




A rapid biodiversity assessment of Lesotho's first proposed Biosphere Reserve: a case study of Bokong Nature Reserve and Tšehlanyane National Park

Authors

^{1,2}Lerato Seleteng-Kose 
³Khotso Kobisi 
⁴Ruida Pool-Stanvliet 
⁵Khotso Mohapi

Affiliations

¹Department of Biology, National University of Lesotho, Roma 180, Lesotho.
²Department of Botany and Plant Biotechnology, University of Johannesburg, P.O. Box 524, Auckland Park 2006, Johannesburg, South Africa.
³Independent Researcher and Plant Collector, P.O. Box 148, Machache 130, Lesotho.
⁴P.O. Box 6147, Uniedal, 7612, South Africa.
⁵Department of Environment, Ministry of Tourism, Environment and Culture, P. O. Box 10993, Maseru, Lesotho

Corresponding Author

Lerato Seleteng-Kose;
e-mail:
leratoseletengkose@gmail.com

Dates

Submitted: 27 March 2020
Accepted: 13 May 2021
Published: 23 August 2021

How to cite this article:

Seleteng-Kose, L., Kobisi, K., Pool-Stanvliet, R. & Mohapi, K., 2021, 'A rapid biodiversity assessment of Lesotho's first proposed Biosphere Reserve: a case study of Bokong Nature Reserve and Tšehlanyane National Park', *Bothalia* 51(2), a6. <http://dx.doi.org/10.38201/btha.abc.v51.i2.6>

Copyright: © 2021. The Authors
Licensee: SANBI. This work is licensed under the Creative Commons Attribution 4.0 International License.

Background: Two of Lesotho's protected areas, namely Bokong Nature Reserve and Tšehlanyane National Park, form the core area of the country's first proposed Biosphere Reserve. Biodiversity is a key aspect needed to justify nomination of a Biosphere Reserve under UNESCO's Man and the Biosphere Programme. Previously documented biodiversity of the two protected areas is limited in terms of coverage and scope as well as being outdated. The aim of the current study was to conduct a rapid assessment of the biodiversity, including endemism, of the proposed Biosphere Reserve to inform the formal nomination process.

Methods: A field survey was undertaken over 112 033 ha in the core, buffer and transition zones of the proposed Biosphere Reserve during which species of both flora and fauna were documented. Purposeful recordings were made during different seasons to incorporate various flowering seasons of the plants, as well as faunal species that may hibernate or migrate seasonally.

Results: A total of 380 plant species was recorded, 30 of which are legally protected in the country, 60 endemic to the Drakensberg Mountain Centre, and two species (*Aloe polyphylla* and *Glumicalyx lesuticus*) are endemic to Lesotho. The former is the national flower of Lesotho and is under threat due to illegal trade. Sixteen mammal species were recorded, seven of which are legally protected in the country, as well as 53 bird species (including the IUCN Red Listed vulture species, *Gyps coprotheres* and *Gypaetus barbatus*). Two fish species were also recorded including *Pseudobarbus quathlambae*, which is Lesotho's only known endemic vertebrate species, as well as seven reptile and three amphibian species (two of which are near endemic namely *Amietia delalandii* and *A. vertebralis*).

Conclusion: This survey has provided valuable baseline information on the biodiversity (particularly regarding the flora and avifauna) of the proposed Biosphere Reserve, which includes two protected areas namely Bokong Nature Reserve and Tšehlanyane National Park. The findings reflect the biodiversity value of the area and will contribute towards its nomination as Lesotho's first Biosphere Reserve.

Keywords: Drakensberg Mountain Centre, MAB Programme, endemics, Red Listed species, UNESCO

Introduction

The Man and the Biosphere (MAB) Programme, of the United Nations Educational, Scientific and Cultural Organization (UNESCO), is an intergovernmental scientific programme that seeks to establish a scientific basis for the improvement of relationships between people and their environments. The Programme is implemented through establishment of Biosphere Reserves (BRs), which are

aimed at balancing human's dependence on biological resources with the ecological integrity of the natural resource base. The MAB Programme contributes to implementing elements of the Convention on Biological Diversity (CBD) through i) conservation of genetic resources, species and ecosystems; ii) scientific research and monitoring; and iii) promoting sustainable development in communities (UNESCO 1996). The guidelines indicate that each BR should contain three elements, namely: a core area/s, which is/are securely protected for conserving biological diversity as well as undertaking non-destructive research and other low-impact uses; a buffer zone, which usually surrounds or adjoins the core area/s, and is used for co-operative activities compatible with sound ecological practices; a flexible transition area, which incorporates a variety of activities including agriculture and human settlements where various stakeholders work together to manage and sustainably develop the area's resources (UNESCO 1996).

In Lesotho, two protected areas (PAs) namely Bokong Nature Reserve (BNR) and Tšehlanyane National Park (TNP) form the core areas of a proposed BR (Figure 1). The area occurs within the Grassland Biome of southern Africa, which is the second largest biome after the Savanna Biome (Mucina & Rutherford 2006). The PAs have been established under the auspices of the Lesotho Highlands Development Authority (LHDA). The BNR covers an area of about 1 970 ha, and is endowed with wetlands that provide water to the Katse Dam, which in turn supplies water to Gauteng Province in South Africa (LHDA 1998a). The wetlands also provide a habitat to the rare Sloggett's ice rat (*Otomys sloggetti* Thomas, 1902), which is endemic to southern Africa, being confined to South Africa and Lesotho (Maloti–Drakensberg).

Interestingly, BNR is the highest elevation PA in Lesotho, lying between 2 600 and 3 152 m above sea level (m.a.s.l). Tšehlanyane National Park covers an area of 5 600 ha, and serves as a conservation area for mature *Leucosidea sericea* Eckl. & Zeyh. riparian woodland, which forms the largest woodland cover of all areas in Lesotho. Woodland vegetation covers only about 1% of the whole country (May 2000). The most conspicuous plants in TNP is the oldwood (*Leucosidea sericea*), quilted sagewood (*Buddleja salviifolia* (L.) Lam. and Drakensberg bamboo (*Thamnocalamus tessellatus* (Nees) (Soderstrom & R.P.Ellis 1982). The latter is the only endemic southern African bamboo, and occurs from the Western Cape province of South Africa, through Lesotho and KwaZulu-Natal to the Free State, at elevations of about 1 500–2 500 masl (Soderstrom & Ellis 1982). Indeed, the name of the park originates from the colour of the Drakensberg bamboo, which is yellowish (translating into Tšehlanyane in Sesotho – the local language). The plant is globally rare and provides a habitat for the Red Listed, Endangered butterfly known as the Bamboo Sylph (*Metisella syrinx* (Trimen, 1868)), which is known only

from mountain summits of South Africa (Eastern Cape, KwaZulu-Natal) and Lesotho (Soderstrom & Ellis 1982).

Bokong Nature Reserve and TNP fall within the high elevation catchments of Lesotho (Lahmeyer Macdonald Consortium & Oliver Shand Consortium 1986). Being situated at a high elevation, up to 3 152 masl, the proposed BR experiences occasional snow, particularly during winter months (May to July). This has resulted in the area developing unique subalpine vegetation typical of the Maloti–Drakensberg (Mucina & Rutherford 2006). It is estimated that 30% of the plant species occurring in the area are endemic (NES 2000). However, Carbutt and Edwards (2001) considered this to be an over-estimate since the flora of the Lesotho Highlands and Eastern Cape Drakensberg was poorly explored at the time, and thus was not incorporated into the calculation of the area's endemism. Nevertheless, the area is recognised as one of southern Africa's eight hot-spots of botanical diversity as indexed by its species richness and endemism (Cowling & Hilton-Taylor 1994). Van Wyk and Smith (2001) rank the area as having the fourth richest regional flora in southern Africa.

A number of studies have discussed the biodiversity of the proposed BR, however, they were based largely on outdated literature. In addition, most of these studies were limited either in terms of scope, documenting mainly dominant and economically important species, or extent, covering only parts of the proposed BR. For example, the Conservation Development and Management Plan of BNR (LHDA 1998a) estimated floral species richness of the area at 180 flowering plants, based mainly on literature. Similarly, the Management and Development Plan for TNP (LHDA 1998b) estimated the floristic composition of the park at 220 flowering species, which is representative of the western Maloti (i.e. from Sentinel Peak to Mohale's Hoek) of the greater Drakensberg region, and documented 24 mammalian species, even though no field assessment had been made.

Insights into the biodiversity of the proposed BR were provided by Carbutt and Edwards (2004) who documented the native flora of the Drakensberg Alpine Centre (DAC), currently known as Drakensberg Mountain Centre (DMC), as comprising 2 818 taxa in 205 families and 781 genera. Of the 2 818 taxa, 89% were angiosperms, 7% bryophytes, 3% pteridophytes and 0.2% gymnosperms. In addition, they recorded 166 exotic angiosperm species. However, the work of Carbutt and Edwards (2004) is outdated and relied on literature, using regional floras such as Jacot Guillarmod (1971) and Kobisi and Kose (2003) for the Flora of Lesotho, Hilliard and Burtt (1987) and Meter et al. (2002) for the southern KwaZulu-Natal Drakensberg; and Porter et al. (1999) for the uKhahlamba–Drakensberg Park; as well as regional field guides for the trees (Pooley 1993) and mountain flowers (Pooley 2003) in the

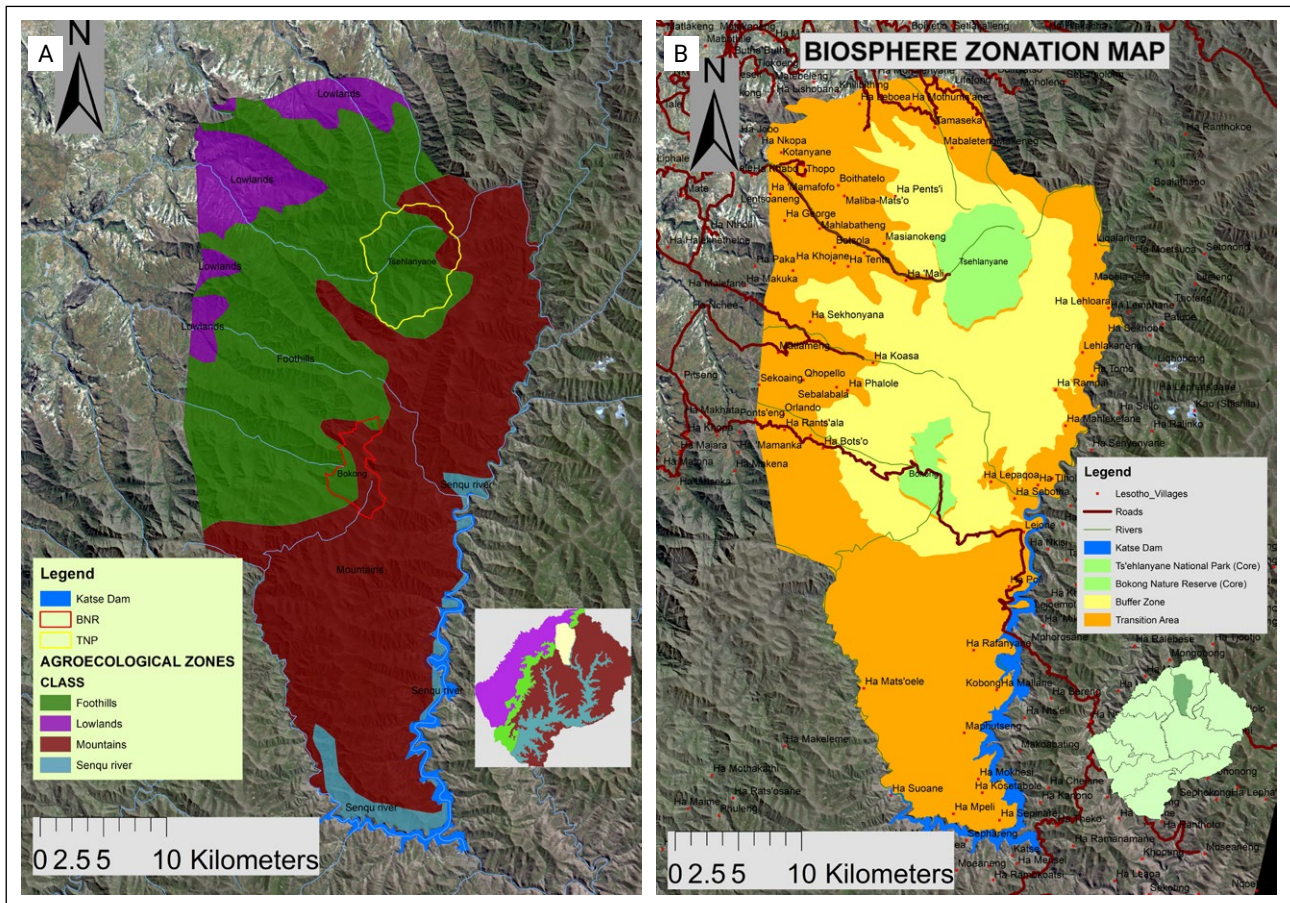


Figure 1. A & B, Lesotho's first proposed Biosphere Reserve, showing the core (Tsehlanyane National Park and Bokong Nature Reserve), buffer and transition zones (Source: T. Leballo).

Maloti–Drakensberg. As they were using regional references, Carbutt and Edwards (2004) were not able to specify which of the recorded species occur in the PAs of the proposed BR.

A publication by Carbutt and Edwards (2006) focused on the endemic and near-endemic angiosperms of the DAC, recording 334 and 595 species respectively, also based on existing literature. The study emphasised that the flora of the area must continue to receive conservation attention because many of its taxa are rare and highly restricted in distribution, and more than half of its endemics are regarded as either Red or Orange Data species. Carbutt (2019) revised the profile of angiosperm endemics provided by Carbutt and Edwards (2006), as well as the boundary of the former DAC. The study recorded 227 angiosperm species, representing 90 genera, as endemic to the DMC, based on previous literature, as well as using Google Earth Pro to delineate new boundaries of the DMC. The revision resulted in removal of about 32% of the species, which were previously regarded as endemic from the account of Carbutt and Edwards (2006), and added two more recently described species to the list.

The most focused work on the biodiversity within the proposed BR was conducted by Letšela et al. (2003),

who presented findings from a survey aimed at inventorying resources on which people rely, and that were likely to be affected by the establishment of a BR that encompasses both TNP and BNR. This publication is now also outdated and was confined to the proposed core area, as well as to specific taxa with socio-economic benefit. It was therefore evident that no comprehensive documentation of the biodiversity of the proposed BR had been undertaken. As a result, a detailed biodiversity survey covering the core area (BNR and TNP) as well as buffer and transition zones, was necessary to appraise the value of the area, hence supporting its nomination as a BR.

Methodology

Study area

The proposed BR covers a total area of about 112 033 ha, encompassing the core (BNR and TNP, 7 570 ha), buffer (31 050 ha) and transition zones (66 577 ha) (Figure 1), with an elevation ranging between 1 636 and 3 152 masl. The area falls within the temperate grassland of southern Africa. It is located in the Leribe District in the northern part of Lesotho

(Figure 1A,B). The proposed BR forms part of the larger area covered by the Maloti–Drakensberg Transfrontier Conservation and Development Programme (MDTC-DP), which spans the border between Lesotho and South Africa, covering certain parts of the two countries (northeastern, eastern and southeastern parts of Lesotho, as well as the adjacent parts of South Africa).

Data collection

The survey stems from the need to profile the biodiversity of the proposed BR, which is needed for supporting nomination of the area to UNESCO. Therefore a rapid survey was undertaken, targeted at both flora and fauna occurring within the proposed BR (core, buffer and transition zones). Four purposeful surveys were conducted by the second and fourth authors, spanning different seasons between August 2018 and May 2019. This was done to target flowering seasons of different plant species to enable their identification, as well as to

maximise opportunities to observe faunal species that may hibernate or migrate seasonally. Each of the four surveys lasted for a period of two weeks. Research and collecting permits were provided by the Department of Environment (under the Ministry of Tourism, Environment and Culture in Lesotho), which is also the custodian of the core area that forms part of the proposed BR.

The approach used for data collection was a purposeful field survey undertaken by travelling throughout the core, buffer and transition zones of the proposed BR on foot and on horseback, targeting accessible areas of the proposed BR. Data were collected by identifying and documenting species of both flora and fauna encountered in the area. Global Positioning System (GPS) coordinates were recorded (using Garmin Etrex 10) to map the area covered during the survey (Figure 2). Plants that could not be identified on site were collected and later identified using the literature or herbarium collections at the National University of Lesotho (NUL) herbarium (ROML), where the collected specimens were also deposited.

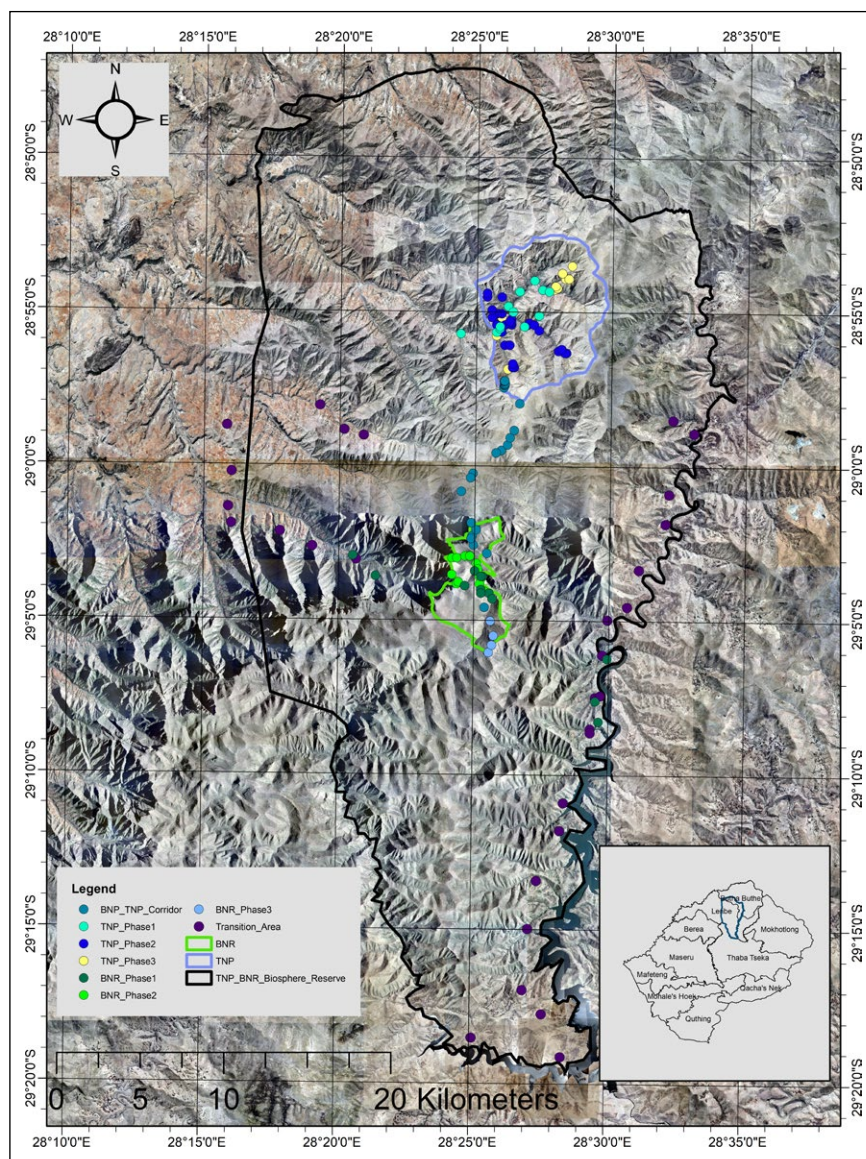


Figure 2. Transect walks covered during the different phases of the biodiversity survey (data collection) in the proposed Biosphere Reserve (Source: T. Leballo).

Fish and aquatic amphibian species were surveyed with the aid of an electro-shocker (powered by a generator) which forced organisms to float on the water surface, where they were identified. The shocking effect was temporary to avoid causing harm. The assessment was conducted in both the Bokong and Tšehlanyane rivers.

Reptiles were surveyed by turning over stones and searching in the thicket. Birds were photographed using a Canon EOS 1100D camera (with a telephoto lens of 300 mm), and identified at a later stage, whereas mammals were recorded through observation. The majority of the species were photographed to allow confirmation of their identification.

Data collection and identification of species was conducted on-site by the second author, a renowned biodiversity specialist who has contributed to various literature resources on Lesotho's flora, such as the Preliminary Checklist of the Plants of Lesotho (Kobisi 2005), a Checklist of Grasses of Lesotho (Kobisi & Kose 2003), as well as the Grassland Biome chapter in the Vegetation of South Africa, Lesotho and Swaziland (Mucina et al. 2006). Species identification was also confirmed by the first author who is a botanist and a Senior Lecturer at the National University of Lesotho. The fourth author also formed part of the expedition team, being the Conservation Officer in the Lesotho's Northern Parks (under which BNR and TNP fall), who has also been involved in several biodiversity expeditions in the country. Various literature resources were used for identification including: Moffett (1997, 2010), Van Wyk and Van Wyk (1997), Pooley (1998, 2003), Van Oudtshoorn (1999), May (2000), Van Wyk and Gericke (2000), Talukdar (2002), Coopero-Driver et al. (2008), Van Wyk et al. (2009), Bromilow (2010), Van Wyk and Smith (2014) for plants; Stuart and Stuart (2015) for mammals; Sinclair et al. (2002) for birds; Alexander and Marais (2008) for reptiles; Du Preez and Carruthers (2009) for amphibians; and NES (2000) for fish.

Limitations of the study

The surveys were undertaken when Lesotho was experiencing dry conditions due to delayed rains in 2018 to 2019. As a result, this delayed the flowering season of the majority of the plants and some specimens could only be identified to genus level. The area is not easily accessible and surveys required long, arduous walks, lasting from sunrise to sunset and are situated in areas with mountainous topography (Figure 3A, B).

Results and discussions

Species lists

The current study provides a detailed compilation of species recorded in the proposed BR (core, buffer and

transition zones), covering both flora and fauna (mammals, birds, reptiles, fish and amphibians). Species lists are provided in Tables 1–6, where scientific, English (common) and vernacular (Sesotho) names have been provided, where available. The Plantzafrica website (pza.sanbi.org), as well as Pooley (1998, 2003) were used as the basis for the plant names for taxa recorded in the current study. In the case of fauna, Sinclair et al. (2002) was used for birds; Stuart and Stuart (2007, 2015) for mammals; Alexander and Marais (2008) for reptiles; NES (2000) for fish; and Du Preez and Carruthers (2009) for amphibians. The IUCN Red List status of the different species is also provided, where available. Lesotho conducted the last flora Red List assessment in 2002, focusing on a limited number of species, and based on literature (Talukdar, 2002). Therefore in most cases the Red List of South African plants has been used in the current study (<http://redlist.sanbi.org>). Similarly, in the case of fauna, Red Listing for Lesotho was last undertaken in 2000, also based on literature. Therefore the IUCN Red List of Threatened Species website (<https://www.iucnredlist.org>) has been used to provide the conservation status of the fauna species listed in Tables 2–6.

Flora

A total of 380 plant species were recorded in the proposed BR during the four biodiversity surveys undertaken (Table 1). However, six species were only identified to genus level due to absence of flowers at the time of undertaking the survey. These include *Cyrtanthus* sp. Aiton, *Delosperma* sp. N.E.Br and *Eulophia* sp. R.Br. ex Lindl. Thirty of the 380 recorded species are declared protected by law in the country (Legal Notice No. 36 of 1969, as amended by Legal Notice No. 93 of 2004 and No. 38 of 2006), and these include Drakensberg bamboo, giant alepidea (*Alepidea amatymbica* Eckl & Zeyh.), Lesotho carnation (*Dianthus basuticus* Burtt Davy), quilted sagewood (*Buddleja salviifolia* (L.) Lam.) and *Aloe* L. spp. (Table 1). The most represented genera include *Helichrysum* Mill. consisting of 25 species, followed by *Senecio* L. with eight species and *Aloe* with six species. The findings of the current study are in agreement with those of Cowling and Hilton-Taylor (1994), who ranked *Helichrysum* and *Senecio* as the top two genera with the largest number of species in the area. Similarly, Carbutt and Edwards (2006) indicated that these two genera contribute the most to the endemic and near-endemic species of the area. In addition, LHDA (1998b) also reported extensive Drakensberg bamboo communities in the area.

Of the 380 recorded plant species, 41 are exotic (marked with an asterisk in Table 1), these include black poplar (*Populus nigra* L.), four o'clock (*Mirabilis jalapa* L.), khakiweed (*Tagetes minuta* L.), inkberry (*Phytolacca octandra* L.), peach tree (*Prunus persica* (L.) Batsch) and

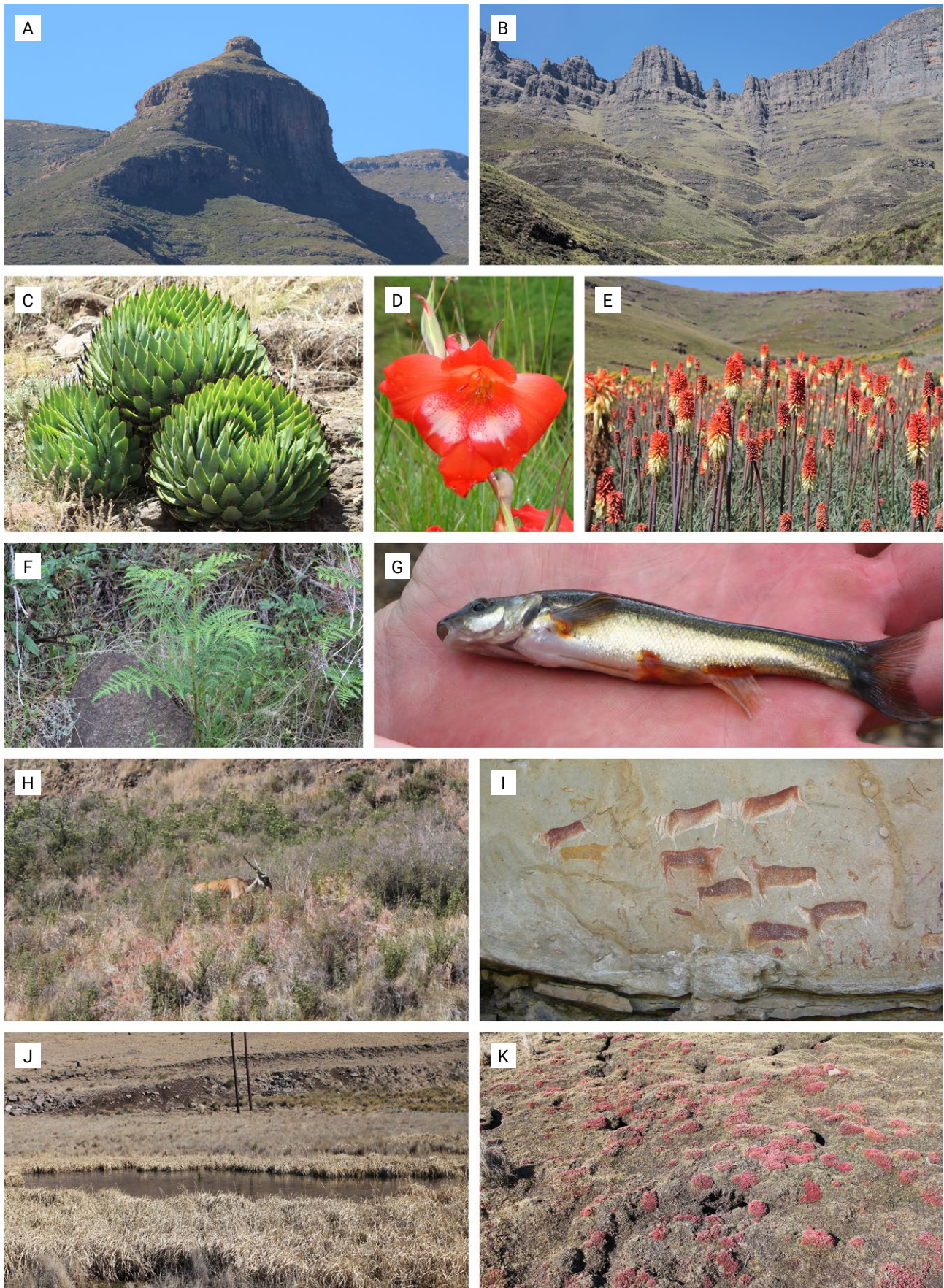


Figure 3. A & B, the spectacular scenery of mountainous landscapes forming part of the proposed BR; C, the endemic spiral aloe; D, the near-endemic Lesotho lily; E, the Lesotho red-hot poker; F, locally uncommon fern – bracken; G, endemic Maloti minnow; H, common eland; and I, its presence on rock paintings; J, some of the wetlands in the BNR; K, some of them damaged by diggings of Sloggett’s ice rat (Source: K. Kobisi).

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
* <i>Acacia dealbata</i> Link	Blue wattle	<i>tjobasele</i>	Terrestrial	Tree	Firewood	Not evaluated	Very common
<i>Afroaster erucifolius</i> (Thell.) J.C.Manning & Goldblatt	Hoary ragwort	<i>mohontsoane-oa-loti</i>	Aquatic	Herb		Least Concern	Not common
<i>Afroaster hispidus</i> (Thunb.) J.C.Manning & Goldblatt		<i>phoa</i>	Terrestrial	Forb	Medicinal	Least Concern	Common
¹ <i>Agapanthus campanulatus</i> F.M.Leight. subsp. <i>patens</i> (F.M.Leight.) F.M.Leight.	Bell agapanthus	<i>leta-la-phofu</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Agave americana</i> L.	Blue agave	<i>lekhalala-le-leputsoa</i>	Terrestrial	Tree	Ropes	Not evaluated	Common
<i>Agrostis capillaris</i> L.	Astoria bent, black couch, brown bentgrass	<i>mohloa-oa-mafika</i>	Aquatic	Grass	Lawns, golf course fairways	Not evaluated	Common
<i>Agrostis lachnantha</i> Nees	Bent grass, south african bent grass	<i>joang-ba-phororo</i>	Aquatic	Grass	Grazing	Least Concern	Common
<i>Ajuga reptans</i> Burch. ex Benth.	Bugle plant	<i>senyarela</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Alectra sessiliflora</i> (Vahl) Kuntze	Yellow witchweed	<i>mokhele, sono</i>	Terrestrial	Forb	Parasitic	Least Concern	Common
³ <i>Alepeidea amatymbica</i> Eckl & Zeyh.	Giant alepidea	<i>lesoko</i>	Terrestrial	Herb	Medicinal	Endangered	Very common
<i>Alepeidea natalensis</i> J.M.Wood & M.S.Evans	Natal star flower	<i>lesokoana</i>	Terrestrial	Herb		Least Concern	Common
¹ <i>Alepeidea thodei</i> Dummer		<i>lesokoana</i>	Terrestrial	Herb		Least Concern	Common
³ <i>Aloe boylei</i> Baker	Broad-leaved grass aloe		Terrestrial	Succulent	Medicinal	Least Concern	Not common
³ <i>Aloe ecklonis</i> Salm-Dyck	Ecklon's aloe	<i>moroba-lihale</i>	Terrestrial	Succulent	Medicinal	Least Concern	Not common
³ <i>Aloe maculata</i> All.	Common soap aloe	<i>lekhalala-la-bafu</i>	Terrestrial	Succulent	Medicinal	Least Concern	Not common
^{2,3} <i>Aloe polyphylla</i> Schönland ex Pillans	Spiral aloe	<i>lekhalala-kharetsa</i>	Terrestrial	Succulent	Medicinal	Vulnerable	Not common
³ <i>Aloiampelos striatula</i> (Haw.) Klopper & Gideon F.Sm.	Hardy aloe	<i>mohalalakane</i>	Terrestrial	Shrub	Medicinal	Least Concern	Common
<i>Andropogon eucomus</i> Nees	Snowflake grass	<i>mohlala</i>	Terrestrial	Grass	Grazed	Least Concern	Common
<i>Anisodonteia julii</i> (Burch.ex DC.) Bates subsp. <i>pannosa</i> (Bolus) Bates	African mallow	<i>letjeane-la-noka</i>	Terrestrial	Herb		Least Concern	Common
<i>Anthemis cotula</i> L.	Dogfennel		Terrestrial	Forb	Ornamental	Not evaluated	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Anthospermum streyi</i> Puff		<i>phakisane</i>	Terrestrial	Forb	Medicinal	Rare	Common
<i>Argyrobium marginatum</i> Bolus			Terrestrial	Herb	Grazed	Least Concern	Common
<i>Argyrobium molle</i> Eckl. & Zeyh.			Terrestrial	Herb		Least Concern	Common
<i>Argyrobium tuberosum</i> Eckl. & Zeyh.	Little russet pea	<i>lebesa</i>	Terrestrial	Herb	Eaten	Least Concern	Not common
¹ <i>Aristaloe aristata</i> (Haw.) Boatwr. & J.C.Manning	Torch aloe	<i>sereleli, lekhalana</i>	Terrestrial	Succulent	Medicinal	Least Concern	Not common
<i>Aristea abyssinnica</i> Pax	Blue-eyed grass		Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Aristea woodii</i> N.E.Br.	Wood's aristeia	<i>lethepu-le-nyenyane</i>	Aquatic	Herb	Medicinal	Least Concern	Common
<i>Aristida adscensionis</i> L.	Annual three-awn	<i>mohlolohali</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Aristida diffusa</i> Trin. subsp. <i>burkei</i> (Stapf) Melderis	Iron grass	<i>bohlangya-ba-lipere</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Aristida junceiformis</i> Trin. & Rupr.			Terrestrial	Grass		Least Concern	Common
<i>Artemisia afra</i> Jacq.ex Willd. var. <i>afra</i>	Wormwood	<i>lengana</i>	Terrestrial	Shrub	Medicinal	Least Concern	Very common
<i>Asclepias humilis</i> (E.Mex.) Schltr.	Drakensberg meadow-star		Terrestrial	Herb	Eaten	Least Concern	Common
<i>Asclepias stellifera</i> Schltr.	Common meadow-star	<i>moholantja</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Asparagus asparagoides</i> (L.) Druce	Broad-leaved asparagus	<i>sethota-sa-mathuoela, khopa</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Asparagus microraphis</i> (Kunth) Baker		<i>lehonyeli</i>	Terrestrial	Shrub	Medicinal	Least Concern	Common
<i>Asparagus racemosus</i> Willd.	Shatavari	<i>lerara-tau</i>	Terrestrial	Shrub	Medicinal	Least Concern	Common
<i>Asplenium adiantum-nigrum</i> L. var. <i>adiantum-nigrum</i>	Black spleenwort	<i>lehorometso</i>	Terrestrial	Herb		Least Concern	Common
<i>Asplenium cordatum</i> (Thunb.) Sw.	Resurrection fern	<i>lehorometso</i>	Terrestrial	Herb		Least Concern	Common
<i>Asplenium monanthes</i> L.	Single-sori fern		Terrestrial	Herb		Least Concern	Common
<i>Athrixia angustissima</i> DC.		<i>Pheisoana-e-nyenyane</i>			Medicinal	Least Concern	Common
<i>Athrixia fontana</i> MacOwan		<i>sepinare</i>	Aquatic	Herb		Least Concern	Common

*exotic;¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Athyrium schimperi</i> Moug. Ex Fée	Grassland lady-fern		Terrestrial	Herb		Least Concern	Common
¹ <i>Berkheya cirsiiifolia</i> (DC.) Roessler		<i>mohato-o-r-mosoeu</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Berkheya multijuga</i> (DC.) Roessler	<i>Doringrige bergdissel</i> (Afrikaans)	<i>mohatollo</i>	Aquatic	Herb	Medicinal	Least Concern	Common
¹ <i>Berkheya rosulata</i> Roessler	Rosette thistle	<i>ntsoantsoane</i>	Terrestrial	Shrub		Least Concern	Common
<i>Berkheya setifera</i> DC.	Buffalo-tongue	<i>leleme-la-khomo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Bidens formosa</i> Cav.	Cosmos		Terrestrial	Forb	Ornamental	Not evaluated	Very common
* <i>Bidens pilosa</i> L.	Common black-jack		Terrestrial	Forb	Medicinal	Not evaluated	Very common
³ <i>Boophane disticha</i> (L.f.) Herb.	Poison bulb	<i>leshoma</i>	Terrestrial	Herb	Medicinal	Endangered	Common
<i>Brachystelma circinatum</i> E.Mey.	Bird-cage brachystelma	<i>karana</i>	Terrestrial	Herb	Eaten	Least Concern	Not common
<i>Bromus firmior</i> (Nees) Stapf	Strong brome	<i>mukuru-oo-thaba</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Brownleea parviflora</i> Harv. Ex Lindl.		<i>mametsana</i>	Terrestrial	Orchid		Least Concern	Not common
<i>Brownleea macroceras</i> Sond.		<i>lefokotsane</i>	Aquatic	Orchid		Least Concern	Not common
^{1,2} <i>Buddleja loricata</i> Leeuwenberg	Mountain sagewood	<i>lelora</i>	Terrestrial	Tree	Firewood	Least Concern	Very common
^{1,2} <i>Buddleja salviifolia</i> (L.) Lam.	Quilted sagewood	<i>lelotoane</i>	Terrestrial	Tree	Firewood	Least Concern	Very common
<i>Bulbine asphodeloides</i> (L.) Spreng.	Spreading bulbine	<i>pekane</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Carex cognata</i> Kunth	Nodding sedge	<i>lesuoane</i>	Aquatic	Sedge	Grazing	Least Concern	Common
<i>Catalpis gracilis</i> Stapf & Stent	Cause grass	<i>joang-ba-matlapa</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Cerastium arabidis</i> E.Mey.ex.Fenzl.	Snow flower	<i>qoqobala-ea-loti</i>	Aquatic	Herb		Least Concern	Common
<i>Cheilanthes eckloniana</i> (Kunze) Mett.	Resurrection fern	<i>mamarakoaneng</i>	Terrestrial	Forb	Medicinal	Least Concern	Common
<i>Cheilanthes hirta</i> Sw.		<i>Lehorometso</i>	Terrestrial	Fern		Least Concern	Common
<i>Cheilanthes quadripinnata</i> (Forssk.) Kuhn	Four-pinnate lip fern	<i>lehorometso</i>	Terrestrial	Fern	Medicinal	Least Concern	Common
<i>Chrysocoma ciliata</i> L.	Bitter bush	<i>sehalahala</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
<i>Cineraria lyratiformis</i> Cron		<i>tlali-tlali, khotolia</i>	Terrestrial	Shrublet		Least Concern	Common
* <i>Cirsium vulgare</i> (Savi) Ten.			Terrestrial	Forb		Not evaluated	Common

*exotic;¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Clematis brachiata</i> Thunb.	Traveller's joy	<i>morarana-oa-mafehlo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Cliffortia nitidula</i> (Engl.)	Starry rice-bush	<i>lenyofane</i>	Terrestrial	Shrub	Firewood	Not evaluated	Common
<i>Clutia natalensis</i> Bernh.		<i>mosali-mofubelu</i>	Terrestrial	Shrub	Fuel Wood, Medicinal	Least Concern	Very common
<i>Conium fontanum</i> Hilliard & Burt			Aquatic	Herb		Least Concern	Very common
<i>Cotula hispida</i> (DC.) Harv.			Aquatic	Herb		Least Concern	Common
<i>Cotyledon orbiculata</i> L. var. <i>oblonga</i> (Haw.) DC.	Pig's ears	<i>serelle</i>	Terrestrial	Succulent	Medicinal	Least Concern	Not common
<i>Crassula alba</i> Forssk.		<i>feko</i>	Terrestrial	Succulent		Least Concern	Not common
<i>Crassula dependens</i> Bolus			Terrestrial	Succulent		Least Concern	Common
<i>Crassula natalensis</i> Schönl.		<i>bohobe-ba-setsomi</i>	Aquatic	Succulent	Medicinal	Least Concern	Common
<i>Crassula peplodes</i> Harv		<i>serellenyana</i>	Terrestrial	Succulent	Medicinal	Least Concern	Common
<i>Crassula sarcocaulis</i> Eckl. & Zeyh.		<i>serellenyana</i>	Terrestrial	Succulent	Medicinal	Least Concern	Common
<i>Crassula setulosa</i> Harv.		<i>serellenyana</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Ctenium concinnum</i> Nees	Sickle grass		Terrestrial	Grass	Grazing	Least Concern	Common
* <i>Cupressus arizonica</i> Greene var. <i>glabra</i> (Sudw.) Little.	Blue Arizona cypress		Terrestrial	Tree	Firewood	Not evaluated	Common
* <i>Cuscuta campestris</i> Yunck.			Terrestrial	Forb	Parasitic	Not evaluated	Common
³ <i>Cussonia paniculata</i> Eckl. & Zeyh. var. <i>sinuata</i> (Reyneke & Kok) DeWinter	Mountain cabbage	<i>motšetše</i>	Terrestrial	Tree	Medicinal	Least Concern	Not common
* <i>Cyathula capitata</i> Moq.		<i>bohomo-ba-lipoli</i>	Terrestrial	Herb	Medicinal	Not evaluated	Not common
<i>Cymbopogon marginatus</i> (Steud.) Stapf ex Burt Davy	Turpentine grass	<i>lebate</i>	Terrestrial	Grass	Thatching	Least Concern	Common
<i>Cymbopogon plurinodis</i> (Steud.) Stapf ex Burt Davy	Narrow-leaved turpentine grass	<i>moshanyana-maralleng</i>	Terrestrial	Grass	Medicinal	Not evaluated	Common
* <i>Cynodon dactylon</i> (L.) Pers	Couch grass, quick grass	<i>mohloa</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Cyperus congestus</i> Vahl		<i>qoqoahoane</i>	Terrestrial	Sedge		Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
¹ <i>Cyrtanthus attenuatus</i> R.A.Dyer				Herb		Least Concern	Common
¹ <i>Cyrtanthus ilanagani</i> Baker	Flanagan's cyrtanthus	yellow dobo lily	Aquatic	Herb		Least Concern	Common
<i>Cyrtanthus</i> sp. Aiton			Aquatic	Succulent			Common
<i>Cysticapnos pruinosa</i> (Bernh.) Lidén	Wild fumaria	<i>musa-pelo-oa-noka</i>	Aquatic	Herb	Medicinal	Least Concern	Common
* <i>Datura stramonium</i> L.	Jimsonweed	<i>letjoi</i>	Terrestrial	Herb	Medicinal	Not evaluated	Common
<i>Delosperma cooperi</i> (Hook.f.) L.Bolus	Table mountain		Terrestrial	Herb		Least Concern	Common
<i>Delosperma lineare</i> L.Bolus			Terrestrial	Herb		Least Concern	Common
<i>Delosperma</i> sp. N.E.Br			Terrestrial	Succulent			Common
³ <i>Dianthus basuticus</i> Burt Davy	Lesotho carnation	<i>hlokoana-la-tsela</i>	Terrestrial	Herb	Medicinal	Least Concern	Not common
<i>Diascia barberae</i> Hook. f.			Terrestrial	Herb		Least Concern	Common
<i>Diclis rotundifolia</i> (Hiem) Hilliard & Burt		<i>leanya-poli</i>	Terrestrial	Herb		Least Concern	Common
<i>Dierama argyreum</i> L.Bolus			Terrestrial	Herb		Least Concern	Not common
¹ <i>Dierama robustum</i> N.E.Br.	Drakensberg hairbell	<i>lethepu</i>	Terrestrial	Herb	Handicrafts	Least Concern	Common
<i>Dimorphotheca jucunda</i> E.Phillips	Trailing pink daisy		Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Diospyros austro-africana</i> DeWinter var. <i>rubriflora</i> (DeWinter) DeWinter	Firesticks Star-apple	<i>senokonoko</i>	Terrestrial	Shrub	Fuel Wood	Least Concern	Common
<i>Disa cephalotes</i> Reichb.f. subsp. <i>frigida</i> (Schltr.) H.P.Linder			Terrestrial	Orchid		Rare	Common
<i>Disa cornuta</i> (L.) Swartz	Golden orchid		Terrestrial	Herb		Least Concern	Not common
<i>Disa fragrans</i> Schltr.	Fragrant disa		Terrestrial	Orchid		Least Concern	Common
<i>Disperis cooperi</i> Harv.			Aquatic	Orchid		Least Concern	Not common
<i>Dracoscirpoides ficinioides</i> (Kunth) Muasya		<i>sechaba, leloli</i>	Aquatic	Sedge	Handicrafts	Least Concern	Common
<i>Empodium monophyllum</i> (Nel) B.L.Burt	Golden star		Terrestrial	Forb		Least Concern	Common
<i>Eragrostis caesia</i> Stapf		<i>joang-ba-mafika</i>	Terrestrial	Grass	Grazed	Least Concern	Common
<i>Eragrostis chloromelas</i> Steud.	Curly leaf	<i>tsaane</i>	Terrestrial	Grass	Grazed	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Eragrostis plana</i> Nees	Fan love grass, tough love grass	<i>molula</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Eragrostis planiculmis</i> Nees	Broom love grass	<i>joang-ba-tsaane molelengoane</i>	Terrestrial	Grass	Grazing	Least Concern	Common
¹ <i>Erica algida</i> H.Bolus		<i>lekhapu-le-lyenyane</i>	Terrestrial	Shrublet		Least Concern	Common
<i>Erica alopecurus</i> Harv.	Foxtail erica	<i>molomo-oa-Lekolikotoana</i>	Terrestrial	Dwarf shrub	Fuel	Least Concern	Common
¹ <i>Erica dominans</i> Killick		<i>lekhapu</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
¹ <i>Erica frigida</i> H.Bolus		<i>khoarai</i>	Terrestrial	Shrublet		Least Concern	Common
<i>Eriocaulon dregei</i> Hochst.	Water pom-pom	<i>nyokoana-aa-likhoho</i>	Aquatic	Herb		Least Concern	Common
* <i>Eucalyptus</i> sp. L'Hér	Gum tree		Terrestrial	Tree	Firewood		Common
³ <i>Euclea coriacea</i> A.DC.		<i>ralikokotoana</i>	Terrestrial	Tree	Medicinal	Least Concern	Common
³ <i>Eucomis autumnalis</i> (Mill.) Chitt. subsp. <i>clavata</i> (Baker) Reyneke	Common pineapple lily	<i>khapumpu</i>	Terrestrial	Herb	Medicinal	Vulnerable	Common
^{1,2} <i>Eucomis schijffii</i> Reyneke	Miniature eucomis	<i>khapumpu</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
³ <i>Eulophia</i> sp. R.Br. ex Lindl.		<i>makholela</i>	Terrestrial	Herb			Common
¹ <i>Eumorphia prostrata</i> Bolus			Terrestrial	Shrub		Least Concern	Very common
¹ <i>Eumorphia sericea</i> Wood & Evans		<i>lirulello</i>	Terrestrial	Dwarf shrub	Fuel	Least Concern	Common
³ <i>Euphorbia clavarioides</i> Boiss.	Lion's spoor	<i>sehloko</i>	Terrestrial	Succulent	Medicinal	Least Concern	Common
<i>Euphorbia ericoides</i> Lam.			Terrestrial	Shrublet		Least Concern	Common
¹ <i>Euryops decumbens</i> B.Nord.			Terrestrial	Shrublet		Least Concern	Common
<i>Euryops evansii</i> Schltr.		<i>sehlaakoana</i>	Terrestrial	Tree	Medicinal	Least Concern	Very common
<i>Euryops laxus</i> (Harv.) Burtt Davy			Terrestrial	Herb		Least Concern	Common
¹ <i>Euryops tysonii</i> E.Phillips		<i>sehlaakoana-senenyane</i>	Terrestrial	Shrub	Ornamental	Least Concern	Not common
<i>Felicia filifolia</i> (Vent.) Burtt Davy	Fine-leaved Felicia	<i>sehalahala</i>	Terrestrial	Shrub	Firewood	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Felicia muricata</i> (Thunb.) Nees		<i>mamileng, mosala-tsela</i>	Terrestrial	Forb	Medicinal	Least Concern	Very common
<i>Felicia rosulata</i> P.E.Yeo			Terrestrial	Herb		Least Concern	Common
¹ <i>Festuca caprina</i> Nees	Goat-beard grass	<i>letsiri</i>	Terrestrial	Grass	Grazed	Least Concern	Common
<i>Festuca costata</i> Nees		<i>lekolojane</i>	Terrestrial	Grass	Grazed	Least Concern	Common
<i>Fingerhuthia sesleriformis</i> Nees	Thimble grass	<i>thitapoho</i>	Aquatic	Grass	Brooms	Least Concern	Common
<i>Gazania krebiana</i> Less.	Terracotta Gazania, common Gazania	<i>tsikitlane</i>	Terrestrial	Forb	Medicinal	Least Concern	Very common
¹ <i>Geranium drakensbergensis</i> Hilliard & B.L. Burtt			Aquatic	Herb		Rare	Not common
<i>Geranium multisetum</i> N.E.Br.		<i>hapi-e-kholo</i>	Aquatic	Herb	Medicinal	Least Concern	Common
<i>Geranium pulchrum</i> N.E. Br.			Terrestrial	Subshrub	Ornamental	Least Concern	Common
<i>Gerbera ambigua</i> (Cass.) Sch. Bip.			Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Gerbera piloselloides</i> (L.) Cass.		<i>tsebe-ea-pela</i>	Terrestrial	Herb		Least Concern	Very common
<i>Geum capense</i> Thunb.		<i>thejana, qojoana</i>	Aquatic	Forb		Least Concern	Very common
³ <i>Gladiolus dalenii</i> Van Ceel subsp. <i>dalenii</i>	African gladiolus	<i>mokhabebe</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Gladiolus saundersii</i> Hook f.	Lesotho lily	<i>mokhabebe</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
² <i>Glumicalyx lesuticus</i> Hilliard & Burtt			Terrestrial	Herb		Least Concern	Not common
¹ <i>Glumicalyx nutans</i> (Rolle) Hilliard & Burtt		<i>theli</i>	Terrestrial	Herb		Least Concern	Common
¹ <i>Gnidia aberrans</i> C.H. Wright			Terrestrial	Dwarf shrublet		Least Concern	Not Common
¹ <i>Gnidia propinqua</i> (Hilliard) B. Peterson			Terrestrial	Dwarf shrublet		Least Concern	Not common
<i>Gomphocarpus fruticosus</i> (L.) Aiton f.	Milkweed		Terrestrial	Shrub	Medicinal	Least Concern	Common
<i>Gomphocarpus physocarpus</i> E.Mey.	Milkweed	<i>moithimolo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Gomphostigma virgatum</i> (L.f.) Baill.	River stars	<i>koete-je-boima</i>	Aquatic	Shrublet	Medicinal	Least Concern	Common
³ <i>Gunnera perpensa</i> L.	Mild rhubarb	<i>qobo</i>	Aquatic	Herb	Medicinal	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Haemanthus humilis</i> Jacq.	Rabbits ears	<i>tsebe-ea-phofu</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Haplocarpha scaposa</i> Harv.	False gerbera	<i>papetloana, khutsana, lengoako</i>	Terrestrial	Herb	Medicinal	Least Concern	Very common
<i>Harpochloa fax</i> (L.f.)Kuntze	Caterpillar grass	<i>lefokololi</i>	Terrestrial	Grass	Grazed	Least Concern	Very common
¹ <i>Harveya huttonii</i> (= <i>H. pulchra</i> Hilliard & Burt)		<i>moshoa-fela</i>	Terrestrial	Herb		Least Concern	Common
<i>Harveya speciosa</i> Bernh.	Tall white ink-flower		Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Hebenstretia dura</i> Choisy		<i>tsitoane</i>	Terrestrial	Herb	Ointment	Least Concern	Not common
<i>Helichrysum cymosum</i> (L.) D.Don	Yellow-tipped straw-flowers		Terrestrial	Shrublet	Medicinal	Least Concern	Common
<i>Helichrysum trilineatum</i> DC.		<i>hokobetsi</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
<i>Helichrysum allioides</i> DC.			Terrestrial			Least Concern	Common
¹ <i>Helichrysum aureum</i> (Houtt) Merrill var. <i>serotinum</i> Hilliard		<i>leabane</i>	Terrestrial	Herb		Least Concern	Common
¹ <i>Helichrysum basalticum</i> Hilliard			Terrestrial	Herb		Least Concern	Not common
¹ <i>Helichrysum bellum</i> Hilliard			Terrestrial	Herb		Least Concern	Not common
<i>Helichrysum caespitium</i> (DC.) Harv.	<i>Speelwonderblom</i> (Afrikaans)	<i>phate-ea-ngaka</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Helichrysum chionosphaerum</i> DC.	Tiny snowball everlasting	<i>Molepelle</i>	Terrestrial	Herb		Least Concern	Common
<i>Helichrysum glomeratum</i> Klatt			Terrestrial	Forb		Least Concern	Common
¹ <i>Helichrysum hypophthalmum</i> Hilliard			Terrestrial	Herb		Least Concern	Not common
<i>Helichrysum krookii</i> Moeser			Terrestrial	Herb		Least Concern	Common
<i>Helichrysum lingulatum</i> Hilliard			Terrestrial	Herb		Least Concern	Common
¹ <i>Helichrysum marginatum</i> DC.		<i>tooane-balingoana-e-tsoeu</i>	Terrestrial	Dwarf shrub		Least Concern	Common
<i>Helichrysum mundtii</i> Harv.		<i>phfo-ea-liliba</i>	Terrestrial	Herb	Medicinal	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Helichrysum nudifolium</i> (L.) Less.	Hottentot's tea	<i>mohlomela-tsie, tee-ea-baroa</i>	Terrestrial	Herb	Tea	Least Concern	Common
<i>Helichrysum nudifolium</i> (L.) Less. var. <i>pilosellum</i> (L.f.) Beentje		<i>boleba, lebeko</i>	Terrestrial	Forb	Medicinal	Least Concern	Common
<i>Helichrysum odoratissimum</i> (L.) Sweet	Most fragrant helichrysum	<i>phefo</i>	Terrestrial	Herb	Medicinal	Least Concern	Very common
¹ <i>Helichrysum praecurrens</i> Hilliard			Terrestrial	Herb		Least Concern	Common
¹ <i>Helichrysum retortoides</i> N.E.Br.			Terrestrial	Herb		Least Concern	Not common
¹ <i>Helichrysum sessiloides</i> Hilliard			Terrestrial	Herb		Least Concern	Common
<i>Helichrysum</i> sp. Mill.			Terrestrial	Herb			Common
<i>Helichrysum spiralepis</i> Hilliard & B.L.Burtt		<i>tooane-ea-metsi</i>	Terrestrial	Herb		Least Concern	Common
<i>Helichrysum splendidum</i> (Thunb.) Less.	Cape gold	<i>tooane-ea-meru</i>	Terrestrial	Shrublet	Medicinal, ornamental	Least Concern	Common
<i>Helichrysum sutherlandii</i> Harv.		<i>molepelle</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Helichrysum trilineatum</i> DC.		<i>hokobetsi</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
¹ <i>Helichrysum witbergense</i> H.Bolus			Terrestrial	Shrub	Firewood	Least Concern	Not common
<i>Helictotrichon turgidulum</i> (Stapf) Schweick.	Small oats grass		Terrestrial	Grass	Grazed	Least Concern	Common
¹ <i>Heliphila formosa</i> Hilliard & Burtt			Terrestrial	Herb		Least Concern	Not common
<i>Hermannia coccocarpa</i> (Eckl. & Zeyh.) Kuntze			Terrestrial	Forb		Least Concern	Common
<i>Hermannia sandersonii</i> Harv.			Terrestrial	Herb		Vulnerable	Not common
<i>Hesperantha baurii</i> Baker subsp. <i>baurii</i>		<i>khukhu-e-nyane</i>	Aquatic	Herb	Corns eaten	Least Concern	Common
<i>Hesperantha coccinea</i> (Backh. & Harv.) Goldblatt & J.C.Manning	Scarlet river lily	<i>khahla</i>	Terrestrial	Herb		Least Concern	Common
¹ <i>Hesperantha crocopsis</i> Hilliard & Burtt			Aquatic	Herb		Not evaluated	Not common

¹exotic; ²DMC (EMR) endemic; ³Lesotho endemic; ⁴declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
³ <i>Heteromorpha arborescens</i> (Spreng.) Cham. & Schltld. var. <i>abyssinica</i> (Hochst. ex A.Rich.) H. Wolff	Parsley-tree	<i>monkhoane</i>	Terrestrial	Tree	Medicinal	Least Concern	Common
<i>Hilliardella hirsuta</i> (DC.) H. Rob.	Guilted-leaved vernonia	<i>hlele-hlele</i>	Terrestrial	Forb	Medicinal	Least Concern	Common
³ <i>Hirpicium armerioides</i> (DC.) Roessler		<i>shoeshoe-ea-loti</i>	Terrestrial	Herb		Least Concern	Common
<i>Holothrix scopularia</i> (Lindl.) Reichb.f.			Terrestrial	Herb		Least Concern	Common
³ <i>Hyparrhenia hirta</i> (L.) Stapf	Common thatching grass	<i>mohlomo</i>	Terrestrial	Grass	Thatching	Least Concern	Very common
³ <i>Hyparrhenia tamba</i> (Steud.) Stapf	Blue thatching grass	<i>qokoa</i>	Terrestrial	Grass	Thatching	Least Concern	Very common
<i>Hypericum lalandii</i> Choisy	Spindly hypericum	<i>bohlokoana</i>		Herb	Medicinal	Least Concern	Common
³ <i>Hypoxis costata</i> Baker		<i>moli-kharetsa</i>	Terrestrial	Forb	Medicinal	Least Concern	Common
<i>Hypoxis obtusa</i> Burch. ex Ker Gawl		<i>moli-boea</i>	Terrestrial	Herb		Least Concern	Common
<i>Hypoxis rigidula</i> Baker	Silver-leaved star-flower	<i>holi</i>	Terrestrial	Herb		Least Concern	Common
<i>Indigofera cuneifolia</i> Eckl. & Zeyh.	Wedge-leaved indingo		Terrestrial	Herb		Least Concern	Common
¹ <i>Inulathera thoderi</i> (Bolus) Källersjö		<i>khato</i>	Terrestrial	Shrub	Medicinal	Least Concern	Very common
¹ <i>Jamesbrittenia pristisepala</i> (Hiern) Hilliard		<i>pokaetsi, phiri-ea-hlaha, sesepa-sa-linoaha, letsoalo</i>	Terrestrial	Shrublet	Fishing	Least Concern	Common
<i>Jamesbrittenia</i> sp. Kuntze			Terrestrial	Shrublet			Common
<i>Kedrostris capensis</i> (Sond.) A. Meeuse		<i>sesepa-sa-linoaha</i>	Terrestrial	Herb		Least Concern	Not common
<i>Kiggelaria africana</i> L.	Wild peach	<i>lekhatzi</i>	Terrestrial	Tree	Ornamental	Least Concern	Not common
³ <i>Kniphofia caulescens</i> Baker	Lesotho red-hot poker	<i>lelele-laloti</i>	Aquatic	Herb	Medicinal	Least Concern	Common
^{1,3} <i>Kniphofia evansii</i> Baker	Evan's poker		Terrestrial	Herb		Rare	Not common
^{1,3} <i>Kniphofia hirsuta</i> Codd		<i>lelele</i>	Aquatic	Forb		Least Concern	Common
³ <i>Kniphofia northiae</i> Bak.	Broad-leaved poker	<i>lelele</i>	Aquatic			Least Concern	Common
<i>Koeleria capensis</i> (Steud.) Nees	June grass	<i>boshwane</i>	Terrestrial	Grass	Grazing	Least Concern	Common
<i>Kohautia amatymbica</i> Eckl. & Zeyh.	Tremble tops	<i>lerete-la-ntja</i>	Terrestrial	Herb	Medicinal	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Ledebouria cooperi</i> (Hook. f.) Jessop	Cooper's ledebouria	<i>lepijetlane</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Ledebouria sandersonii</i> (Baker) S. Venter & T.J. Edwards			Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Leobordea divaricata</i> Eckl. & Zeyh.	Hairy lotononis	<i>namele</i>	Terrestrial			Least Concern	Common
<i>Lessertia depressa</i> Harv.		<i>musa-pelo</i>	Terrestrial	Shrublet		Least Concern	Common
<i>Lessertia frutescens</i> (L.) Goldblatt & J.C. Manning subsp. <i>frutescens</i>	Cancer-bush, mountain balloon pea	<i>musa-pelo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Lessertia perennans</i> (Jacq.) DC.	Lessertia	<i>musa-pelo</i>	Terrestrial	Shrublet		Least Concern	Common
³ <i>Leucosidea sericea</i> Eckl. & Zeyh.	Oldwood	<i>cheche</i>	Terrestrial	Tree	Firewood	Least Concern	Very common
<i>Limosella grandiflora</i> Benth.		<i>tsika-metsi</i>	Aquatic	Forb	Medicinal	Least Concern	Common
¹ <i>Limosella vesiculosa</i> Hilliard & Burt			Aquatic	Herb		Least Concern	Not common
¹ <i>Lobelia galpinii</i> Schltr.		<i>tenane</i>	Terrestrial	Herb		Least Concern	Common
¹ <i>Lotononis galpinii</i> Dummer			Terrestrial	Shrub	Grazed	Least Concern	Common
<i>Lotononis laxa</i> Eckl. & Zeyh.		<i>musa-pelo-oa-maitlapa-o-monyenyana</i>	Terrestrial	Herb		Least Concern	Common
<i>Lotononis lotononooides</i> (Scott-Elliott) B.-E. van Wyk		<i>mosita-tlali</i>	Terrestrial	Herb		Least Concern	Common
¹ <i>Lotononis sericophylla</i> Benth.		<i>motoaitoai</i>	Terrestrial	Shrub		Least Concern	Common
¹ <i>Macowania pulvinaris</i> N.E.Br.		<i>mamotasi</i>	Terrestrial	Shrublet		Least Concern	Common
¹ <i>Macowania sororis</i> Compton			Terrestrial	Shrub		Least Concern	Common
* <i>Marrubium vulgare</i> L.	Horehound	<i>monyeloa-ke-nija</i>	Terrestrial	Herb	Medicinal	Not evaluated	Common
<i>Melianthus comosus</i> Vahl	Maroon honey-flower		Terrestrial	Shrub	Ornamental	Least Concern	Not common
<i>Melolobium microphyllum</i> (L.f.) Eckl. & Zeyh.		<i>mofahla-toeba</i>	Terrestrial	Shrublet	Grains Protector	Least Concern	Common
³ <i>Mentha aquatica</i> L.	Water mint	<i>koena-ea-mekhoabo</i>	Aquatic	Forb	Medicinal	Least Concern	Common
[#] <i>Mentha longifolia</i> (L.) Huds.	Wild spearmint	<i>koena</i>	Aquatic	Forb	Medicinal	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Merwillia plumbea</i> (Lindl.) Speta	Large blue scilla	<i>kherere</i>	Terrestrial	Herb	Medicinal	Near Threatened	Very common
^{1,3} <i>Merxmuellera macowanii</i> (Stapf) Conert		<i>mosika-nokana, mosea, molala-hlolo</i>	Aquatic	Grass	Thatching, brooms, ropes, hats, mats	Least Concern	Very common
³ <i>Merxmuellera stereophylla</i> (J.G.Anders.) Conert		<i>molalahlolo</i>	Terrestrial	Grass	Thatching	Least Concern	Very common
<i>Metastasia densa</i> (Lam.) P.O.Karis	Drakensberg steekbos	<i>tee</i>	Terrestrial	Shrub	Fumigant	Least Concern	Very common
* <i>Mirabilis jalapa</i> L.	Four o'clock		Terrestrial	Herb	Ornamental	Not evaluated	Common
¹ <i>Miscanthus ecklonii</i> (Nees) Mabb.	East-coast broom grass	<i>mothala</i>	Terrestrial	Grass	Thatching	Least Concern	Common
<i>Miscanthus junceus</i> (Stapf) Pilg.	Wireleaf daba grass		Terrestrial	Grass	Stabilising riverbanks	Least Concern	Very common
¹ <i>Mohria rigida</i> J.P.Roux			Terrestrial	Herb		Least Concern	Not common
¹ <i>Moraea alpina</i> Goldblatt			Terrestrial	Herb		Least Concern	Not Common
¹ <i>Moraea alicola</i> Goldblatt		<i>teele-e-kholo</i>	Terrestrial	Herb	Ornamental	Least Concern	Common
<i>Moraea brevistyla</i> (Goldblatt) Goldblatt			Terrestrial	Herb		Least Concern	Not common
<i>Moraea modesta</i> Killick			Terrestrial	Herb		Least Concern	Common
<i>Moraea stricta</i> Baker	<i>Bloutulp</i> (Afrikaans)	<i>qhekoe</i>	Terrestrial	Herb	Corns eaten	Least Concern	Common
³ <i>Morella serrata</i> (Lam.) Killick	Lance-leaved waxberry	<i>maleleka</i>	Terrestrial	Shrub	Medicinal	Vulnerable	Not Common
¹ <i>Muraltia flanaganii</i> Bolus			Terrestrial	Shrub		Least Concern	Common
<i>Myosotis semiamplexicaulis</i> A.D.C.	Forget-me-not		Terrestrial	Herb	Medicinal	Data Deficient Taxonomically Problematic	Common
<i>Myrsine africana</i> L.	Cape myrtle	<i>moroka-pheleu</i>	Terrestrial	Shrub	Medicinal	Least Concern	Common
<i>Nasturtium officinale</i> R.Br.	Watercress	<i>semetsing, selae</i>	Aquatic	Herb	Vegetables	Not evaluated	Common
<i>Nemesia caerulea</i> Hiern	Nemesia		Terrestrial	Forb		Least Concern	Common
<i>Nemesia rupicola</i> Hilliard			Terrestrial	Herb		Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
* <i>Nicotiana sylvestris</i> Sp. & Comes	Woodland tobacco	<i>setalane</i>	Terrestrial	Herb	Tobacco	Not evaluated	Common
<i>Nidorella pinnata</i> (L.f.) J.C.Manning & Goldblatt				Aquatic	Forb	Least Concern	
* <i>Oenothera elata</i> Kunth.	Yellow evening primrose		Terrestrial	Herb		Not evaluated	Common
<i>Ornithogalum juncifolium</i> Jacq.	Grass-leaved	<i>lijo-tsa-noko, mahae</i>	Aquatic	Herb	Medicinal	Least Concern	Common
<i>Ornithogalum viridiflorum</i> (L.Verd.) J.C.Manning & Goldblatt	Green berg lily		Terrestrial	Herb		Least Concern	Common
<i>Orthochilus aculeatus</i> (L.f.) Bytebier subsp. <i>huttonii</i> (Rolfe) Bytebier		<i>mametsana</i>	Terrestrial	Herb		Least Concern	Not common
¹ <i>Osteospermum thodei</i> Markötter			Terrestrial	Shrub		Least Concern	Not common
<i>Othonna burtii</i> B. Nord.			Terrestrial	Herb	Grazing	Least Concern	Not common
<i>Oxalis obliquifolia</i> Steud. ex A.Rich.	Oblique-leaved sorrel	<i>bolila</i>	Terrestrial	Herb	Eaten	Least Concern	Common
<i>Oxalis smithiana</i> Eckl. & Zeyh.	Narrow-leaved sorrel	<i>boli-ba-lipoli</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
³ <i>Pachycarpus vexillaris</i> E.Mey.	Mountain pachycarpus	<i>leshokhoa</i>	Terrestrial	Forb	Medicinal	Least Concern	Common
<i>Papaver aculeatum</i> Thunb.	Orange poppy	<i>sehlohlo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Paspalum dilatatum</i> Poir.			Terrestrial	Grass	Grazing	Not evaluated	Common
¹ <i>Passerina drakensbergensis</i> Hilliard & Burt	Drakensberg passerina	<i>lekhapu</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
¹ <i>Passerina montana</i> Thoday	Mountain passerina	<i>lekhapu</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
<i>Pelargonium alchemilloides</i> (L.) L'Hér.	Pink trailing pelargonium	<i>bolila-ba-litsoene</i>	Terrestrial	Herb	Medicinal	Least Concern	Very common
<i>Pelargonium bowkeri</i> Harv.	Carrot-leaved pelargonium	<i>bolila-ba-litsoene</i>	Terrestrial	Herb	Medicinal	Least Concern	Not Common
<i>Pelargonium ranunculophyllum</i> (Eckl. & Zeyh.) Baker			Terrestrial	Herb		Least Concern	Very common
<i>Peltocalathos baurii</i> (MacOwan) Tamura	Large-leaved ranunculus	<i>qojoana</i>	Aquatic	Herb		Least Concern	Common
* <i>Pennisetum clandestinum</i> Hochst. ex Chiov.	Kikuyu	<i>mohloa-tsepe</i>	Terrestrial	Grass	Grazing	Not evaluated	Very common
<i>Pentameris airoides</i> Nees subsp. <i>airoides</i>			Terrestrial	Grass	Grazing	Least Concern	Very common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Pentameris oreodoxa</i> (Schweick.) Galley & H.P.Linder			Terrestrial	Grass	Grazing	Least Concern	Very common
<i>Pentameris setifolia</i> (Thunb.) Galley & H.P.Linder			Terrestrial	Grass	Grazing	Least Concern	Very common
<i>Pentzia cooperi</i> Harv.		<i>lelingoana</i>	Terrestrial	Shrub	Firewood	Least Concern	Very common
<i>Persicaria decipiens</i> (R.Br.) K.L.Wilson	Knotweed	<i>tolo-la-khongoana-le-lerenyanyane</i>	Aquatic	Herb	Medicinal	Least Concern	Common
* <i>Persicaria lapathifolia</i> (L.) Gray	Spotted knotweed	<i>khamane-ee-noka</i>	Aquatic	Herb	Medicinal	Not evaluated	Common
³ <i>Phragmites australis</i> (Cav.) Steud.	Common reed	<i>lehlaka</i>	Aquatic	robust Grass	Thatching	Least Concern	Common
<i>Phygellus aequalis</i> Harv. Ex Hiern	River bells	<i>mafifi-matso</i>	Aquatic	Herb	Medicinal	Least Concern	Very common
<i>Phygellus capensis</i> E.Mey. ex Benth.	Southern phygellus	<i>mafifi-matso</i>	Terrestrial	Shrub	Medicinal	Least Concern	Common
* <i>Phytolacca octandra</i> L.	Inkberry	<i>monatja</i>	Terrestrial	Herb	Medicinal	Not evaluated	Common
* <i>Pinus radiata</i> D. Don	Pine tree	<i>phaena</i>	Terrestrial	Tree	Firewood	Not evaluated	Common
* <i>Plantago lanceolata</i> L.	Narrow-leaved ribwort, plantain	<i>bolilanyana, setla-bocha</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Plectranthus dolichopodus</i> Briq.	Blue yonder		Terrestrial	Herb	Ornamental	Least Concern	Common
<i>Plectranthus esculentus</i> N.E.Br.	African potato	<i>lephelephele</i>	Terrestrial	Herb	Eaten	Data Deficient Insufficient Information	Not common
<i>Plectranthus grillatus</i> Briq.	Tuberous spur-flower	<i>lephelephele</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Polemannia simplicior</i> Hilliard & Burt			Terrestrial	Shrub		Least Concern	Common
<i>Polygala gracilenta</i> Burt	Davy		Terrestrial	Herb		Least Concern	Common
<i>Polygala myrtifolia</i> L.	September bush		Terrestrial	Shrub	Ornamental	Least Concern	Very common
<i>Polygala rhinostigma</i> Chodat			Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Polygala virgata</i> Thunb.	Purple broom	<i>ntsebele-ee-moru</i>	Terrestrial	Shrub	Medicinal	Least Concern	Common
¹ <i>Polystichum monticola</i> N.C. Anthony & Schelpe	Arching fronds	<i>lehorometso</i>	Terrestrial	Fern		Least Concern	Not common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
* <i>Populus deltooides</i> Marshall	Eastern cottonwood		Terrestrial	Tree	Poles, Firewood	Not evaluated	Common
* <i>Populus nigra</i> L.	Black poplar	<i>maipopo</i>	Terrestrial	Tree	Poles, Firewood	Not evaluated	Common
* <i>Populus x canescens</i> (Aiton) Sm.	Grey poplar	<i>papoleri</i>	Terrestrial	Tree	Poles, Firewood	Not evaluated	Very common
* <i>Portulaca oleracea</i> L.	Common purslane	<i>sereleli</i>	Terrestrial	Herb	Medicinal	Not evaluated	Common
<i>Potomage-ton pusillus</i> L.	Narrow-leaved pondweed	<i>joang-ba-metsi-bo-boholo</i>		Herb		Least Concern	Common
<i>Printzia auriculata</i> Harv.	Giant daisy bush	<i>sephomolo</i>	Terrestrial	Shrub	Ornamental	Least Concern	Common
¹ <i>Printzia nutans</i> (Bolus) Leins			Terrestrial	Herb		Least Concern	Common
<i>Printzia pyrifolia</i> Less.		<i>lekhisa</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Prunus armeniaca</i> L.	Apricot tree		Terrestrial	Tree	Fruits	Not evaluated	Common
* <i>Prunus persica</i> (L.) Batsch	Peach tree	<i>perekisi</i>	Terrestrial	Tree	Fruits	Not evaluated	Common
<i>Pteridium aquilinum</i> (L.) Kuhn	Bracken fern		Terrestrial	Fern	Medicinal	Least Concern	Very common
<i>Pterygodium alticola</i> (Parkman & Schelpe) J.C.Manning & Goldblatt			Terrestrial	Orchid		Rare	Common
<i>Pterygodium calfrum</i> (L.) Sw.			Aquatic	Herb		Least Concern	Common
<i>Pterygodium cooperi</i> Rolfe			Aquatic	Herb		Least Concern	Common
* <i>Pyracantha angustifolia</i> (Franch.) C.K.Schneid.	Narrowleaf firethorn		Terrestrial	Tree	Hedge	Not evaluated	Common
<i>Ranunculus meyeri</i> Harv.	Bog buttercup	<i>bolila-ba-linku-ba-metsi</i>		Herb		Not evaluated	Common
<i>Ranunculus multifidus</i> Forsk. sens. lat.	Common buttercup	<i>tlhapi</i>	Aquatic	Herb	Medicinal	Least Concern	Very common
* <i>Rapistrum rugosum</i> (L.) All.	Wild mustard		Terrestrial	Herb	Vegetables	Not evaluated	Very common
³ <i>Rhamnus prinoides</i> L'Hérit	Glossy leaf Dogwood	<i>mofifi</i>	Terrestrial	Tree	Medicinal	Least Concern	Very common
<i>Rhynchosia totta</i> (Thunb.) DC.	Yellow carpet bean	<i>seelioetla, sehoete, sebalibetloa</i>	Terrestrial	Forb	Tuber eaten	Least Concern	Common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
* <i>Robinia pseudoacacia</i> L.	Black locust	leoka	Terrestrial	Tree	Poles, Firewood	Not evaluated	Common
* <i>Rorippa nudiuscula</i> Thell.	Yellow cress	papasane	Terrestrial	Herb	Vegetable	Least Concern	Common
* <i>Rosa rubiginosa</i> L.	Sweet-briar, rosehip	moroboi	Terrestrial	Shrub	Hedge, Cosmetics	Not evaluated	Very common
* <i>Rumex sagittatus</i> Thunb.	Climbing rumex	bolila-bo-boholo	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Salix babylonica</i> L.	Weeping willow		Aquatic	Tree	Firewood	Not evaluated	Very common
* <i>Salix fragilis</i> L.	Basket willow	moluoane	Aquatic	Tree	Firewood	Not evaluated	Very common
<i>Satyrium longicauda</i> Lindl.	Blushing bride satyrium		Terrestrial	Orchid	Medicinal	Not evaluated	Common
<i>Scabiosa columbaria</i> L.	Wild scabious	selomi	Terrestrial	Herb	Medicinal	Least Concern	Very common
<i>Schistostephium crataegifolium</i> (DC.) Fenzl. ex Harv.	Golden flat-flower	kobo-ee-Marena	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Schizoglossum atropurpureum</i> E.Mey. subsp. <i>atropurpureum</i>		sehoete-moru	Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Schizoglossum hilliardiae</i> Kupicha	Hilliard's schizoglossum		Terrestrial	Herb		Least Concern	Common
¹ <i>Searsia discolor</i> (E.Mey. ex Sond.) Sond.	Grassveld currant	mohlohoane	Terrestrial	Shrub	Medicinal	Least Concern	Not Common
<i>Searsia divaricata</i> (Eckl. & Zeyh.) Moffett	Rusty leaves currant	kolitsana	Terrestrial	Shrub	Medicinal	Least Concern	Very common
<i>Searsia pyroides</i> (Burch.) Moffett	Common currant	kolitsane	Terrestrial	Shrub	Firewood	Least Concern	Common
¹ <i>Sebaea marlothii</i> Gilg		marama-a-baroetsana	Aquatic	Herb		Least Concern	Not common
<i>Sebaea natalensis</i> Schinz		marama-a-baroetsana	Aquatic	Herb		Least Concern	Common
<i>Sebaea sedoides</i> Gilg		marama-a-baroetsana	Aquatic	Herb	Medicinal	Least Concern	Common
¹ <i>Sebaea thodeana</i> Gilg		marama-a-baroetsana-a-masoeu	Aquatic	Herb		Least Concern	Not Common
¹ <i>Selago flanaganii</i> Rolfe		lenyofane	Terrestrial	Subshrub		Least Concern	Common
<i>Selago trauseldtii</i> Killick			Terrestrial	Herb		Least Concern	Common
<i>Senecio asperulus</i> DC.		Moferefere	Terrestrial	Forb	Medicinal	Least Concern	Very common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Senecio humidanus</i> C.Jeffrey		<i>lehlomane-je-leholo</i>	Terrestrial	Herb		Least Concern	Common
<i>Senecio inomatus</i> DC.		<i>lehlongoane-je-leholo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Senecio isatideus</i> DC.	Dan's cabbage	<i>lehlomane-je-leholo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Senecio macrocephalus</i> DC. sens. lat.		<i>sebea-mollo</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Senecio othonniflorus</i> DC.		<i>lehlomane</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Senecio rhomboideus</i> Harv.		<i>lelutla-ja-pula</i>	Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Senecio seminivens</i> Wood&Evans		<i>khotolia-ee-noka</i>	Aquatic	Dwarf shrub	Medicinal	Least Concern	Common
<i>Silene bellidioides</i> DC.			Terrestrial	Herb		Least Concern	Common
<i>Solanum retroflexum</i> Dunal	Sobosobo berry	<i>limomonyane</i>	Terrestrial	Herb		Least Concern	Common
<i>Stachys rugosa</i> Aiton		<i>taraputsoe</i>	Terrestrial	Herb	Herbal tea	Least Concern	Common
<i>Stoebe plumosa</i> (L.) Thunb.	Bankrupt bush	<i>sehalahala</i>	Terrestrial	Shrub	Firewood	Least Concern	Common
<i>Striga bilabiata</i> subsp. <i>bilabiata</i> (Thunb.) O.Kuntze	Small witchweed		Terrestrial	Herb	Parasitic	Least Concern	Common
* <i>Jagetes minuta</i> L.	Khakiweed	<i>monkhane, lechuchutha</i>	Terrestrial	Forb	Dye	Not evaluated	Common
* <i>Taraxacum officinale</i> Weber sensu lato	Common dandelion	<i>lenyoka</i>	Terrestrial	Herb	Medicinal	Not evaluated	Very common
<i>Tarchoanthus camphoratus</i> L.	Wild camphor bush		Terrestrial	Shrub	Firewood	Least Concern	Not common
³ <i>Tenaxia disticha</i> (Nees) N.P.Barker & H.P.Linder var. <i>disticha</i>	Copper wire grass		Terrestrial	Grass		Least Concern	Very common
³ <i>Thamnocalamus tessellatus</i> (Nees) Sonderstrom & Ellis	Drakensberg bamboo	<i>leqala, tshlanyane</i>	Terrestrial	Grass	Thatching	Vulnerable	Very common
<i>Themeda triandra</i> Forssk.	Red grass	<i>sebok</i>	Terrestrial	Grass	Grazed	Least Concern	Very common
<i>Thesium costatum</i> A.W.Hill		<i>marakalle</i>	Terrestrial	Shrublet		Least Concern	Common
* <i>Tragopogon dubius</i> Scop.	Yellow goat's beard	<i>moetse-oa-pere</i>	Terrestrial	Forb	Vegetable	Not evaluated	Common
<i>Trichoneura grandiglumis</i> (Nees) Ekman			Terrestrial	Grass	Grazing	Least Concern	Common

*exotic;¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

Table 1. Plant species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Habitat	Growth Form	Uses	IUCN Conservation Status	Abundance
<i>Trifolium burchellianum</i> Ser.	Wild clover	moroko	Aquatic	Forb	Medicinal	Least Concern	Common
* <i>Trifolium repens</i> L.			Aquatic	Forb	Grazing	Not evaluated	Common
<i>Tristachya leucothrix</i> Trin. ex Nees	Hairy trident grass		Terrestrial	Grass	Grazing	Least Concern	Common
<i>Tulbaghia acutiloba</i> Harv.	Wild garlic	moelela	Aquatic	Herb	Medicinal	Least Concern	Common
<i>Typha capensis</i> (Rohrb.) N.E.Br.		motsila	Aquatic	Forb	Hat	Least Concern	Common
* <i>Urtica urens</i> L.		bobatsi	Terrestrial	Herb	Vegetables	Not evaluated	Common
¹ <i>Valeriana capensis</i> Thunb.	Cape valerian	seliba/Motetele	Aquatic	Herb	Medicinal	Least Concern	Very common
* <i>Verbena bonariensis</i> L.	Tall verbena, purple top		Terrestrial	Forb		Not evaluated	Common
<i>Veronica anagallis-aquatica</i> L.			Aquatic	Herb		Least Concern	Very common
<i>Wahlenbergia krebsii</i> Cham. subsp. <i>krebsii</i>	Fairy bell-flowers	moopetsane	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Withania somnifera</i> (L.) Dunal	Ashwagandha	mofrangope	Terrestrial	Herb	Medicinal	Least Concern	Common
¹ <i>Woodсия montevicensis</i> (Spreng.) Hieron.			Terrestrial	Fern		Least Concern	Not Common
¹ <i>Wurmbea burttii</i> B.Nord.			Aquatic	Herb		Least Concern	Not Common
<i>Xerophyta viscosa</i> Baker	Small black-stick lily	lefiroane	Aquatic	Herb	Ropes	Least Concern	Common
³ <i>Xysmalobium involucratum</i> (E. Mey.) Decne.	Scented xysmalobium		Terrestrial	Herb	Medicinal	Least Concern	Not Common
<i>Xysmalobium parviflorum</i> Harv. ex Scott Elliot	Octopus cartwheel	leoto-la-khoho		Herb	Medicinal	Least Concern	Not common
³ <i>Xysmalobium stockenstromense</i> Scott Elliot	Mountain uzura		Terrestrial	Herb	Medicinal	Least Concern	Not common
<i>Zaluzianskya microsiphon</i> (O.Kuntze) K.Schum.	Short-tubed drumsticks		Terrestrial	Forb		Least Concern	Common
<i>Zaluzianskya pulvinata</i> Killick		lebohloho, theleli	Terrestrial	Herb		Least Concern	Common
<i>Zantedeschia aethiopica</i> (L.) Spreng.	White arum lily	mohalalitoe	Terrestrial	Herb	Medicinal	Least Concern	Common
<i>Zantedeschia albomaculata</i> (Hook.) Baill.	Arrow-leaved arum	mohalalitoe	Terrestrial	Herb	Medicinal	Least Concern	Common
* <i>Zinnia peruviana</i> (L.) L.	Redstar zinnia	pitopilo	Terrestrial	Forb	Whistles	Not evaluated	Very common

*exotic; ¹DMC (EMR) endemic; ²Lesotho endemic; ³declared legally protected in the country

rosehip (*Rosa rubiginosa* L.). Even though some of the exotic species are invasive, such as yellowcress (*Rorippa nudiuscula* Thell.) and khakiweed (*Tagetes minuta* L.), some of these exotic species are of commercial importance. For example, rosehip is consumed for its edible fruits and is also used for medicinal purposes. In fact, Lesotho is currently exporting rosehip fruits to Germany for making tea and jam, as well as for the production of essential oils used in the cosmetics industry. The residue from the plant is reported to induce fertility in animals (Kobisi et al. 2019). Sixty of the 380 recorded species are endemic to the DMC. Two of the recorded species are endemic to Lesotho namely *Glumicalyx lesuticus* Hillard & Burttt and spiral aloe (*Aloe polyphylla* Schönl. ex Pillans, Figure 3C), whereas *Othonna burttii* B.Nord. and Lesotho lily (*Gladiolus saundersii* Hook.f., Figure 3D) are near endemic. Spiral aloe is the national flower of Lesotho and is under threat due to illegal trade. Some natural populations are now extinct from certain areas in the country where the plant used to be abundant (pers. obs.). However, it is surprising that spiral aloe is listed as Vulnerable, whereas *G. lesuticus* and *O. burttii* have an IUCN conservation status of Least Concern, despite their limited distribution and population in the country. On the other hand, *G. lesuticus* and *O. burttii* have not previously been recorded by authors who documented the flora of Lesotho (e.g. Phillips 1917; Jacot Guillarmod 1971; Schmitz 1982; Kobisi 2005), even though these plants have been listed as Lesotho endemics (NES 2000) and are Red Listed (Talukdar 2002).

A notably conspicuous but locally uncommon fern, known as bracken (*Pteridium aquilinum* (L.) Kuhn, Figure 3F), which has a narrow distribution in Lesotho, was also recorded in TNP. Cooper-Driver et al. (2008) stated that even though bracken is a common weedy plant worldwide, it is surprisingly rare in Lesotho. Bracken was found forming a colony within a thicket of oldwood in TNP at an elevation of 2 037 masl, at GPS coordinates of S 28°55' 28.5", E 028°26' 44.8". The only other records of this plant in the country are Ha Ntsi, on the way to Mohale Dam, and Ha Mamokoaqo in the Leribe District, collected by Dieterlen in 1903 (Cooper-Driver et al. 2008). The fern is unique in that it is very large compared to other common fern species occurring in the country, growing to a height of 1.5 m.

Fauna

Even though a majority of wild species of fauna has been hunted down close to extinction in different parts of the country, a number of species still exist in the proposed BR, particularly birds and mammals. As a result, many of these species are declared legally protected in the country, and these include antelope, baboons, monkeys, bearded vultures, other birds of prey, cranes, storks and herons. A number of species have been recorded in the current study for the five classes of vertebrates (mammals,

birds, fish, reptiles and amphibians), and these are discussed in more detail in the sections that follow.

Mammals: A total of 16 mammal species were recorded in the proposed BR, including rodents, jackal, antelope, dassies, rabbits and baboons (Table 2). Seven of the 16 recorded species are declared legally protected, and these include African clawless otter (*Aonyx capensis* Schinz, 1821), Cape porcupine (*Hystrix africae australis* Peters, 1852), chacma baboon (*Papio ursinus ursinus* (Kerr, 1792)), grey rhebok (*Pelea capreolus* (Forster, 1790)) and common eland (*Tragelaphus oryx* (Pallas, 1766)). The common eland seems to have been previously widespread in the country, as evidenced by the many occurrences of rockart (Figures 3H, I). However, the species was locally extirpated mainly due to hunting prior to being reintroduced into TNP following declaration of the area as a PA. In comparison, LHDA (1998a, 1998b) reported 11 mammals in BNR and 12 in TNP, based on reports from field staff in the area. Even though a limited number of mammals have been recorded in the current study, archaeological records indicate that several species of mammals were historically (during the Holocene) widespread in the country (Grab & Nash 2020). These include aardwolf (*Proteles cristata* Sparrman, 1783), African wild cat (*Felis lybica* Forster, 1780), black-backed jackal (*Canis mesomelas* Schreber, 1775), black wildebeest (*Connochaetes gnou* (Zimmermann, 1780)), blesbok (*Damaliscus pygargus phillipsi* Harper, 1939), Cape fox (*Vulpes chama* (A. Smith, 1833)), common genet (*Genetta genetta* (Linnaeus, 1758)), scrub hare (*Lepus saxatilis* F. Cuvier, 1823), klipspringer (*Oreotragus oreotragus* (Zimmermann, 1783)), mountain reedbuck (*Redunca fulvorufula* (Afzelius, 1815)), red hartebeest (*Alcelaphus buselaphus* (Pallas, 1766)), rock hyrax (*Procavia capensis* (Pallas, 1766)), slender mongoose (*Galerella sanguinea* (Rüppell, 1835)), springbok (*Antidorcas marsupialis* (Zimmermann, 1780)), Cape porcupine (*H. africae australis*), steenbok (*Raphicerus campestris* (Thunberg, 1811)) and common warthog (*Phacochoerus africanus* (Gmelin, 1788)) (Grab & Nash 2020). Given the drastic extinction rate of fauna species in Lesotho, the recording of six of these species in the current study, namely African wild cat, black-backed jackal, common genet, scrub hare, rock hyrax and Cape porcupine, adds to the biodiversity value of the proposed BR. However, absence of some of these species currently reveals a major loss of fauna in Lesotho over the past 200 years as discussed by Grab and Nash (2020).

Birds: Fifty-three bird species were recorded in the proposed BR, 13 of which are declared legally protected in the country (Table 3). It is important to note that two of the 13 protected species, namely Cape Vulture (*Gyps coprotheres* (Forster, 1798)) and Bearded Vulture (*Gypaetus barbatus* (Linnaeus, 1758)), have a limited distribution and are globally listed as Endangered and Near Threatened respectively (Hockey et al. 2006). Indeed LHDA (1998a, 1998b) reported a total of ten

Table 2. Mammals species recorded in the first proposed Biosphere Reserve of Lesotho

Taxon	Common names	Vernacular (Sesotho) names	IUCN Conservation Status	Habitat	Abundance
³ <i>Aonyx capensis</i> Schinz	African clawless otter	<i>qibi</i>	Near Threatened	Aquatic	Not Common
<i>Canis mesomelas</i> Schreber	Black-backed jackal	<i>Phokojoe</i>	Least Concern	Terrestrial	Not Common
³ <i>Caracal caracal</i> Schreber	Caracal	<i>Thoalere</i>	Least Concern	Terrestrial	Not Common
<i>Cryptomys hottentotus</i> Lesson	Common african mole-rat	<i>Mokunyane</i>	Least Concern	Terrestrial	Common
<i>Felis lybica</i> Schreber	African wild cat		Least Concern	Terrestrial	Not Common
³ <i>Galerella pulverulenta</i> Wagner	Small grey mongoose	<i>Mochalla</i>	Least Concern	Terrestrial	Common
<i>Genetta genetta</i> L.	Small-spotted genet	<i>Qoako</i>	Least Concern	Terrestrial	Not Common
³ <i>Hystrix africae australis</i> Peters	Cape porcupine	<i>Noko</i>	Least Concern	Terrestrial	Not Common
<i>Ictonyx striatus</i> Perry	Striped polecat	<i>Nakeli</i>	Least Concern	Terrestrial	Not Common
<i>Leptailurus serval</i> Schreber	Serval		Least Concern	Terrestrial	Not Common
<i>Lepus saxatilis</i> F. Cuvier	Scrub hare	<i>Mutlanyana</i>	Least Concern	Terrestrial	Common
<i>Mystromys albicaudatus</i> Smith	White-tailed rat		Vulnerable	Terrestrial	Not Common
<i>Otomys sloggetti</i> Thomas	Sloggett's ice rat	<i>Leboli-leqhoa</i>	Least Concern	Terrestrial	Very Common
³ <i>Papio cynocephalus ursinus</i> Kerr	Chacma baboon	<i>Isoene</i>	Least Concern	Terrestrial	Not Common
³ <i>Pelea capreolus</i> Forster	Grey rhebok	<i>Letsa</i>	Near Threatened	Terrestrial	Common
<i>Procavia capensis</i> Pallas	Rock dassie	<i>Pela</i>	Least Concern	Terrestrial	Very Common
<i>Pronolagus rupestris</i> A. Smith	Red rock rabbit	<i>Thlolo</i>	Least Concern	Terrestrial	Common
³ <i>Tragelaphus oryx</i> Pallas	Common eland	<i>Phoofu</i>	Least Concern	Terrestrial	Not Common

³Declared legally protected in the country

Red-listed bird species, including the Cape Vulture and Bearded Vulture in both BNR and TNP. Even though their common breeding sites are the high elevation cliffs in Lesotho, the two bird species occasionally migrate to neighbouring countries such as South Africa, Botswana, northern Namibia and southern Zimbabwe (Hockey et al. 2006). Lesotho has also legally protected the two bird species (under Legal Notice No. 36 of 1969, as amended by Legal Notice No. 93 of 2004 and No. 38 of 2006), as well as listing them under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Lesotho is reported to be the main breeding ground to the rare Bearded Vulture in southern Africa (NES 2000). A study by Donazar et al. (1993) revealed that elevation and ruggedness of the topography probably influence the existence of adequate breeding places for the Bearded Vulture, as is the case in the proposed BR, however, human disturbance negatively affects the breeding success of the bird. In fact, the population

of the species has declined drastically, mainly due to hunting of adults and robbery of eggs and chicks, as well as fire, decline in food supply, gin traps and collection of the birds for skins and plumage. In addition, since the Bearded Vulture is a specialised species in terms of its habitat requirements and food choice, Colahan (2004) suggested establishment of partnerships between conservation organisations for management and conservation of the population. Several efforts are currently being undertaken by the Department of Environment in Lesotho (of the Ministry of Tourism, Environment and Culture) together with South Africa, under a bilateral programme targeted towards enhanced breeding of the species. A Bearded Vulture Management Plan has also been developed for conservation of the species.

The decline of Bearded Vulture populations has also been observed in other parts of the world. For example, the decline is reported to have started in the mid-nineteenth century in Europe and North America,

Table 3. Bird species recorded in the first proposed Biosphere Reserve of Lesotho

Taxon	Common names	Vernacular (Sesotho) names	Form	IUCN Conservation Status	Habitat	Abundance
<i>Anas sparsa</i> Eyton	African Black Duck	letata	Fish eater, aquatic insect	Least Concern	Aquatic	Not Common
<i>Anthus hoeschi</i> Stresemann	Mountain Pipit	tšaase- <i>ea-loti</i>	Insects-eater	Near Threatened	Terrestrial	Common
³ <i>Aquila verreauxii</i> Lesson	Black Eagle	moja-lipela	Birds of Prey	Least Concern	Terrestrial	Not Common
³ <i>Ardea cinerea</i>	Grey Heron	kokolofitoe	Birds of Prey	Least Concern	Aquatic	Common
³ <i>Bostrychia hagedash</i> Latham	Hadedda Ibis	lengangane	Insects and frogs eater	Least Concern	Terrestrial	Not Common
<i>Bubo capensis</i> Smith	Cape Eagle-owl		Medium-sized mammals and birds	Least Concern	Terrestrial	Common
³ <i>Buteo rufofuscus</i> Forster	Jackal Buzzard	khajoane	Birds of Prey	Least Concern	Terrestrial	Common
<i>Chaetops aurantius</i> Layard	Drakensberg Rockjumper	mamolisa-lipela	Rock Jumper	Near Threatened	Terrestrial	Common
³ <i>Columba guinea</i> L.	Speckled Rock Pigeon	leeba-la-thaba	Seeds-eater	Least Concern	Terrestrial	Common
<i>Corvus albicollis</i> Latham	White-necked Raven	lekhoaba	Birds of Prey	Least Concern	Terrestrial	Not Common
<i>Cossypha caffra</i> L.	Cape Robin-chat	sethoena-moru	Insects-eater	Least Concern	Terrestrial	Common
<i>Coturnix coturnix</i> L.	Common Quail	khoale	Seeds-eater	Least Concern	Terrestrial	Common
<i>Emberiza capensis</i> L.	Cape Bunting	maborokoane	Seeds-eater	Least Concern	Terrestrial	Common
<i>Emberiza flaviventris</i> Stephens	Golden-breasted Bunting	maborokoane	Seeds-eater	Least Concern	Terrestrial	Common
<i>Emberiza tahapisi</i> Smith	Cinnamon-breasted Bunting	maborokoane	Seeds-eater	Least Concern	Terrestrial	Common
<i>Estrilda melanotis</i> Temminck	Swee Waxbill		Seeds-eater	Least Concern	Terrestrial	Not Common
<i>Euplectes ardens</i> Boddaert	Red-collared Widowbird		Seeds-eater	Least Concern	Terrestrial	Common
³ <i>Falco biarmicus</i> Temminck	Lanner Falcon	phakoe	Birds of Prey	Least Concern	Terrestrial	Not Common
³ <i>Falco rupicolis</i> Dupont	Rock Kestrel	seotsanyana	Birds of Prey	Least Concern	Terrestrial	Not Common
³ <i>Geronticus calvus</i> Boddaert	Southern Bald Ibis	mokhotlo	Insects-eater	Vulnerable	Terrestrial	Common
³ <i>Gypaetus barbatus</i> L.	Bearded Vulture	ntsu-kobokobo	Birds of Prey	Near Threatened	Terrestrial	Not Common
³ <i>Gyps coprotheres</i> Forster	Cape Vulture	lenong, letlaaka	Bird of Prey	Endangered	Terrestrial	Not Common
<i>Hirundo albigularis</i> Strickland	White-throated Swallow	lekabelane	Insects-eater	Least Concern	Terrestrial	Common
<i>Hirundo cucullata</i> Boddaert	Greater Striped Swallow	lehaqasi	Insects-eater	Least Concern	Terrestrial	Common

³Declared legally protected in the country

Table 3. Bird species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Form	IUCN Conservation Status	Habitat	Abundance
<i>Lamprolaima bicolor</i> Gmelin	African Pied Starling	<i>lehohi</i>	Insects-eater	Least Concern	Terrestrial	Common
<i>Lanius collaris</i> L.	Common Fiscal	<i>tsemeli</i>	Bird of Prey	Least Concern	Terrestrial	Common
<i>Melaenornis silens</i> Shaw	Fiscal Flycatcher	<i>tsemeli</i>	Birds of Prey	Least Concern	Terrestrial	Common
<i>Monticola explorer</i> Vieillot	Sentinel Rock Thrush	<i>mohelle</i>	Insects-eater	Near Threatened	Terrestrial	Common
<i>Motacilla capensis</i> L.	Cape Wagtail	<i>motjoli</i>	Insects-eater	Least Concern	Terrestrial	Common
<i>Nectarinia famosa</i> L.	Female Malachite Sunbird	<i>taletale</i>	Insects-eater and nectar	Least Concern	Terrestrial	Common
<i>Numida meleagris</i> L.	Helmeted Guinea Fowl	<i>khaka</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Onychognathus morio</i> L.	Red-Winged Starling	<i>letsomila</i>	Insects-eater	Least Concern	Terrestrial	Common
<i>Passer domesticus</i> L.	House Sparrow	<i>seroebele</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Passer melanurus</i> Statius Müller	Cape Sparrow	<i>seroebele</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Petronia supercilii</i> Blyth (= <i>Gymnoris supercilii</i>)	Yellow-throated Bush Sparrow	<i>seroebele</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Phalacrocorax lucidus</i> Lichtenstein	White-breasted Cormorant	<i>seinuli</i>	Fish-eater	Least Concern	Aquatic	Common
<i>Ploceus capensis</i> L.	Cape Weaver	<i>letholopjoe</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Prinia maculosa</i> Boddaert	Karoo Prinia	<i>motinyane</i>	Insects-eater	Least Concern	Terrestrial	Common
<i>Pternistis swainsonii</i> Smith	Swainson's Spurfowl	<i>khoale</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Ptyonoprogne fulgula</i> Lichtenstein	Rock Martin	<i>lekabelane</i>	Insects-eater	Least Concern	Terrestrial	Common
<i>Pycnonotus nigricans</i> Vieillot	African Red-eyed Bulbul	<i>hlakahlhoana</i>	Insects-eater	Least Concern	Terrestrial	Common
³ <i>Sagittarius serpentarius</i> J. F. Miller	Secretarybird	<i>mamolangone</i>	Birds of Prey	Vulnerable	Terrestrial	Not Common
<i>Saxicola torquata</i> L.	African Stonechat	<i>tlhatsinyane</i>	Seeds-eater	Least Concern	Terrestrial	Common
³ <i>Scopus umbretta</i> Gmelin	Hamerkop	<i>mamasianoke</i>	Frogs, crabs	Least Concern	Terrestrial	Not Common
<i>Serinus canicollis</i> Swainson	Cape Canary	<i>tsoere</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Sphenoeacus afer</i> Gmelin	Cape Grassbird	<i>nkhonoa-litali</i>	Insects-eater	Least Concern	Terrestrial	Common

³Declared legally protected in the country

Table 3. Bird species recorded in the first proposed Biosphere Reserve of Lesotho (continued)

Taxon	Common names	Vernacular (Sesotho) names	Form	IUCN Conservation Status	Habitat	Abundance
<i>Streptopelia capicola</i> Sundevall	Cape Turtle Dove	<i>molala-motso</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Streptopelia senegalensis</i> L.	Laughing Dove	<i>motubetsoana</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Telophorus zeylonus</i> L.	Bokmakierie	<i>ptjempfjete</i>	Insects-eater	Least Concern	Terrestrial	Common
<i>Turdus libonyana</i> Smith	Kurrichane Thrush			Least Concern	Terrestrial	Common
³ <i>Tyto capensis</i> Smith	African Grass-Owl	<i>sephooko</i>	Bird of Prey	Least Concern	Terrestrial	Not Common
<i>Vidua macroura</i> Pallas	Pin-tailed Whydah	<i>molepe</i>		Least Concern	Terrestrial	Common
<i>Vidua paradisaea</i> L.	Long-tailed Paradise Whydah	<i>ijobolo</i>	Seeds-eater	Least Concern	Terrestrial	Common
<i>Zosterops virens</i> Sundevall	Cape White-Eye	<i>mahloanalitsepe</i>		Least Concern	Terrestrial	Common

³Declared legally protected in the country

causing the populations to approach extinction (Ogada et al. 2012). A similar observation has also been made in the Middle East, as well as Central and South America (Ogada et al. 2012). According to Di Vittorio et al. (2018), vulture populations in West Africa are also undergoing dramatic decline, particularly due to factors such as environmental changes, poisoning and bioaccumulation of toxic substances from agricultural products, pesticides, and veterinary drugs used in cattle livestock. In addition, the vultures are subject to direct persecution for the trade of products used in traditional medicine (Di Vittorio et al. 2018). The proposed BR would assist in creating a platform for enhanced breeding of the species to increase the population size. In addition, raising awareness of the biodiversity wealth of the area amongst all residents and role-players could potentially result in reduced utilisation of natural resources specifically within the core areas. Interestingly, Birdlife International categorises the Lesotho Highlands (under which the proposed BR falls) as an Endemic Bird Area of high priority and lists the Drakensberg Rock-jumper (*Chaetops aurantius* Layard, 1867), Mountain Pipit (*Anthus hoeschi* Stresemann, 1938) and Drakensberg Siskin (*Crithagra symonsi* (Roberts, 1916)) to be of particular global interest (LHDA 1998a, 1998b). Therefore the proposed BR has potential to become a popular spot for birders who are interested in high elevation species, and thus enhance tourism in the area.

Fish: Only two fish species were recorded in the current study namely Maloti minnow or Maloti redbin (*Pseudobarbus quathlambae* (Barnard, 1938)), (Figure 3G) and rainbow trout (*Oncorhynchus mykiss* (Walbaum, 1792)), as summarized in Table 4. It is reported that Maloti minnow was first discovered in the headwaters of the uMkhomazana River in Kwazulu-Natal, South Africa (Barnard 1938), but was subsequently feared extinct (Jubb 1971). The fish was rediscovered at Sehlaba-thebe in Lesotho in 1970 (Jubb 1971). However, although the South African population was feared to be certainly extinct, the species was recently rediscovered in the Mzimkhulu River system in KwaZulu-Natal (Kubheka et al. 2017) and therefore considered near endemic in Lesotho. The recording of Maloti minnow in the Bokong River during this survey adds tremendous clout to the biodiversity rationale of the proposed BR, particularly because the species is Lesotho's only known endemic vertebrate. However, rainbow trout have been introduced in the country. Indeed, LHDA (1998b) indicated that there was circumstantial evidence that rainbow trout were previously introduced into the Tšehlanyane River, and that a residual population existed downstream of TNP. Therefore, the occurrence of the two fish species in two separate rivers, minimises the possibility of one species being a threat to the other (feeding on the other).

Reptiles: A total of seven reptiles were recorded in the proposed BR, comprising four snakes and three lizards (Table 5). Some of the snakes are venomous, namely

Table 4. Fish species recorded in the first proposed Biosphere Reserve of Lesotho

Taxon	Common names	Vernacular (Sesotho) names	IUCN Conservation Status	Abundance
* <i>Oncorhynchus mykiss</i> Walbaum	Rainbow trout	<i>trautu</i>	Not Evaluated	common
² <i>Pseudobarbus quathlambae</i> Barnard	Maloti minnow	<i>thoboshana</i>	Endangered	common

*Introduced species; ² Lesotho endemic

berg adder (*Bitis atropos* (Linnaeus, 1758)), puff adder (*Bitis arietans* (Merrem, 1820)) and rinkhals (*Hemachatus haemachatus* (Bonnaterre, 1790)). Berg adder is known from high elevations in the Maloti–Drakensberg, but also occurs at lower elevations in the Cape Fold Mountains of the Western Cape of South Africa (Barlow et al. 2019). On the other hand, LHDA (1998a, 1998b) previously reported six lizards and four snakes in both BNR and TNP, including the Essex's mountain lizard (*Tropidosaura essexi* Hewitt, 1927), which is known only from the summit slopes of the KwaZulu-Natal Drakensberg, the adjacent Free State province and the Lesotho Highlands.

Amphibians: Three amphibian species were recorded, two of which are aquatic, namely Drakensberg frog (*Amietia delalandii* (Duméril & Bibron, 1841) and Maloti River Frog (*Amietia vertebralis* (Hewitt, 1927)), as well as one terrestrial Bufonid, called Gariep toad or mountain toad (*Vandijkophrynus garipeensis* (Smith, 1848)), summarised in Table 6. *Amietia delalandii* and *A. vertebralis* are reported as near endemic in the country (NES 2000). A study by LHDA (1998a, 1998b) reported seven amphibian species in both BNR and TNP. These are African clawed frog (*Xenopus laevis* Daudin, 1802), Gray's stream frog (*Strongylopus grayii* (Smith, 1849)), Natal ghost frog (*Heleophryne natalensis* (Hewitt, 1913)) and ranger's toad (*Amietophrynus rangeri* Hewitt, 1935), as well as the three species recorded in the current study. Generally, Lesotho is reported to have a total of 19 amphibian species, with only two near-endemic species (NES 2000).

Amphibians are reported to be one of the most sensitive group of animals in the world which react rapidly to substantial changes in their environments (Saber et al. 2017). As a result, they are useful indicators of pollution and climate change.

Other biophysical aspects (wetlands)

Three major wetlands were observed in the core area of the proposed BR, and four others in the transition zone. These wetlands do not only provide habitats for certain flora and fauna species, but also provide water for many river basins in the country as well as transboundary rivers. As a result, these wetlands play a major role in the ecology and hydrology of downstream systems including the provision of water to the Katse Dam, which supplies water to Gauteng province in South Africa. In addition, the wetlands provide water for livestock drinking and domestic use to surrounding communities. However, it was observed that wetlands in the transition zone lack effective management systems and are vulnerable to degradation and consequent reduction of ecosystem services. Some sections within the wetlands are intact while other patches are degrading due to erosion, thus threatening the intact portions. The long-term productivity of these ecosystems is threatened by encroachment through ploughing in surrounding fields and poor road construction practices. In addition, a majority of wetlands in the transition zone are under threat due to cropland encroachment, roads/paths that go through them, as well as grazing. Similarly, a study

Table 5. A list of recorded reptiles

Taxon	Common names	Vernacular (Sesotho) Names	IUCN Conservation Status	Form
<i>Agama atra</i> Peters	Southern rock agama	<i>mankhoshepe</i>	Least Concern	Agama
<i>Bitis arietans</i> Merrem	Puff adder	<i>marabe</i>	Not Evaluated	Adder
<i>Bitis atropos</i> L.	Berg adder	<i>qoane</i>	Least Concern	Adder
<i>Dubberia lutrix lutrix</i> Linnaeus	Common slug-eater		Least Concern	Snake
<i>Hemachatus haemachatus</i> Bonnaterre	Rinkhals	<i>masumo</i>	Least Concern	Cobra-like Snake
<i>Pseudocordylus melanotus</i> A. Smith	Drakensberg crag lizard	<i>checheiki</i>	Least Concern	Lizard
<i>Trachylepis punctatissima</i> Smith	Montane speckled skink	<i>mokholutsoane</i>	Least Concern	Skink
<i>Tropidosaura essexi</i> Hewitt	Essex's mountain lizard		Least Concern	Lizard

Table 6. A list of recorded amphibian species

Taxon	Common names	Vernacular (Sesotho) names	Form	Habitat	IUCN Conservation Status
<i>Amietia delalandii</i> Duméril and Bibron (= <i>A. dracomontana</i> Channing)	Drakensberg frog	<i>seqaqana</i>	Frog	Aquatic	Least Concern
<i>Amietia vertebralis</i> Hewitt	Maluti river frog	<i>letlametlu</i>	Frog	Aquatic	Least Concern
<i>Vandijkophrynus garipeensis</i> A. Smith	Gariiep toad Mountain toad	<i>marokolo</i>	Toad	Terrestrial	Least Concern

by Chatanga et al. (2020) indicated that wetlands in the Maloti–Drakensberg region are generally intensively utilised and degraded, with very high anthropogenic pressures, particularly in the highlands of Lesotho. The wetlands are also a habitat for Sloggett’s ice rat, which is endemic to southern Africa, being confined to South Africa and Lesotho. However, the species causes damage to the wetlands by digging holes that destroy the vegetation (Figures 3J, K). A study by Mokotjomela et al. (2009) revealed that the damage caused by Sloggett’s ice rat through soil erosion and loss exceeds effects of domestic livestock. This mammal species is also found in rocky habitats and alpine grassland, both wet and dry, at elevations of more than 2 000 m (6 600 ft). It is reported in the Drakensberg Mountains of the Eastern Cape and KwaZulu-Natal provinces of South Africa, as well as Lesotho (Monadjem et al. 2015).

Notable plant species recorded in the wetlands include: copper wire grass (*Merxmuellera macowanii* (Stapf) Conert), which is used for making crafts (brooms, baskets, traditional Basotho hats) and thatching, as well as mild rhubarb (*Gunnera perpensa* L.), water mint (*Mentha aquatica* L.), and wild clover (*Trifolium* L. spp), used for medicinal purposes. In addition, Lesotho red-hot poker (*Kniphofia caulescens* Baker) adds beautiful scenery to high elevation valleys of the Maloti–Drakensberg, particularly in summer (Figure 3E). This plant is endemic to the Maloti–Drakensberg region, even though it is reported to be relatively rare on the South African side (being found in Eastern Cape and KwaZulu-Natal). A study by Chatanga et al. (2019) reported a total of 16 wetland types associated with the Maloti–Drakensberg region, and these include *M. macowanii* wetland, *G. perpensa* wetland, *K. caulescens* wetland and *Mentha longifolia*–*Juncus inflexus* wetland. The study also discussed the classification, description and environmental factors of montane wetland vegetation of the Maloti–Drakensberg region.

Conclusion

The current study provides findings of a rapid biodiversity survey undertaken in Lesotho’s first proposed Biosphere Reserve, the core area of which comprises

Bokong Nature Reserve and Tšehlanyane National Park. The survey recorded a total of 380 plant species, 60 of which are endemic to the Drakensberg Mountain Centre (formerly known as Drakensberg Alpine Centre), whereas 30 are declared legally protected in the country. Two plants endemic to Lesotho have been documented in the area namely spiral aloe and *Glumicalyx lesuticus*. The former is the national flower of Lesotho, which is under immense pressure in the wild due to illegal trade. The near-endemic (confined to South Africa and Lesotho) Drakensberg bamboo was found widespread in Tšehlanyane National Park, and it is reported to provide a habitat for the Red-listed Endangered butterfly species known as *Metisella syrinx*. However, the search for this butterfly during the survey was not successful.

In the case of fauna, 16 mammalian species were recorded, seven of which are declared legally protected in the country. These include Sloggett’s ice rat, which is endemic to southern Africa, being confined to South Africa and Lesotho. This species is however, causing damage to the wetlands, which provide ecosystem services such as water and livestock grazing. These wetlands supply water to the Katse Dam of the Lesotho Highlands Water Project, which in turn provides water to parts of Gauteng in South Africa. A total of 53 bird species were documented, 13 of which are declared legally protected. Among these are the Cape Vulture and Bearded Vulture, which are IUCN listed as Endangered and Near Threatened respectively, and have limited distribution being endemic to southern Africa. Lesotho is currently the main breeding ground for the Bearded Vulture in southern Africa. Two fish species were recorded namely Maloti minnow and rainbow trout, with the former being Lesotho’s only known true endemic vertebrate species. A total of seven reptiles were recorded, three of which are venomous snakes namely puff adder, berg adder and rinkhals. In addition, three amphibian species were recorded, two of which are reported as near endemic in the country, namely *Amietia delalandii* and *A. vertebralis*.

The survey has filled some gaps by providing valuable information on the biodiversity (particularly regarding the flora and avifauna) of the proposed Biosphere Reserve.

The presence of important species, i.e. some being endemic to Lesotho, endemic to the Maloti–Drakensberg area, Red Data-listed, or declared legally protected in the country, contribute tremendously to the biodiversity value of the proposed BR. Therefore, the findings of the current study will contribute towards justification of the area to be nominated as Lesotho’s first Biosphere Reserve under the UNESCO MAB Programme. However, management plans of the proposed Biosphere Reserve should be developed, to address, amongst others, the challenges of managing invasive species and fire that may negatively affect the biodiversity of the area.

Acknowledgements

The authors are grateful to UNESCO and the Lesotho Government for financial support to undertake the study. We thank the two anonymous reviewers for their useful suggestions to improve the manuscript.

Competing interests

The authors declare that they have no competing interests.

Authors’ contributions

LSK drafted the manuscript, KK and KM collected the data, and RPS edited the manuscript and added valuable information.

Funding

The study was financed by UNESCO viz; the UNESCO MAB Programme in Paris, the German Commission for UNESCO and the Lesotho National Commission for UNESCO, as well as the Lesotho Government through the Ministry of Tourism, Environment and Culture (MTEC).

References

- Alexander, G. & Marais, J., 2008, *A Guide to the Reptiles of Southern Africa*, Struik Publishers, Cape Town, South Africa.
- Barlow, A., Wüster, S., Kelly, C.M.R., Branch, W.R., Phelps, T. & Tolley, K.A., 2019, ‘Ancient habitat shifts and organismal diversification are decoupled in the African viper genus *Bitis* (Serpentes: Viperidae)’, *Journal of Biogeography* 46, 1234–1248, <https://doi.org/10.1111/jbi.13578>.
- Barnard, K.H., 1938, ‘Description of a new species of fresh-water fish from Natal’, *Annals of the Natal Museum* 8(3), 525–528.
- Bromilow, C., 2010, *Problem plants and alien weeds of South Africa*, Briza Publishers, Pretoria, South Africa.
- Carbutt, C. & Edwards, T.J., 2001, ‘Cape elements on high-altitude corridors and edaphic islands: historical aspects and preliminary phytogeography’, *Systematics and Geography of Plants* 71, 1033–1061.
- Carbutt, C. & Edwards, T.J., 2004, ‘The flora of the Drakensberg Alpine Centre’, *Edinburgh Journal of Botany* 60(3), 581–607, <https://doi.org/10.1017/S0960428603000428>.
- Carbutt, C. & Edwards, T.J. 2006, ‘The endemic and near-endemic angiosperms of the Drakensberg Alpine Centre’, *South African Journal of Botany* 72, 105–132, <https://doi.org/10.1016/j.sajb.2005.06.001>.
- Carbutt, C., 2019, ‘The Drakensberg Mountain Centre: A necessary revision of southern Africa’s high-elevation centre of plant endemism’, *South African Journal of Botany* 124, 508–529, <https://doi.org/10.1016/j.sajb.2019.05.032>.
- Chatanga, P., Kotze, D.C., Janks, M. & Sieben, E.J.J., 2019, ‘Classification, description and environmental factors of montane wetland vegetation of the Maloti–Drakensberg region and the surrounding areas’, *South African Journal of Botany* 125, 221–233, <https://doi.org/10.1016/j.sajb.2019.04.028>.
- Chatanga, P., Kotze, D.C., Okello, T.W. & Sieben, E.J., 2020, ‘Ecosystem services of high-altitude Afromontane palustrine wetlands in Lesotho’, *Ecosystem Services* 45, 101185, <https://doi.org/10.1016/j.ecoser.2020.101185>.
- Colahan, B.D. 2004, ‘The status and conservation of vultures in the Free State Province of South Africa’ in Monadjem, A., Anderson, M.D., Piper, S.E. & Boshoff, A.F (eds.), *Vultures in The Vultures of Southern Africa – Quo Vadis?*, Proceedings of a workshop on vulture research and conservation in southern Africa., Birds of Prey Working Group, Johannesburg.
- Cooper-Driver, G., Letšela, T. & Polaki, M., 2008, *Searching for ferns in Lesotho*, Ashworth Publishing Co., Cornwall, UK.
- Cowling, R.M. & Hilton-Taylor, C., 1994, ‘Patterns of Plant Diversity and Endemism in Southern Africa: An overview’ in Huntley, B.J. (ed.), *Botanical Diversity in Southern Africa*, 31–52, National Botanical Institute, Pretoria.
- Di Vittorio, M., Hema, E.M., Dendi, D., Akani, G.C., Cortone, G., López-López, P., Amadi, N., Hoinsoudé Ségniagbeto, G., Battisti, C. & Luiselli, L., 2018, ‘The conservation status of West African vultures: an updated review and a strategy for conservation’, *Life and Environment* 68 (1), 33–43.
- Donázar, J.A., Hiraldo, F. & Bustamante, J., 1993, ‘Factors influencing nest site selection, breeding density and breeding success in the bearded vulture (*Gypaetus barbatus*)’, *Journal of Applied Ecology* 504–514.
- Du Preez, L. & Carruthers, V., 2009, *A complete guide to the frogs of Southern Africa*, Struik Nature, Cape Town, South Africa.
- Grab, S.W. & Nash, D.J., 2020, ‘“But what silence! No more gazelles...” occurrence and extinction of fauna in Lesotho, southern Africa, since the late Pleistocene’, *Quaternary International*.

- Hilliard, O.M. & Burt, B.L., 1987, *The Botany of the Southern Natal Drakensberg*, *Annals of the Kirstenbosch Botanical Garden*, 15, 253.
- Hockey, P.A.R., Dean, W.R.J., & Ryan, P.G., (eds.), 2006, *Roberts birds of Southern Africa* (7th edn), Russel Friedman Books, Halfway House, South Africa.
- IUCN 2018, 'The IUCN Red Data List of Threatened Species, Version 2018-2', viewed 1 October 2018, <http://www.iucnredlist.org>
- Jacot Guillarmod, A., 1971, *Flora of Lesotho*, Cramer, Lehre.
- Jubb, RA 1971, 'Oreodaimon quathlambae (Labeo quathlambae Barnard) in the Tsoelikana river, south-west Lesotho', *Piscator* 81, 39–42.
- Kobisi, K., 2005, *Preliminary checklist of the plants of Lesotho*, Southern African Botanical Diversity Network Report no. 34, SABONET, Pretoria & Roma, ISBN 1-919795-67–7.
- Kobisi, K. & Kose, L.E., 2003, *A checklist of Lesotho grasses*, Southern Africa Botanical Diversity Network (SABONET) Report no. 17, Pretoria, ISBN 1-919795-68–5.
- Kobisi, K., Seleteng-Kose, L. & Moteetee, A., 2019, 'Invasive alien plants occurring in Lesotho: their ethnobotany, potential risks, distribution and origin', *Bothalia* 49(1), <https://doi.org/10.4102/abc.v49i1.2453>.
- Kubheka, P.S., Chakona, A. & Magunzula, D.N., 2017, 'The Maloti minnow *Pseudobarbus quathlambae* (Barnard, 1938) is not extinct in South Africa', *African Journal of Aquatic Science* 42(3), 303–306, <https://doi.org/10.2989/16085914.2017.1363705>.
- Lahmeyer Macdonald Consortium & Oliver Shand Consortium 1986, Lesotho Highlands Water Project, Kingdom of Lesotho, Ministry of Water, Energy and Mining.
- Letšela, T., Witkowski, E.T.F. & Balkwill, K., 2003, 'Plant resources used for subsistence in Tšehlanyane and Bokong in Lesotho', *Economic Botany* 57(4), 619–639.
- Lesotho Highlands Development Authority (LHDA) 1998a, *Conservation development and management plan for Bokong Nature Reserve*, LHDA Contract 604.
- Lesotho Highlands Development Authority (LHDA) 1998b, *Conservation development and management plan for Tšehlanyane National Park*, LHDA Contract 604.
- May, E.D., 2000, *The Indigenous forests of Lesotho*, Morija Printing Works, Morija, Lesotho.
- Meter, E.B., Edwards, T.J., Rennie, M.A. & Granger, J.E., 2002, 'A checklist of the plants of Mahwaqa Mountain, KwaZulu-Natal', *Bothalia* 32(1), 101–115.
- Ministry of Tourism, Environment and Culture (MTEC) *Legal Notice No. 36 of 1969, as amended by Legal Notice No. 93 of 2004 and No.38 of 2006*.
- Moffett, R., 1997, *Grasses of the Eastern Free State, their description and uses*, UNIQUA, Phuthaditjhaba.
- Moffett, R., 2010, *Sesotho plant and animal names and plants used by the Basotho*, Sun Press, Bloemfontein, South Africa.
- Mokotjomela, T., Schwaibold, U. & Pillay, N., 2009, 'Does the ice rat *Otomys sloggetti robertsi* contribute to habitat change in Lesotho?' *Acta Oecologica* 35, 437–443, <https://doi.org/10.1016/j.actao.2009.01.004>.
- Monadjem, A., Taylor, P.J., Denys, C. & Cotterill, F.P.D., 2015, *Rodents of Sub-Saharan Africa: A biogeographic and taxonomic synthesis*, De Gruyter, Berlin, Germany.
- Mucina, L. & Rutherford, M.C. (eds.), 2006, *The vegetation of South Africa, Lesotho and Swaziland*, *Strelitzia* vol. 19, South African Biodiversity Institute, Pretoria.
- Mucina, L., Hoare, D.B., Lötter, M.C., Du Preez, J., Rutherford, M.C., Scott-Shaw, C.R., Bredenkamp, G.J., Powrie, L.W., Scott, L., Camp, K.G.T., Cilliers, S.S., Bezuidenhout, H., Mostert, T.H., Siebert, S.J., Winter, P.J.D., Burrows, J.E., Dobson, L., Ward, R.A., Stalmans, M., Oliver, E.G.H., Siebert, F., Schmidt, E., Kobisi, K. & Kose, L., 2006, Grassland Biome in L. Mucina & M.C. Rutherford (eds), *The Vegetation of South Africa, Lesotho and Swaziland*, *Strelitzia* 19, South African National Biodiversity Institute, Pretoria.
- National Environment Secretariat (NES) 2000, *Biological diversity in Lesotho: a country study*, Morija Printing Works Maseru, Lesotho.
- Ogada, D.L., Keesing, F. & Virani, M.Z., 2012, 'Dropping dead: causes and consequences of vulture population declines worldwide', *Annals of the New York Academy of Sciences* 1249, 57–71.
- Phillips, E.P., 1917, 'A contribution to the flora of the Leribe Plateau and environs', *Annals of the South African Museum* 16, 1–379.
- Pooley, E., 1993, *The Complete field guide to trees of Natal, Zululand & Transkei*, Natal Flora Publications Trust, Durban, South Africa.
- Pooley, E 1998, *A Field guide to wild flowers of KwaZulu-Natal and the eastern region*, Natal Flora Publication Trust, Durban, South Africa.
- Pooley, E., 2003, *Mountain flowers: A field guide to flora of Drakensberg and Lesotho*, Natal Flora publications Trust, Durban, South Africa.
- Porter, R., Scott-Shaw, C.R. & Thomson, P., 1999, *Nomination proposal for the Drakensberg Park to be listed as a World Heritage Site*, KwaZulu-Natal Nature Conservation Service, Pietermaritzburg.
- Saber, S., Tito, W., Said, R., Mengistou, S. & Alqahtani, A., 2017, 'Amphibians as bioindicators of the health of some wetlands in Ethiopia', *The Egyptian Journal of Hospital Medicine* 66 (1), 66–73.
- Schmitz, M.O., 1982, *Wild flowers of Lesotho*, ESSA, Roma, Lesotho.
- Sinclair, I., Hockey, P. & Tarboton, W., 2002, *Birds of southern Africa: the region's most comprehensively illustrated guide*, Struik Publishers, Cape Town, South Africa.
- Soderstrom, T.R. & Ellis, R.P., 1982, 'Taxonomic status of the endemic South African bamboo, *Thamnocalamus tessellatus*', *Bothalia* 14(1), 53–67.
- Stuart, C. & Stuart, M., 2015, *Field guide to mammals of Southern Africa*, Struik Publishers, Cape Town, South Africa.
- Talukdar, S., 2002, 'Lesotho Plant Red Data List' in Golding, J. (ed.), *Southern African Plant Red Data Lists*, Report No. 14, Southern African Botanical Diversity Network, Pretoria, South Africa.
- UNESCO, 1996, *Biosphere reserves: the Seville Strategy and the Statutory Framework of the World Network*, UNESCO, Paris.
- Van Oudtshoorn, F., 1999, *Guide to grasses of Southern Africa*, Briza Publications, Pretoria, South Africa.
- Van Wyk, B-E. & Gericke, N., 2000, *People's plants. A guide to useful plants of Southern Africa*, Briza Publications, Pretoria, South Africa.
- Van Wyk, A.E. & Smith, G.F., 2001, *Regions of floristic endemism in Southern Africa*, Umदाus Press, Pretoria, South Africa.
- Van Wyk, B-E. & Smith, G., 2014, *Guide to the Aloes of South Africa*, Briza Publications, Pretoria, South Africa.

Van Wyk, B-E. & Van Wyk, P., 1997, *Field guide to trees of Southern Africa*, Struik Publishers, Cape Town, South Africa.
Van Wyk, B-E., Van Oudtshoorn, B. & Gericke, N., 2009, *Medicinal plants of South Africa* 2nd Edn, Briza Publications, Pretoria, South Africa.
Wybenga, W., 2006, 'Wildflowers of Lesotho's Tšehlanyane National Park', *Veld & Flora* 92(2), 81–85.

Web material

<http://redlist.sanbi.org> (viewed 20 September 2020)
<https://www.iucnredlist.org> (viewed 26 September 2020)
<http://pza.sanbi.org/> (viewed 22 September 2020)