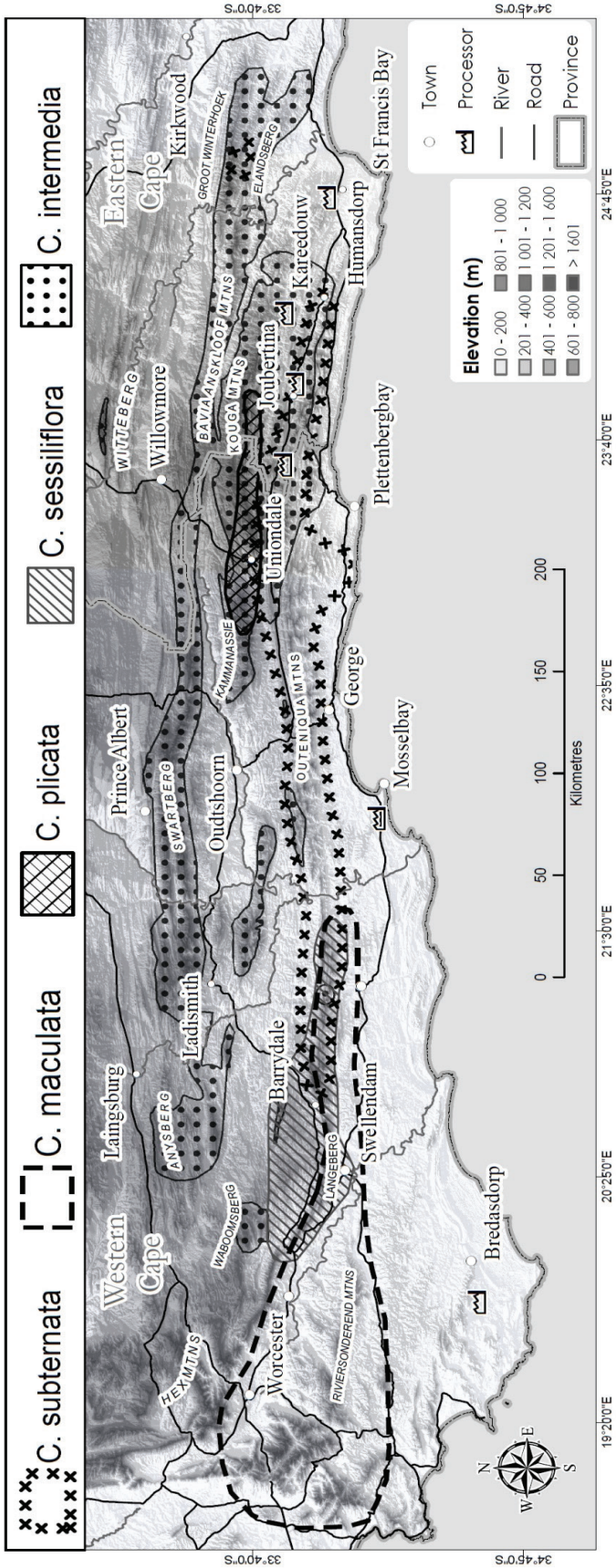

Figure 1: Distribution map of the areas where the five wild harvested Cyclopia species occur (adapted from McGregor, 2018).

4.3.3 Alien plant invasion

There is widespread alien plant invasion in much of the honeybush-bearing land. On mountain slopes and along drainage lines, plants such as *Acacia mearnsii, Hakea sericea* and *Pinus sp.* out-compete many fynbos species including *C. subternata* and *C. intermedia*, leading to reduced population sizes. Alien species occur as dense stands or individual plants, and while the dense stands are extremely difficult to eradicate, their expansion should at least be held in check. Scattered individual alien plants are in some instances relatively easy to eradicate and should be targeted for removal as soon as possible to prevent further spread. Where practical, these lower density infestations should also be a place for targeted bio-control release. Invasive alien plant infestations may also lead to higher intensity fires as these plants take longer to be consumed by the fire, resulting in high seed mortalities in the soil.

4.3.4 Unnatural fire regimes

Fires that burn too frequently can reduce the diversity of a fynbos system by destroying the slow-maturing, overstorey, non-sprouting *Protea* and *Leucadendron* species in fynbos systems (Vlok & Yeaton, 1999; Vlok & Yeaton, 2000; Kraaij & Van Wilgen, 2014). Research has shown that these species play an important role in maintaining species diversity in fynbos ecosystems. Through competitive interactions these *Protea* and *Leucadendron* species ensure that sprouters (resprouters) do not outcompete other species, and that gaps are created for seedlings (of e.g. *Cyclopia* species) to colonise and establish after fires. Conversely, the absence of fire over many years causes honeybush populations to decline as *C. subternata* and *C. intermedia* plants are outcompeted by other fynbos species and are reduced to scraggly, unharvestable forms.

Cyclopia species are vulnerable to repeated fires and extended droughts – both of which are features of a climate change influenced present and future. All *Cyclopia* species are dependent on periodic fires (seeds are ant-dispersed and dependent on the heat of fire to stimulate germination; fire sterilises the soil of pathogens and creates gaps for species to colonise and seedlings to establish and manifest themselves), and *Xylocopa* (Carpenter) bees for pollination. Carpenter bees are solitary bees that make their homes in the dead branches of e.g. previously burnt *Protea* plants and are therefore also affected by fire regimes.

4.3.5 Genetic contamination

Genetic contamination results from the human-induced flow of genes from plants of one population to those of another population through pollination, with possible hybridisation events or infraspecific genetic shifts. The establishment of cultivated honeybush orchards in close proximity to naturally occurring wild populations of *C. subternata* and *C. intermedia* is recognised as a threat to the genetic integrity of these species. There are potentially serious downstream consequences, such as progeny with weakened genetic bases that are unable to adapt to climate change. It is considered important to protect and buffer wild/undomesticated types to conserve their genetic diversity for use in selective plant breeding (as is done often and successfully with other commercial crop plants such as tomatoes, potatoes etc.).

Bringing in or establishing foreign genetic material (e.g. from another location or species) into natural areas through broad cast sowing of seeds or planting seedlings is a serious threat. *Cyclopia intermedia* is a variable species that is genetically diverse, with plants from the inland mountains (Witteberg, Anysberg, Swartberg, Touwsberg, Rooiberg, Kammanassie) having longer calyx lobes and bracts, and those from the Kouga, Baviaanskloof and coastal mountains having rounded calyx lobes and bracts. Detailed studies on the genetic variation between populations of species have indicated that there is great variability between populations (Galuszynski, 2020; Galuszynski and Potts, 2020a, 2020b). There is major concern that movement of genetic material from the different ecotypes into other areas will result in genetic contamination or hybridisation (Potts, 2017); especially if augmentation is

considered. It is only by active focus on retaining the richness in diversity that genetic fitness will be ensured.

4.3.6 Pests and disease

Cultivation plot establishment could potentially also result in the proliferation of emerging crop pests to natural populations of *C. subternata* and *C. intermedia*. These pest introductions could not only reduce the biomass of plants available for wild harvesting but could act as a reservoir for the re-infestation of cultivation sites.

4.3.7 Retention of germplasm and related information within South Africa

The Honeybush industry in South Africa is making a meaningful economic contribution to the country. Should the honeybush species be grown outside the country it will result in a loss of opportunity in Gross Domestic Product (GDP) contribution, profit and employment. These losses would represent a reduction in benefits to share and hence result in a possible decline in the desire and efforts to conserve *Cyclopia* species.

4.3.8 Climate Change and Drought

In response to climate change the fynbos biome is known to be particularly vulnerable - it is likely to contract with loss of an estimated 51-65% of its unique fynbos bioclimatic conditions (Midgley et al. 2002). The combined effect of alien invasive species and more frequent fire returns is likely to cause biodiversity loss and reduced ecosystem functioning (Foden et al, 2018). The physical requirements of suitable habitat for Honeybush (in decreasing order of importance) are soil type, rainfall seasonality, rainfall, aspect, elevation above sea level, and temperature (DoA, 2016). Climate change research that included the honeybush-producing areas of the Western Cape has shown that climate-related impacts on honeybush could include reduced seed germination and seedling success due to increased drought frequency during winter, impacts on yield due to erratic rainfall, increased impact from fungal soil-borne diseases due to water logging as a result of increased heavy rainfall events, and impacts from an overall increase in high fire risk conditions (DoA, 2016). As a result of these impacts, wild honeybush could experience decreases in population sizes and increased habitat fragmentation, particularly in marginal areas, which will result in a loss of genetic resources (DoA, 2016). Changes in pest and disease complexes could affect cultivated honeybush, while there may be changes in which areas are suitable/unsuitable for honeybush production (DoA, 2016). Stressed plants would also likely be susceptible to a broader range of pests and diseases that have not yet been identified. Models estimating the potential impact of intermediate and worst-case scenarios of climate change on *C. intermedia* shows a projected range loss of 25% on average (G. McGregor, personal communication). Use value of the species

Local use of the plants can be dated back to the 1800's when leafy shoots and flowers were dried to make 'tea-water' (Latrobe, 1818). Extractions of the plants were also used to treat illnesses related to the respiratory system (Bowie, 1830). Today, the dried leaves and stems of *Cyclopia* species are used to make quality herbal-tea products for which there is a large and growing global demand. Of all the utilised species, *C. subternata* and *C. intermedia* are known to produce very good quality teas making them two of the most popular species in the industry. Honeybush extracts can also potentially be used as preservatives or flavourings in ready-to-drink beverages such as iced tea, fruit juice blends and sweets, or as fragrances in cosmetic products. International patents have already been registered regarding the use of honeybush extracts to replace the existing preservatives used in wine, beer and cider.

5. Planning methodology

5.1 Identified role players

Stakeholders were identified through a literature review as well as in consultation with the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) through the Honeybush Community of Practice (HCoP) group. During the stakeholder identification process, the names and contact details of stakeholders were registered on a database of interested and affected parties. The database is to be used to:

- Capture all details pertaining to identified stakeholders (names, contact details, etc.) so that they can be notified of the proposed project;
- Invite stakeholders to scheduled stakeholder workshops; and
- Update stakeholder details as the process proceeds.

5.2 Description of the process followed in drawing up this BMP

The planning methodology or the processes to be used in the development of the Biodiversity Management Plans for species (BMP-S) is outlined in terms of section 5 of the Norms and Standards for BMP-S.

5.3 Process for stakeholder consultation

A stakeholder consultation workshop to consult a BMP-S for *C. intermedia and C. subternata* took place on 4 March 2020 in Uniondale.

5.4 Stakeholders consulted

A total of 99 stakeholders were included in the stakeholder database, which included the following stakeholder groups:

- National Government Stakeholders (e.g. Department of Environment, Forestry and Fisheries (DEFF);
- Parastatal (e.g. SANBI, CapeNature, ECPTA, SANParks);
- Provincial Government Stakeholders (e.g. DEDEAT, DEA&DP, DOA WC);
- Municipal Stakeholders (e.g. Nelson Mandela Municipality);
- Academic or Research Stakeholders (e.g. Rhodes University, UCT, ARC, Stellenbosch University);
- Industry participants (i.e. Gower Enterprises);
- Industry Associations (SAHTA);
- NGOs (e.g. Living Lands);
- Private Conservation Stakeholders;
- Landowners;
- Other Stakeholders

Several workshops were held where the above stakeholder groups were engaged, participants of which are included in *Appendix A: List of stakeholder workshops with participants.*

5.5 Verification and approval by relevant experts on the quality and context of the species related issues

All actors to assist in this regard.

6. Draft action plan for the BMP for *C. subternata* and *C. intermedia*

Aim: The aim of this BMP is to ensure the long-term survival of *C. subternata* and *C. intermedia* populations in the wild, whilst safeguarding and respecting the livelihoods of stakeholders.

Note: Deadlines refer to the timelines for an action to be undertaken, starting from when the final BMP is gazetted for implementation.

OBJECTIVE 1: **To ensure that wild harvesting of *Cyclopia subternata* and *Cyclopia intermedia* is carried out in a manner that maintains long-term survival and genetic integrity of the species in the wild.**

CRITERION 1.1.: Conservation status of *Cyclopia subternata* and *Cyclopia intermedia* is reviewed and updated regularly.

Wild harvested honeybush makes up 70% of the annual harvest with only 30% originating from cultivated sources. *C. intermedia* forms 85% of the wild harvested honeybush crop and *C. subternata* accounts for 10%. With increased demand for the crop and better rates per kilogram of wet tea, wild harvesting is an attractive source of income for landowners and harvesters. With its unique fynbos ecological characteristics, long term survival of the plants can only be achieved by harvesters and landowners with knowledge and experience. The last regional assessment carried out by SANBI categorised the species as 'Least Concern' on the basis of expert inputs to the assessment. Based on updated assessments of the quality and quantity of plants in the field, our understanding of the resource base is dynamic, requiring periodic conservation status reassessments.	
Action 1.1.1	Conduct IUCN Red List national conservation assessments of *Cyclopia subternata* and *Cyclopia intermedia*.
Actors	Main actor: SANBI Supporting actors: experts and conservation agencies
Indicator	Conservation status of *Cyclopia subternata* and *Cyclopia intermedia* is regularly assessed according to IUCN Red List categories and criteria, and published online
Deadline	2021 and then every six years.

CRITERION 1.2: Harvesting practices are based on the Wild Honeybush Harvesting Field Guide, and adequate inventory assessments and monitoring of *C. intermedia* and *C. subternata* populations is ongoing so that harvesting intensity and trade is sustainable.

Appropriate sustainable harvesting advice and permitting needs to be informed by adequate inventory assessments and ongoing monitoring of *C. intermedia* and *C. subternata* populations so that harvesting intensity and trade does not threaten the persistence of the species in the wild. The extent of the resource sourced from unlawful wild harvest needs to be informed by trade surveys in consumer markets.	
Action 1.2.1	Establish a resource monitoring programme for the two species across their ranges to assess impacts of ongoing wild harvesting.
Actors	Main actors: SANBI, academic institutions, Provincial conservation authorities, consultants Supporting actors: SAHTA, HCoP

Indicators	Monitoring programme methodology finalised in a report and monitoring in progress. Data management plan in place.
Deadline	24-36 months

Use results of resource assessments to determine whether current and anticipated future offtake will negatively impact populations of *C. subternata* and *C. intermedia* and determine if quotas or other regulations are required. Improved management of wild harvesting results in reduced loss or decline in populations of the species due to ongoing or growing harvesting pressures, as well as an improvement in the state of overharvested populations. These populations would be expected to regenerate, setting seed and increasing in number of individuals through seedling recruitment.	
Action 1.2.2	Undertake an assessment of the resource base extent and character for the two *Cyclopia* species
Actors	Main actors: SANBI, academic institutions, HCoP, consultants Supporting actors: SAHTA, HCoP, landowners
Indicator	Report(s) on extent and character of the resource base of the two *Cyclopia* species is produced. Report on sustainability of current harvesting activities produced, with recommendations. Provincial conservation authorities are using baseline information from the resource assessments to clearly define the boundaries where legal wild collection (i.e. with a permit) is permitted or could be permitted based on the state of the resource at that time.
Deadline	24-36 months, repeated 6-8 years later

Trade data informs compliance/non-compliance with regulations, and the extent of unlawful harvesting. Permits issued are informed by ongoing monitoring and evaluation of the resource. Action dependent on TOPS implementation.	
Action 1.2.3	Establish a monitoring / traceability system through TOPS (e.g. e-Permit reporting) that link total quantities in trade (locally and internationally) and cross check with permit conditions / volumes issued and processing output, to determine extent of unlawfulness.
Actors	Main actors: WC & EC permitting authorities, DEFF, TRAFFIC Supporting actors: other NGOs, Industry, AGRI SETA (harvesters & experts), SAHTA, DEA&DP, DEFF (BABS), WCDoA, HCoP, honeybush processors
Indicators	Maximum allowed collection quantities are defined and based on available supply and ecological criteria. Database of trade records (industry records and DEFF BABS permit records) per year is in place and maintained by DEFF. Trade data provided in report by transactional advisors contracted by DEFF Trade data report available to permitting and enforcement authorities.

	Each permit issued is substantiated by a resource assessment. Provinces implement TOPS when in force. Provincial conservation agencies / processors / stakeholders able to detect unlawfully sourced material being presented for processing Provincial conservation agencies able to trace honeybush material through the value chain
Deadline	12 months and ongoing.

CRITERION 1.3: Industry, landowners, farmers, field harvesters, and relevant government officials are educated on the ecology of the species and the harvesting guidelines and field guide for both species are maintained, endorsed and implemented.

Harvesting of plant material is subject to adequate training and monitoring of those involved in the harvest and trade of *C. intermedia* and *C. subternata*.	
Action 1.3.1	Conduct training and information sharing workshops for industry, farmers, landowners, field harvesters incl. EMIs and compliance officers to educate relevant stakeholders on the ecology of the species and sustainable harvesting as well as the implications of this BMP, legislation and compliance, protocols and recommendations for the sustainable harvesting of these plants
Actors	Main actor: HCoP Supporting actors: DALRRD, Cape Nature, DEDEAT, DEA&DP, ECPTA, Academics, NGOs, WCDoA, HCoP, EMIs, compliance officers and landscape partners.
Indicator	• Stakeholder database kept up to date inclusive of industry, processors, farmers (commercial and emergent), landowners, field harvesters and (all applicable persons, incl. EMIs, compliance officers) • Number of Stakeholders trained and capacitated in the two range provinces on the implementation of the BMP-S and regulations (TOPS and BABS) pertaining to the sustainable harvesting / use / development and conservation of the species. • BMP-S monitoring reports provide insight into legal compliance and successful delivery of the actions in the BMP. • Distribution of all relevant materials (e.g. BMP-S, legislative notices, guidelines/field guides, plans and strategies) to all relevant stakeholders • Checklist of best practice harvesting principles developed and distributed to honeybush stakeholders • Number of training and communication initiatives within the provinces to develop/refresh the skills of relevant stakeholders
Deadline	Ongoing training to those previously not trained and regular refresher courses to all (dependent on funding and capacity of landscape partners)

Harvest guidelines should include a suitable frequency of return harvests based on population size and species ecology and be widely distributed to harvesters. They should

be maintained and endorsed by provincial authorities, supported by the HCoP and adhered to by industry.	
Action 1.3.2	Review & revise sustainable harvesting guidelines for *Cyclopia subternata* & *C. intermedia* based on lessons learned from implementation of the current guidelines, as well as the outcomes of resource assessments, incl. management advice for other commercial *Cyclopia* species.
Actors	Main: DEDEAT, DEA&DP Supporting: WCDoA, DALRRD, DEFF, NGOs, SAHTA, honeybush processors, Living Lands
Indicators	• Collection and harvest instructions/guidelines and rules are produced that inform the basic procedures of harvest for *C. subternata*. • Revised guidelines for both species produced that include information on suitable frequency of return harvests based on population size and species ecology. • Harvesting guidelines for both species are available and widely distributed. • Population decline through excessive and too-frequent harvesting is minimised and there is an improvement in the health, regeneration and recruitment of (harvested) populations of *C. intermedia* and *C. subternata*. • Field officers provide feedback on the effectiveness of current guidelines.
Deadline	Guidelines for *C. intermedia* already developed Guidelines for *C. subternata* = 12 months Revised harvesting field guidelines for both species = 60 months Distribution and Implementation = ongoing

CRITERION 1.4: An accreditation or certification scheme component for the honeybush sector is introduced that promotes legal access to, and sustainable use of, *C. intermedia* and *C. subternata.*

A system is developed that enables monitoring and checks the compliance of all stakeholders with regulations and guidelines relevant to the sustainable use of *C. intermedia* and *C. subternata*. Industry members are provided with support to enable compliance with the standard, and offenders are taken to task. The scheme component incorporates best environmental practice and represents increased self-regulation by industry.	
Action 1.4.1	Develop the environmental component of an accreditation system and honeybush industry certification/assurance scheme implemented by a recognised industry organisation for harvesters and other industry members.
Actors	Main actor: SANBI, DEFF, SAHTA Supporting actors: WC DEDAT, DEDEAT, HCoP, academia
Indicator	Environmental component of a certification/assurance scheme established and subscribed to by at least five SAHTA members.
Deadline	36 months

Action 1.4.2	Develop a standardized database of harvesters, harvesting & cultivating farms, landowners, processors and other honeybush stakeholders including EMI's and compliance officers
Actors	Main actor: HCoP Supporting actors: SAHTA, DEDEAT, DEA&DP, DEFF (biodiversity economy), WCDoA, DEDAT
Indicator	Database developed populated and available to the Actors
Deadline	With immediate effect, updated regularly

OBJECTIVE 2: **To ensure that wild harvesting of *Cyclopia subternata* and *Cyclopia intermedia* does not adversely affect the environment, including ecosystem function.**

CRITERION 2.1: Sensitive taxa and habitats that could be affected by harvesting of *C. intermedia and C. subternata* are identified and adequately protected.

In many cases harvesting takes place in remote, otherwise unused, relatively pristine areas. Most of these sites are in mountain catchment areas where low levels of impact are key to water security for the lowlands. It is therefore important to keep harvesting and the development of related infrastructure such as roads to a minimum. Detailed information on the location of and recommended management for CBAs and ESAs in the Western Cape Province may be sourced in the Western Cape Biodiversity Strategy and Handbook (Pool-Stanvliet et al. 2017). The DEFF screening tool can also serve as an informant here, as it provides cadastral level information.	
Action 2.1.1	Use provincial/national sensitivity mapping and existing decision-support tools to identify areas where harvesting could be considered so as to not result in negative impacts on sensitive ecosystems and species. Areas to be included in decision support tool must include: • Threatened ecosystems • Areas of exceptional and critical biodiversity [CBAs, Protected Areas (PAs)]
Actors	Main: SANBI, DEDEAT, DEA&DP & CapeNature Support: WC/EC DoA and DEFF (Conservation Management & Ecosystem Management)
Indicator	• Maps produced that overlay locality data for *C. intermedia* and *C. subternata* with data on sensitive areas and threatened species. • Provincial authorities make use of these maps to inform harvesting activities/permitting.
Deadline	12 months / ongoing

CRITERION 2.2: The impacts from adjacent land uses are monitored and managed in order to address inappropriate landscape transformation and maintain the functioning of an environmentally sustainable system

The extent of inappropriate and unlawful use of land within the honeybush cultivation and harvesting footprint requires ongoing monitoring, to track and avoid adverse impacts that limit development of the honeybush industry. Conversely, both industry and the relevant permitting authorities need guidance based on land use data analyses, regarding where best to expand the honeybush cultivation footprint in a manner that is environmentally sustainable. Detailed information on the location of and recommended management for

CBAs and ESAs in the Western Cape Province may be sourced in the Western Cape Biodiversity Strategy and Handbook (Pool-Stanvliet et al. 2017). The DEFF screening tool can also serve as an informant here, as it provides cadastral level information.	
Action 2.2.1	Update and maintain land-use GIS layers useful for the identification of existing transformed land (suitable) as well as virgin land (unsuitable) for the cultivation of Honeybush species (focussed on the honeybush footprint).
Actors	Main actors: WCDoA, DEADP, HCoP, SAHTA to drive the update and maintenance of the maps (supported by partners). Supporting actors: DEFF, SANBI, SANParks, CapeNature and municipalities.
Indicator	• Non-virgin land suitable for Honeybush cultivation continues to be identified and provided to relevant permitting authorities. • Virgin land requiring protection identified via stewardship, reserve expansion and other conservation prioritisation processes and this information provided to relevant permitting authorities.
Deadline	Report on an annual basis.
Action 2.2.2	Advise and strengthen relevant permitting authorities to avoid issuing permits / authorisations for ploughing of virgin land and exercise control and monitoring of unlawful activities carried out within the honeybush footprint
Actors	Main actors: Main implementing agent for the BMP: DEA&DP (Environmental Law Enforcement), CapeNature, ECPTA, WCDoA, DEDEAT (Compliance and Enforcement) Supporting actors: DEFF (Biodiversity Compliance and Enforcement), SANParks
Indicator	• Report indicating the extent of virgin land developed for Honeybush cultivation or used for other unlawful activities or developments • Unlawful land users identified and charged • Report presented to HCoP, to EMIs and compliance officers
Deadline	Monitoring ongoing; report produced and presented annually.
Action 2.2.3	Promoting proactive compliance on the legislative provisions of land use and ensure adequately resourced compliance monitoring of unlawful activities on virgin land
Actors	Main actors: DEFF, DALRRD, DEDEAT, DEA&DP, CapeNature Supporting actors: SAHTA, HCOP, WCDoA
Indicator	• Report (action 2.3.3) indicating the extent of virgin land developed for Honeybush cultivation or used for other unlawful activities or developments • All reported unlawful land use cases are followed-up and addressed • Report (action 2.3.3) presented to landowners, processors and other honeybush stakeholders.
Deadline	Ongoing
Action 2.2.4	Promote use of identified existing transformed (non-virgin) land for the cultivation of *Honeybush* species (in areas previously dedicated to agriculture and forestry but no longer used for these purposes) while avoiding sensitive areas such as CBAs & ESAs, e.g. wetlands, key corridors that might need to be restored and or maintained as natural in support of broader ecosystem function.

Actors	Main actors: DEFF (Biodiversity Economy Strategy Unit), DEDEAT, DEA&DP, WCDoA Supporting actors: SANParks, CapeNature, private land owners, natural resource management agencies, SAHTA
Indicator	• Develop GIS layers (see action 2.3.2) indicating transformed land available for honeybush cultivation within the distribution range (Western and Eastern Cape) • Map presented at HCoP and to other honeybush stakeholders.
Deadline	Ongoing

OBJECTIVE 3: **To ensure that harvesting and management activities are carried out under legitimate tenure arrangements and comply with relevant laws, regulations and agreements**.

CRITERION 3.1: Stakeholders in the honeybush industry are made fully aware of relevant national and provincial legislation and regulations that affect their operations, and the process of compliance to allow for the honeybush natural resource to be sustainably used and well managed and empowered with easily accessible best practice materials (drawn from the guidelines/field guide). The permitting and enforcement authorities are properly capacitated to perform their control and enforcement measures, and related monitoring and evaluation activities.

Most wild honeybush harvesting takes place on privately owned land according to an arrangement between the farmer and a harvesting team. But there is an issue with unlawful harvesting in protected areas, communal areas and on farms where landlords are absent. Harvesting of honeybush species is regulated through the permitting system provided for in terms of Eastern Cape provincial ordinances. The system provides for proof of legal acquisition and assist in combatting supply of unlawfully harvested honeybush materials. Other relevant regulatory requirements are listed and explained in the Wild Honeybush Harvesting Field Guide. All applicable national legislation and provincial controls regarding the use and conservation of *C. intermedia* and *C. subternata* must be strengthened, implemented and adhered to.	
Action 3.1.1	Implement and enforce (where necessary) the terms of the Threatened or Protected Species (TOPS) and the Bio-prospecting, Access and Benefit Sharing (BABS) regulations for the Honeybush industry.
Actors	Main actors: DEFF (BABS Unit), DEA&DP, DEDEAT. Supporting actors: industries and communities
Indicator	Documentary proof (permits) of compliance with the NEMBA, including the TOPS and BABS regulations & relevant provincial legislation
Deadline	Ongoing

For the honeybush resource base to be well-managed, the Eastern and Western Cape Provinces need to co-operate extensively, including in standardising as far as possible their control and enforcement measures, and their monitoring and evaluation. This facilitates compliance by industry.	
Action 3.1.2	Standardize as far as possible the management and control measures and actions across the provinces in relation to the harvesting/use/development of Honeybush species across the entire distribution range.
Actors	Main actors: Provincial conservation authorities and DEFF (LACE)

	Supporting actors: SAHTA, Industry, HCoP
Indicator	Align conservation regulations and targets and policies in the Eastern and Western Cape Provinces for *C. intermedia* and *C. subternata.* Provinces implement TOPS when in force. Keeping of complete records by all actors.
Deadline	24 months

Tenure, management authorities and land use rights are clearly defined for the harvesting of *C. intermedia* and *C. subternata* in the wild. Legal access and harvesting must be the standard pre-requisite.	
Action 3.1.3	Harvesters and industry prove prior written consent and legal access as per legislation.
Actors	Main actors: SAHTA, Industry, DEDEAT, CapeNature, ECPTA and private and communal land owners Supporting actors: HCoP
Indicator	All honeybush material processed is legally sourced in compliance with permit requirements, as substantiated by relevant documentation. [processors to keep a record of all required traceability documentation (TOPs permits, land owner permission for wild harvesting, etc.)]. Contracts signed where applicable. Complete records are kept of all acquired documents.
Deadline	Ongoing

Community participation in HCoP and SAHTA is improved	
Action 3.1.4	Maintain advocacy and community participation
Actors	Main actor: HCoP Supporting actors: All role players: DEDEAT, Cape Nature & DEA&DP, DAFF, WCDoA, ARC, SAHTA, Municipalities, ECPTA
Indicator	Advocacy and community participation/organisation improved [Extent of participation in HCoP & SAHTA – number of people/interventions, organisations/communities/sectors represented]
Deadline	Ongoing - annual report in relation to community participation in HCoP and SAHTA

OBJECTIVE 4: **To ensure that customary rights of local and indigenous communities to use and manage applicable collection areas are recognised and respected.**

CRITERION 4.1: Tenure, management authority and use rights are clearly defined for access to *Cyclopia* species in the wild.

The rights and interests of land owners and local communities (where applicable) are upheld and access to resources needs to be provided subject to prior inform consent. Legal access

and harvesting must be *de rigeur* and included in harvesting guidelines and industry procedures.	
Action 4.1.1	Support landowners / land managers & local communities in implementation of any new legislation e.g. BABS and IKS regulations. All available information on land tenure, traditional knowledge associated with honeybush species and community-level benefit-sharing mechanisms needs to be incorporated material transfer and benefits sharing agreements, biocultural community protocol and national record systems on IKS.
Actors	Main actors: DEFF (BABS Unit), Supporting actors: WCDoA, CapeNature, SAHTA, HCoP, DEDEAT and DSI
Indicator	DEFF (BABS unit) and DSI provides data to be shared with the industry relating to BABS/IKS regulatory requirements (incl. details of resource management and highlights the legal processes and benefit sharing options between communities, landowners and the industry).
Deadline	Ongoing

CRITERION 4.2: The honeybush value chain is subject to South African regulations on Access and Benefit Sharing in relation to the Nagoya Protocol and the CBD. Communities are informed of their ABS rights and appropriately enabled to participate in benefit-sharing discussions.

A sector-wide benefit sharing agreement akin to that produced for the rooibos industry is envisaged for the honeybush industry. This would impact on local community livelihoods and the sustainable utilisation of wild populations of *C. intermedia* and *C. subternata*.	
Action 4.2.1	A benefit-sharing agreement (BSA) is negotiated by industry & relevant communities, assisted by government.
Actors	Main actor: DEFF (BABS unit) Supporting actors: Communities, industry, SAHTA.
Indicator	BSAs and other agreements between stakeholders concluded to satisfaction of Minister DEFF and biotrade/bioprospecting permits awarded.
Deadline	5 years

OBJECTIVE 5: **To ensure that, through fair and equitable sharing of benefits derived from the biotrade and bioprospecting of *Cyclopia,* the conservation and sustainable use of honeybush species is promoted**.

CRITERION 5.1: The benefits derived from the biotrade and bioprospecting of *C. intermedia and C. subternata* are shared to directly promote the conservation of honeybush species and the ecosystems in which they occur. A monitoring and evaluation system is introduced that allows for tracking ABS outcomes for biodiversity conservation within the honeybush footprint.

For compliance with the CBD and the Nagoya Protocol, to both of which instruments South Africa is a ratifying Party, conservation and sustainable use of biodiversity should be promoted and implemented through equitable benefit sharing. This is presently affected through the BABS regulations of DEFF.

Action 5.1.1	Devise and introduce a monitoring and evaluation system that tracks the extent of conservation of honeybush genes, species and ecosystems derived through honeybush biotrade or bioprospecting permits issued by DEFF.
Actors	Main Actor: Academic partner - UCT Supporting actors: DEFF (BABS Unit), HCoP, SAHTA, DEDEAT, Cape Nature & DEA&DP, SANBI
Indicator	A M&E plan is produced and implemented.
Deadline	36 months and ongoing

OBJECTIVE 6: **To ensure the wild harvesting of *Cyclopia subternata* and *Cyclopia intermedia* is based upon ecologically sound, adaptive, practical, participatory and transparent management practices**.

CRITERION 6.1: Unnatural fire regimes across the distribution range of *C. intermedia* and *C. subternata* are addressed and managed.

A holistic and long-term approach to resource management is required for this industry.	
Action 6.1.1	Revise existing information materials (sustainable harvesting guidelines, field guide & ecological review) to include more detail on ecologically sound fire management, which prioritises the long-term maintenance of the whole ecosystem and distribute to relevant stakeholders incl. Landowners/FPAs/Municipalities.
Actors	Main actor: HCoP Supporting actors: DEDEAT, DEA&DP, CapeNature, Garden Route Environmental Forum (GREF) / Southern Cape Landowners Initiative (SCLI)] & Landowners, academia, Fire Protection Associations (FPA) & landowners' initiatives
Indicator	• Summarised communique's (as per sustainable honeybush harvesting guidelines) on ecologically sound fire practices related to fynbos ecosystems in the honeybush footprint produced • Information materials incorporate encouragement and advice for stakeholders to join FPA's and Landscape initiatives • Record of new and revised information material distributed to relevant stakeholders • Records of controlled/prescribed burns indicate improved fire management across the species distribution range (SCLI) • Continued investment by the FPAs/CapeNature/ECPTA in ecologically sound fire management in the honeybush footprint • Number of awareness raising events by the HCoP and its partners in support of FPAs & landowners' initiatives
Deadline	Ecological review updated in 24 months and followed by updated guidelines and field guides over the period.
Action 6.1.2	Develop integrated land management plans (whole farm plans) to manage for honeybush
Actors	Main actor: Land owners, Living Lands

	Supporting actors: HCoP, DEA&DP, DEDEAT, WCDoA
Indicator	Integrated land management plans developed by honeybush landowners actively harvesting
Deadline	2 years

Invasive alien plants do have a negative impact on biodiversity (*e.g.* through competition, increasing fire intensities) and ecosystem services (*e.g.* water provision, pollination systems, scenic values), and as such also on Honeybush species.	
Action 6.1.3	Promote legal and effective alien vegetation clearing through integrated catchment management and monitor Honeybush species recovery after fires
Actors	Main actor: DEDEAT, CapeNature, landowners Supporting actors: HCoP, DEA&DP, DEDEAT, DEFF (EP AIS), Living Lands
Indicator	Integrated management plans (as provided in the Field Guide) indicate AIS and ecologically sound fire management regime.
Deadline	Ongoing

CRITERION 6.2: Alien invasive plant species (AIS) are successfully managed through implementation clearing plans.

Honeybush stakeholders need to be aware of the impacts of AIS on wild honeybush and on the benefits they can derive from it. This also includes their role in managing wild honeybush and following sound ecological principles in the honeybush footprint.	
Action 6.2.1	Advise honeybush-bearing land owners (i.e. communal, provincial, protected areas, private and municipal) to adhere to CARA relevant to honeybush i.e. clearing of AIS through NRM programmes, clearing of virgin land, duty of care, etc. stakeholders encouraged to report presence of AIS by logging online project on a platform like iNaturalist
Actors	Main actors: DEFF, DALRRD Supporting actors: Landowners, WCDoA, CapeNature, SANParks, SAHTA, DEDEAT, DEA&DP, Living Lands, Municipalities and Communities
Indicator	WCDoA/ DALRRD to give 1 presentation on CARA compliance at SAHTA. Presence of iNaturalist records of AIS within honeybush footprint
Deadline	24 months and ongoing

The harvester community is highly knowledgeable about the nature of the landscape in which they harvest and are well positioned to identify the occurrence and extent of AIS. During the off-season they potentially could be contracted to manage AIS or report the presence of AIS by logging online records on a platform like iNaturalist.	
Action 6.2.2	Promote the involvement of the harvester and local communities in the monitoring and removal of AIS in Honeybush areas (piloting & capacitating).
Actors	Main: HCoP

	Support: landowners, NGOs (incl. Living Lands), harvesters, DALRRD, DEFF-NRM
Indicator	Harvester community involved in the mapping, monitoring and clearing of AIS (reported on via HCoP discussions and feedback)
Deadline	24 months and ongoing

CRITERION 6.3: Pollinator vectors, pests and diseases of honeybush are monitored and researched, and management advice is generated

The productivity of commercial honeybush species is impacted by pollinator activity, and the prevalence of pests and diseases. Research on these aspects, with recommendations for management interventions, are required to safeguard the health of the wild and cultivated stocks on which the industry depends. Biocontrol is a method of controlling pests such as herbivorous insects and pathogenic fungi, and relies on predation, parasitism or other natural mechanisms, but typically also involves an active human management role. Biocontrol is an important component of integrated pest management as well as safeguarding the important role of pollinators.	
Action 6.3.1	Prioritise and promote research on the pollinators, diseases and pests (natural and/or invasive) that either could or are known to impact populations of wild and cultivated honeybush species.
Actors	Main actors: SAHTA, ARC & academic partners Supporting partners: HCoP, DEDEAT, DEA&DP, WCDoA, DALRRD, land owners
Indicator	Technical reports/theses/published literature produced, including biocontrol protocols for honeybush pests SAHTA communicates management advice to its members
Deadline	Ongoing

CRITERION 6.4: The possible impacts of climate change and drought are identified and assessed, and possible measures are taken to minimise these impacts.

In the honeybush growing region fires are occurring more frequently, burning larger areas at a time, and prolonged droughts are being experienced, all of which impacts on *Cyclopia* species. The best way to address the impacts of climate change and drought is to maintain natural veld in an ecologically healthy state (i.e. ensure that fires are managed in an ecologically sound way; invasive alien plants are cleared; etc.). Nonetheless, other proactive measures are required to safeguard honeybush biodiversity at the gene level.	
Action 6.4.1	Dissemination of information on climate change impacts on Honeybush.
Actors	Main: HCoP Support: SAHTA, DEA&DP, DEDEAT, provincial departments of Agriculture, Academia
Indicator	SmartAgri brief for the Honeybush sector disseminated.
Deadline	As information becomes available.
Action 6.4.2	Undertake gene banking for conservation in areas most likely impacted by climate change and identify 10 suitable collection sites for seed collection.

Actors	Main actors: SANBI (MSB), NPGRC (national genebank), ARC Supporting actors: HCoP, SAHTA, regional conservation agencies, DEFF
Indicator	Representative seed samples collected from 10 prioritised sites and deposited with NPGRC and the Millennium Seed Bank.
Deadline	48 months

OBJECTIVE 7: **To inform management practices that can rationally be applied to all commercial *Cyclopia* species, whether reseeders or resprouters**.

CRITERION 7.1: Best practices for the successful cultivation of Honeybush species are developed and promoted so as to maintain genetic integrity and diversity. This protocol is then used to educate the honeybush community on genetic contamination issues. Populations of *C. subternata* and *C. intermedia* in formal protected areas remain intact and conserved and are not harvested (these are benchmark populations that need to be maintained and protected as reference populations).

The movement of material of honeybush species, including for augmentation, should optimally involve local genetic material only (i.e. genetic stock is not moved between areas).	
Action 7.1.1	Develop a protocol for ecologically appropriate cultivation of Honeybush and minimisation of genetic contamination and erosion in wild populations. Promote establishment of *Cyclopia* orchards from local genetic stock on (clearly demarcated) existing/abandoned transformed lands
Actors	Main actors: WCDoA (Farmer Support and Development & Research, Technology and Development Services), DEA&DP, Eastern Cape Agriculture, ARC, academia Supporting actors: SAHTA, HCoP
Indicator	Protocol document available and has been distributed. Protocol document promoted at SAHTA and HCoP to stakeholders in the sector, in understandable terms.
Deadline	36 months
Action 7.1.2	Consolidate available information on Honeybush genetics and identify priority research to be undertaken (gap analysis)
Actors	Main: HCoP Support: ARC, Academia
Indicator	Priority genetic research recommendation report produced.
Deadline	12 months, then ongoing

7. References and Further Information

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Appendix A: List of stakeholder workshops with participants

Table 1: List of stakeholders from the Honeybush BMP Stakeholder Consultation Workshop held 5-6 December 2017 in George

Abongwe Ketelo	Clyde Lamberts	Lenhard Jonas	Prince Ramafalo
Albert Ackhurst	David Newton	Mashadi Nkoana	Shirley Pierce Cowling
AnneLise Vlok	Elzette Bester	Mncedisi Cindi	Solly Molepo
Arnold Vlok	Gerald Mabeba	Natalie Feltman	Stanley Tshitwamulomoni
Asanda Zulu	Gerrie Ferreira	Neil Crouch	Tebogo Mashua
Azwinaki Muingi	Gillian McGregor	Noluthando Bam	Thea Carroll
Ben van Staden	Humbulani Mafumo	Nomalungisa Mbangcolo	Thembinkosi Tyali
Cecilia Bester	Kganya Masenake	Phumla Nkhatshwa	

Table 2: List of stakeholders from the Honeybush Tea BMP workshop held 20 June 2019 in George

Albert Ackhurst	Dick Carr	Ked Dodds	Rupert Koopman
Azwinaki Muingi	Frances Balayer	Natalie Feltman	Sthembile Ndwandwe
Cindi Mncedisi	Gerrie Ferreira	Neil Crouch	Thembinkosi Tyali
Clyde Lamberts	Gillian McGregor	Noluthando Bam	
David Newton	Humbu Mafumo	Pippa Karsen	

Table 3: List of stakeholders from the public meeting on the Draft Honeybush Biodiversity Management Plan held 4 March 2020 in Uniondale

Albert Ackhurst	David Newton	Gerrie Ferreira	Noluthando Bam
AnneLise Vlok	Denny Davids	Gillian McGregor	Paul-Luc Michau
Azwinaki Muingi	Dereck de Toit	Humbu Mafumo	Preshanthie Naicker
Barry Jacobs	Dick Carr	Ian Terblanche	Raymond Booysen
Barry Thompson	Donovan Brunette	Jan de Jaar	Shannon Daniels
Berenise Pieterse	Ebrahim Mohamed	Jan Louw	Thembinkosi Tyali
Bredon Jonas	Eugene Smith	Johan Kritzinger	Theo Adams
Cecil Opperman	Elmarie Kritzinger	Kim van Niekerk	Thinus Viljoen
Chris Lee	Erika Smith	Luzuko Dali	Toetie Douw
Christian Jacobs	Ewald Gerber	Macdam Nell	Willem Goemas
Clyde Lamberts	Frances Balayer	Melikhaya Pantsi	Zoliswa Snel
Cornelius Julies	Gerhard Mulder	Neil Crouch	

Appendix B: Actions that cannot be implemented in the first 5-year implementation cycle due to lack of funds or capacity.

Should funds or capacity become available these actions can be pursued, but if not, they will not be reported on in the first 5-year implementation cycle and will be considered for inclusion in the second version of the BMP during the first review.

Resource mobilisation to be undertaken for the implementation of the actions within the BMP, including monitoring and enforcing compliance. Additionally, DEFF (Biodiversity Conservation) to provide endorsement and support for sourcing of funds by implementing agencies/supporting actors to assist towards the implementation of the actions within the BMP.	
Action 1.4.6	Determine and obtain the funding & other resources required for monitoring and enforcing compliance (cross cutting)
Actors	Main actors: DEFF (LACE) supported by DEFF (Biodiversity Conservation), Supporting Actors: AGRI SETA (harvesters & experts), SAHTA, DEDEAT, DEA&DP, DAFF, WCDoA, HCoP
Indicator	Monitoring and compliance enforcement costs secured each financial year

Action 2.3.1	Manage and monitor impacts from surrounding/adjacent land uses and adjust use/management of the species accordingly
Actors	Main Actors: Provincial & national natural resource management authorities & SAHTA Supporting Actors: DEFF, SANBI
Indicator	During the 5-yearly review of this plan, incorporate impacts from surrounding/adjacent land uses and adjust use/management of the species accordingly.

Action 2.3.4	Review, revise and if necessary enforce a cooperation agreement on the clearing of virgin land. Coordinate virgin land MoA with WCDoA and DEA&DP.
Actors	Main actors: WCDoA, DEA&DP Supporting actors: CapeNature, DALRRD
Indicator	Cooperation agreement kept current and relevant