

## СООБЩЕНИЯ

## FLORA OF SEHLABATHEBE NATIONAL PARK, LESOTHO

© 2019 г. Grzegorz Kopij<sup>1,\*</sup>, Fred Hoener<sup>2</sup>

<sup>1</sup> Department of Vertebrate Ecology Wrocław University of Environmental & Life Sciences  
Ul. Kozuchowska 5b, Wrocław, 51-631, Poland

<sup>2</sup> Lesotho Parks Board, Maseru, Lesotho

\*e-mail: gkopij@unam.na

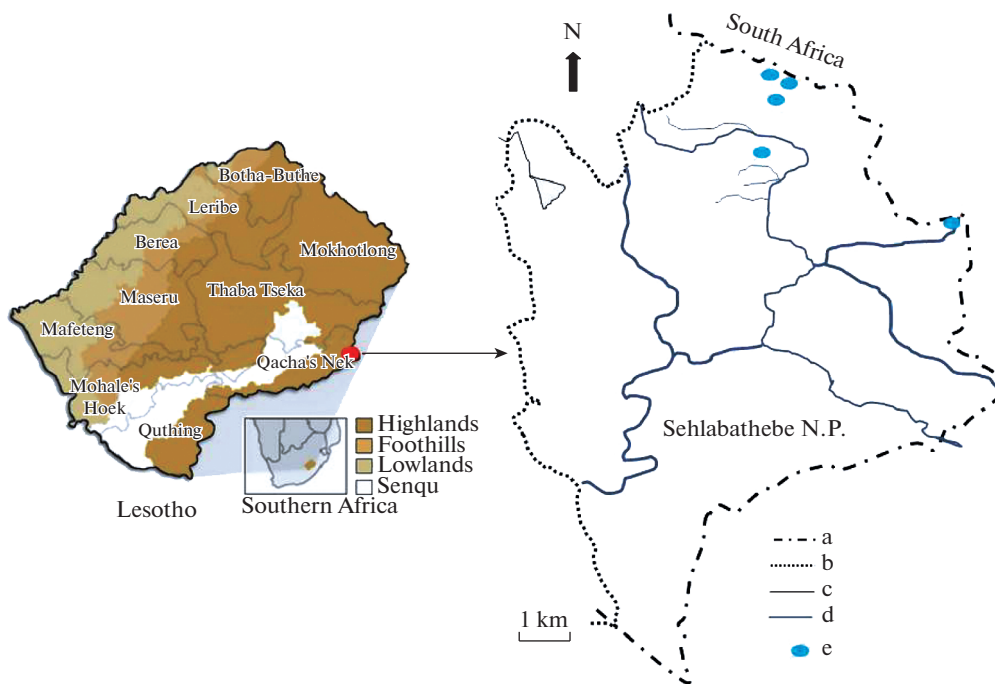
Received December 5, 2017; revised April 7, 2019; accepted April 9, 2019

Sehlabathebe National Park (SNP) with the surface of 6805 ha was proclaimed on 27 February 1970. It is situated in the Qacha's Nek district, Lesotho, southern Africa (latitudes 29°52'–29°58' and longitudes 29°02'–29°08'). The geological formations of SNP represent geological processes spanning a period in excess of 200 million years, i.e. from the Triassic period to the present. The park as a whole can be subdivided into three distinct geological formations: sedimentary materials as represented by a variety of sandstones, mudstones and shales; igneous materials represented by the Drakensberg basalt flows; and intrusive igneous rocks as represented by the numerous dolerite and sills. Major soil types in SNP include: Lekholong-Rock outcrop complex (6744 acres, i.e. 37.7% of the park surface), Lekholong loams (11.6%) and Rockland sandstone (10.5%). The water of SNP can be divided into: a) rivers, streams; b) oxbow ponds; c) marshes and bogs; d) rock pools; e) man-made dams. SNP includes two watersheds: Leqooa River and Tsoelikane River. SNP can be divided into four habitat units and several subunits: grassland (75%) with *Themeda* grassland, *Themeda-Stiburus* grassland, and *Pentaschistis* grassland; wetland (10%) with marsh land, stream and river banks, bogs, ponds and rock pools; rock land (10%) with outcrops, crevices/overhangs, dolerite dykes and ridges and rocky slopes; and disturbed land (5%) with kraals, tracks, road shoulders and old fields. A total of 596 different species and sub-species of vascular plants represented 74 families and 270 genera have so far been recorded in SNP. Four families appear particularly significant: Poaceae (42 genera and 63 species), Cyperaceae (12 genera and over 25 species), Asteraceae (45 genera and 143 species) and Orchidaceae (12 genera and 40 species).

*Keywords:* nature conservation, national park, flora, vegetation, Drakensberg, Lesotho.

DOI: 10.1134/S0006813619060073

The Sehlabathebe National Park (SNP) is located in the Qacha's Nek district on the extreme south-eastern border of Lesotho (Fig. 1). It comprises 6805 ha. Ranging in elevation from 2200 m to 2600 m a. s. l., it falls entirely within the Afroalpine grassland. Its name, Sehlabathebe, which means in Sesotho 'plateau', well characterizes the park's relatively flat expanse. Along its eastern border with KwaZulu-Natal is the precipitous Drakensberg escarpment, while to the north and north-west are peaks ranging to 3100 m a. s. l. In a direct line, the park is approximately 50 km NE of Qacha's Nek, 75 km S of Mokhotlong, and 160 km E of the capital city Maseru. The park lies roughly within latitudes 29°52'S–29°58'S and longitudes 29°02'E–2°08'E.



**Fig. 1.** Location of Sehlabathebe National Park in eastern Lesotho.

Explanations: a – state boundaries, b – park boundaries, c – roads, d – rivers, e – rock pools.

**Рис. 1.** Местоположение национального парка Сехлабатебе в восточном Лесото.

Условные обозначения: а – границы государств, б – границы парка, с – дороги, d – реки, e – скальные водоемы.

At present, Sehlabathebe National Park is the only national park in Lesotho. It was proclaimed on 27 February 1970 and managed by the National Parks of the Conservation Division within the Department of Conservation, Forestry and Land Use Planning in the Ministry of Agriculture in Maseru (Pomela et al. 2000). Together with five other protected areas the combined total surface of 10 602 ha is equivalent to 0.35% of Lesotho's area. There are few proposals for other protected areas in this country (Kopij, 2001, Pomela et al., 2000).

To date, the biodiversity of the Sehlabathebe National Park has been poorly investigated. Only Kopij (2006a) listed 15 butterfly and 14 moth species (Insecta: Lepidoptera), and there are only several other invertebrate species recorded so far in this park (Kopij, 2000). Lynch & Watson (1990) and Kopij (2006b) surveyed mammal fauna, Kopij (2017) reptile, amphibian and fish fauna, while Kopij (2002) quantified bird communities. Although plant collection has been made and specimens are deposited in the Sehlabathebe National Park Herbarium, during the past 50 years of the park's existence only general and incomplete information on vegetation and flora of this protected area were published (Willis et al., 1999). Even Hodgetts et al. (1999) who extensively collected moss species throughout Lesotho, did not survey the moss flora in Sehlabathebe National Park. This paper reports on geographical environment, vegetation and flora of Sehlabathebe National Park. It is important to note that the park's legal status provides no protection [sic!] to those components of the park's ecosystem (Pomela et al., 2000).

## GEOGRAPHICAL ENVIRONMENT

### *Geology*

Almost the entire area of Sehlabathebe National Park is on Cave Sandstone of Clarens formation. Here the formation reaches the highest altitude known in southern Africa. Where Cave Sandstone protrudes, it has been eroded, forming deep pools, caves, arches and other structures.

The geological formations represent geological processes spanning around a period in excess of 200 million years, i.e. from the Triassic period to the present. The park as a whole can be subdivided into three distinct geological formations.

1. Sedimentary materials as represented by a variety of sandstones, mudstones and shales. These form a major portion of the substrata of the plateau and the material from which are carved the park's sandstone rock pools, arches and caves.

2. Igneous materials are represented by the Drakensberg basalt flows. This material covers much of the northern half of Lesotho and is exhibited in the park in the form of Thaba Ntšo and the Tree Bushmen Mountains.

3. Intrusive igneous rocks as represented by the numerous dolerite and sills, which dissect the park, and by a number of volcanic breccias. These harder rocks tend to be the controlling factors influencing the topography in that they constitute most of the parent materials from which are formed ridges and hills and the Tsoelikana Waterfall.

### *Soils*

Two major units were surveyed. One of these coincided with the actual surface area of 7244 ha of the Park, as it is now gazetted and fenced. The other unit, consisting of 373 ha, borders the Park and incorporates the southern slopes of Thaba Ntšo. This smaller unit has been proposed for annexation to the Park in an effort to contain the entire upper watershed of the Tseolikana River within Sehlabathebe National Park boundaries. This is believed to be of importance to the protection and management of the park for several reasons. First and foremost was the need to protect the soils, water quality, and vegetation of the entire watershed. At present, the southern slopes of Thaba Ntšo, which are extremely steep, are being overgrazed. Consequently, while the eroded areas within the park have been stabilizing and regenerating, the Thaba Ntšo slopes are continually impacted. This situation, therefore, places the entire watershed in jeopardy. Rainfall on the upper, unprotected slopes wash down the hillside and effects gully and sheet erosion, which in turn fridges the protected portion below. This affects water quality of streams and rivers within the present park proper. Some content that this impacts on water quality by increasing the level of sediment and, therefore, forms a threat to the survival of the endangered Maloti Minnow *Pseudobarbus quathlambi*, a fish species that inhabits the Tsoelikana River.

Major soil types in Sehlabathebe National Park include: Lekholong-Rock outcrop complex (6744 acres, i.e. 37.7% of the park surface), Lekholong loams (11.6%), Rockland sandstone (10.5%), Lekholong-Tsenola loams (10.4%), Sani loams (7.5%), Popa Matsana loams (6.5%), Tsenola loams (5.2%), Thabana clay loams (3.2%), Popa loams (2.2%) and others (5.2%).

By combining approximately 97% of the park's land of all soil types into slope categories, it was calculated that approximately 2.2% of the land consisted of 0–3% slope, 8.0% of 3–6% slope, 14.7% of 6–12% slope, 15.3% of 12–20% slope, 34.0% of 20–35% slope and 22.7% of over 35% slope. Consequently, approximately half (56.7%) of the parkland consists of soil types exceeding 20% slope and nearly a quarter (22.7%) exceeds a 35% slope. The high percentage of land with relatively steep slope has implications not only for erosion control, watershed management, and vegetation manipulation, but also places constraints on the types and methods of development and construction projects permissible in the park.

### Hydrology

Sehlabathebe National Park has: a) rivers, streams and their tributaries; b) oxbow ponds; c) marshes and bogs; d) rock pools; e) man-made dams. The park consists two watersheds: Leqooa River and Tsoelikane River. The Leqooa flows from the north to the south through the Sehlabathebe Valley. The Tsoelikane has its headwaters in the Park and near Moshebi it merges to form the Tsoelike River, which empties into the Senqu near Qacha's Nek.

The Tsoelikane flows in SW direction and descends from 2410 m to 2220 m above sea level on its 12 km course through the park. Its overall pattern is dendritic forming numerous valleys and canyons. The Tsoelikane Valley is a mature alluvial flood plain, marked by numerous meanders and oxbow ponds. Many tributaries of both Tsoelikane and Leqooa contain water only during the wet season.

Associated with the sandstone outcroppings in Sehlabathebe National Park are the rock pools, which contain rainwater. While a few of these pools are quite large (up to 5 m deep and 10 m in diameter), the majority are of much smaller size. The larger rock pools are concentrated in several places. The highest concentration is located in the NE edge of the park.

The rock pools are of extremely significance to the Park. They provide a habitat for highly endemic and endangered *Aponogeton ranunculiflorus*, which is known to exist nowhere else in the world but in the Park and its close vicinity. Out of 70 pools, in which the plant was recorded during the years 1970–1978, 66 were located within Sehlabathebe National Park. All, except one, of these pools are confined to an area of approximately 2.5 km<sup>2</sup> in the rock pool area near the NE edge of the park. *A. ranunculiflorus* appears to favour those rock pools, which have clear, still water and coarse sandy/gravelly bottom. The plant inhabits not only pools, which contain water all year round, but also pools that are dry in winter.

During the years 1970–1974, eight dams were built near the headwaters of the Tsoelikane. All of them were formed by excavation of stream valleys and construction of earthen dams. Four of the reservoirs, representing a waterway chain of impoundments, were built in NE corner of the park, and one dam, which today constitutes a marshland, was built about 6 km further South. As the dams are continually flushed by new supplies of fresh stream water, the water of these reservoirs is usually clear and relatively cold. Most of the dams were built to provide a habitat, which would support trout fishing. All the dams serve also as wildlife habitat.

### Climate

The climate of Sehlabathebe National Park is a mixture of climate effecting Lesotho and Natal Drakensberg as a whole. While the main Lesotho climatological patter flows across the highlands in SE direction, that from KwaZulu-Natal often flows in W direction, bringing moist and subtropical air currents inland from the Indian Ocean. In fact, the seemingly dynamic and unpredictable weather which characterize here can be viewed as the product of the forces of these two main climatological patterns mixing and collecting the Drakensberg interface.

During much of summer, the dynamic and unpredictable weather is often exemplified by the following sequence of weather patterns, all spanning a single day: dense mist from the east; a light, easterly wind and clear sky; increasing cloud cover; a thunderstorm approaching from the east; heavy rain; clearing sky; dense mist from the Drakensberg Escarpment.

### VEGETATION

Sehlabathebe National Park includes in Eastern Mountain Region, *Themeda-Festuca* Alpine Veld, Austro-Afroalpine Region, Austral Domain of the Afroalpine Region, Afroalpine Region, Altimontane vegetation, South-eastern Mountain Regional Mosaic, Drakensberg Region, Alti/Afro Mountain Grassland (Acocks, 1988; Willis et al., 1999; Mucina et al., 2007).

**Table 1.** List of vascular plant species, their distribution by habitat type and conservation status

Species	Grassland	Wetland	Rock-land	Disturbed land
<b>PTERIDOPHYTA</b>				
<b>Lycopodiaceae</b>				
<i>*Lycopodium saururus</i> Lam.			+	
<b>Selaginellaceae</b>				
<i>Selaginella caffrorum</i> (Milde) Hieron.		+ Rock pool		
<b>Isoetaceae</b>				
<i>Isoetes</i> sp.		+ Rock pool		
<b>Schizaeaceae</b>				
<i>Mohria caffrorum</i> (L.) Desv.	+			
<b>Cyatheaceae</b>				
<i>Cyathea dregei</i> (Kunze) Tyron	+			
<b>Adiantaceae</b>				
<i>Adiantum capillus-veneris</i> L.	+			
<i>Cheilanthes eckloniana</i> (Kunze) Mett.	+			
<i>C. hirta</i> Swartz	+			
<i>*Pellaea pteroides</i> (L.) Prantl	+			
<i>Pteris cretica</i> L.	+			
<b>Polypodiaceae</b>				
<i>Polypodium vulgare</i> L.			+	
<b>Aspleniaceae</b>				
<i>Acrostichum cordatum</i> (Thunb.) Desv.	+			
<i>Asplenium adiantum-nigrum</i> L.	+			
<i>*A. stoliniferum</i> Bory	+			
<i>A. trichomanes</i> L.	+?			
<b>Athyriaceae</b>				
<i>*Athyrium scandicinum</i> (Wild.) Presl	+			
<i>Cystopteris fragilis</i> (L.) Bernh.	+			
<b>Aspidiaceae</b>				
<i>Dryopteris inaequalis</i> (Schlechtd.) Kuntze	+			
<i>Polystichum luctuosum</i> (Kunze) T. Moore	+			
<i>Woodsia montevidensis</i> (Spreng.) Hieron.	+			
<b>Blechnaceae</b>				
<i>Blechnum australe</i> L.	+?			
<b>ANGIOSPERMAE</b>				
<b>MONOCOTYLEDONAE</b>				
<b>Typhaceae</b>				
<i>Typha capensis</i> (Rohrb.) N. E. Br.		+ Rock pool		
<b>Potamogetonaceae</b>				
<i>Potamogeton nodosus</i> Poir.		+ Rock pool		
<i>P. pusillus</i> L.		+		
<b>Hydrocharitaceae</b>				

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>Lagarosiphon major</i> (Ridley) Moss ex Wager		+ Rock pool		
<b>Poaceae</b>				
<i>Agrostis barbuligera</i> Stapf	+			
<i>A. bergiana</i> Trin.	+			
<i>A. eriantha</i> Hack.	+			
<i>A. lachnantha</i> Nees	+			
<i>Alloteropsis semialata</i> (R. Br.) Hitchc.	+			
<i>Andropogon amethystinus</i> Steud.	+			
<i>A. appendiculatus</i> Nees	+			
* <i>A. festuciformis</i> Rendle	+			
<i>Anthoxanthum ecklonii</i> (Nees ex Trin.) Stapf	+			
<i>Atristida diffusa</i> Trin.	+			
<i>A. junciformis</i> Trin. et Rupr.	+			
* • <i>Arundo donax</i> L.				+
<i>Avena</i> sp.				+
* <i>Bromus catharticus</i> Vahl				+
<i>Catalepis gracilis</i> Stapf et Stent	+			
<i>Cymbopogon dieterlenii</i> Stapf ex Phill.	+			
<i>Dactylis glomerata</i> L.	+ EX			
* <i>Deschampsia cespitosa</i> (L.) Beauv.	+			
<i>Digitaria monodactyla</i> (Nees) Stapf	+			
* <i>Ehrharta melicoides</i> Thunb.	+			
<i>Elionurus muticus</i> (Spreng.) Kunth	+			
<i>Eragrostis caesia</i> Stapf	+			
<i>E. capensis</i> (Thunb.)	+			
<i>E. curvula</i> (Schrad.) Nees	+			
<i>E. racemosa</i> (Thunb.) Steud.	+			
<i>Festuca caprina</i> Nees	+			
* <i>F. killickii</i> K.-O'Byrne	+			
<i>F. scabra</i> Vahl	+			
<i>Fingerhuthia sesleriiformis</i> Nees	+			
<i>Harporchloa falx</i> (L.) Kuntze	+			
* <i>Helictotrichon capense</i> Schweick.	+			
<i>H. turgidulum</i> (Stapf) Schweick.	+			
<i>Heteropogon contortus</i> (L.) Roem. et Schult.	+			
<i>Hordeum capense</i> Thunb.				+
<i>Hyparrhenia dregeana</i> (Nees) Stapf	+			
<i>Koeleria capensis</i> (Steud.) Nees	+			
* • <i>Lolium perenne</i> L.	+			
<i>Melica racemosa</i> Thunb.	+			
<i>Melinis nerviglumis</i> (Franch.) Zizka	+			
<i>Merxmüllera macowanii</i> (Stepf) Conert	+			

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>M. stereophylla</i> (J. G. Anders.) Conert	+			
<i>Microchloa caffra</i> Nees	+			
<i>Miscanthus capensis</i> (Nees) Anderss.	+			
<i>M. junceus</i> (Stapf) Pilg.	+			
<i>Monocymbium cerasiiforme</i> (Nees) Stapf	+			
<i>Panicum ecklonii</i> Nees	+			
<i>P. natalense</i> Hochst.	+			
* <i>Pentaschistis colorata</i> (Steud.) Stapf	+			
<i>P. exserta</i> Linder	+			
<i>P. setifolia</i> (Thunb.) McClean	+			
* <i>P. trisetata</i> (Thunb.) Stapf	+			
<i>P. tysonii</i> Stapf	+			
<i>Phalaris arundinacea</i> L.	+			
<i>Poa binata</i> Nees	+			
<i>Sporobolus centrifugus</i> (Trin.) Nees	+			
<i>Stiburus alopecuroides</i> (Hack.) Stapf	+			
<i>S. conrathii</i> Hack.	+			
<i>Tenaxia disticha</i> (Nees) Conert	+			
<i>T. stricta</i> (Schrad.) Conert	+			
<i>Themeda triandra</i> Forssk.	+			
<i>Trachypogon spicatus</i> (L.) Kunze	+			
* <i>Tristachya biseriata</i> Stapf	+			
* • <i>Vulpia bromoides</i> (L.) S. F. Gray				+
* • <i>V. myuros</i> (L.) C. C. Gmel.				+
<b>Cyperaceae</b>				
* <i>Ascolepis capensis</i> (Kunth) Ridley		+		
<i>Bulbostylis schoenoides</i> (Kunth) C. B. Cl.		+		
<i>Carex cognata</i> Kunth		+		
* <i>C. mossii</i> Nelmes		+		
<i>C. zuluensis</i> C. B. Clarke		+		
* <i>Carpha capitellata</i> (Nees) Boeck.		+		
<i>Cyperus semitrifidus</i> Schrad.		+		
* <i>Eleocharis limosa</i> (Schrad.) Schult.		+		
<i>Ficinia</i> sp. Schrad.		+		
* <i>Fuirena ecklonii</i> Nees		+		
<i>Kyllinga pulchella</i> Kunth		+		
<i>Scirpus burkei</i> C. B. Cl.		+		
<i>S. diabolicus</i> Steud.		+		
<i>S. falsus</i> C. B. Cl.		+		
<i>S. ficinioides</i> Kunth		+		
<i>S. pinguiculus</i> C. B. Cl.		+		
* <i>S. venustulus</i> Boeck.		+		

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
* <i>Schoenoxiphium burtii</i> Kukkonen		+		
<i>Scleria</i> sp. Berg		+		
<i>Tetraria cuspidata</i> (Rottb.) C. B. Cl.		+		
* <i>T. maculata</i> Schonl. et Turrill		+		
<b>Araceae</b>				
* <i>Zantedeschia albomaculata</i> (Hook.) Baill.		+		
<b>Restionaceae</b>				
* <i>Restio sejunctus</i> Mast.		+		
<b>Colchicaceae</b>				
<i>Colchicum longipes</i> (Bak.)	+			
<i>Wurmbea burtii</i> B. Nord.		+ Stream banks		
<i>W. kraussii</i> Bak.		+ Stream banks		
<b>Asphodelaceae</b>				
<i>Aloe aristata</i> Haw.			+	
<i>A. ecklonis</i> Salm-Dyk	+			
<i>Bulbine abyssinica</i> A. Rich.	+			
<i>Kniphofia brachystachya</i> (Zehlbr.) Codd		+		
<i>K. caulescens</i> Bak.		+		
* <i>K. galpinii</i> Bak.		+		
* <i>K. ichopensis</i> Bak. ex Schniz		+		
<i>K. northiae</i> Bak.		+		
<i>K. porphyrantha</i> Bak.		+		
<i>K. ritualis</i> Codd		+		
<i>Trachyandra asperata</i> Kunth	+			
<b>Alliceae</b>				
<i>Agapanthus</i> sp.	+			
<i>Tulbaghia</i> sp.		+		
<b>Liliaceae</b>				
* <i>Albuca nelsonii</i> N. E. Br.	+			
<i>A. setosa</i> Jacq.			+	
<i>Asparagus</i> sp.			+	
<i>Drimia</i> sp.	+			
* <i>Eucomis autumnalis</i> (Mill.) Chitt.	+			
* <i>E. humilis</i> Bak.	+			
<i>Ledebouria cooperi</i> (Hook.) Jessop	Moist grassland			
* <i>Ornithogalum diphyllum</i> Bak.	+			
<i>O. graminifolium</i> Thunb.		+		
<i>O. paludosum</i> Bak.		+		
<b>Amaryllidaceae</b>				
<i>Brunsvigia natalensis</i> Bak.	+			
<i>Cyrtanthus breviflorus</i> Harv.		+		
<b>Eriospermaceae</b>				



Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>Eriospermum</i> sp.	+?			
<b>Hypoxidaceae</b>				
<i>Hypoxis filiformis</i> Bak.	+			
<i>Rhodohypoxis baurii</i> (Bak.)			+	
<i>R. incompta</i> Hilliard et Burt	+ (RARE)			
<b>Eriocaulaceae</b>				
<i>Eriocaulon abyssinicum</i> Hochst.	+	+		
* <i>E. setaceum</i> L.		+		
<b>Iridaceae</b>				
<i>Aristea montana</i> Bak.			+?	
<i>Dierama robustum</i> N. E. Br.	+			
<i>Gladiolus ecklonii</i> Lehm.	+			
<i>Hesperantha bauerii</i> Bak.	Moist Grassland			
* <i>H. longicollis</i> Bak.	Moist Grassland			
<i>H. radiata</i> (Jacq.) Ker-Gawl.	Moist Grassland			
<i>Moraea albicuspa</i> Goldbl.	+			
<i>M. alticola</i> Goldbl.	+			
<i>M. elliotii</i> Bak.	+			
* <i>M. galpinii</i> (Bak.)	+			
<i>M. huttonii</i> Bak.		+ Stream banks		
<i>M. inclinata</i> Goldbl.	+			
<i>M. modesta</i> Killick	+			
* <i>M. pubiflora</i> N. E. Br.	+			
<i>M. stricta</i> Bak.	+			
<i>M. trifida</i> R. C. Fost	+			
<i>Romulea campanuloides</i> Harms				+
<i>Schizostylis coccinea</i> Backk. et Harv.	+?			
<i>Tritonia linearifolia</i> (Salisb.) Ker.-Gawl.	+			
<b>Orchidaceae</b>				
* <i>Brownleea galpinii</i> H. Bol.	+			
<i>B. macroceras</i> Sond.	+			
<i>B. parviflora</i> Harv. ex Lindl.	+			
* <i>B. recurvata</i> Sond.	+			
* <i>Corycium nigrescens</i> Sond.	+			
<i>Disa basatorum</i> Schltr.	+ (ENDANGERED)			
* <i>D. brevipetala</i> Linder	+ (DDT)			
<i>D. cephalotes</i> Reichb.	+			
<i>D. chrysostachya</i> Swartz	+			
<i>D. fragrans</i> Schltr.	Moist Grassland			
* <i>D. intermedia</i> Linder	+			
* <i>D. montana</i> Sond.	+ (VULNERABLE)			
<i>D. oreophila</i> H. Bol.	+			

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>*D. pulchra</i> Sond.			+	
<i>D. stricta</i> Sond.	+			
<i>D. thodei</i> Schltr. ex Kraenzl.	+			
<i>D. versicolor</i> Reichb.		+ Marshland		
<i>*Disperis oxyglossa</i> H. Bol.	Moist Grassland			
<i>D. tysonii</i> H. Bol.	+			
<i>*D. wealei</i> Reichb.	+			
<i>Dracomonticola virginea</i> (H. Bol.) Schltr.	+			
<i>Eulophia aculeata</i> (L.)	+			
<i>E. foliosa</i> (Lindl.) H. Bol.	+?			
<i>Holothrix scopularia</i> (Lindl.) Reichb.	+			
<i>H. thodei</i> Rolfe	+			
<i>*Huttonaea grandiflora</i> (Schltr.) Rolfe	+			
<i>Neobolusia tysonii</i> (H. Bol.) Schltr.	+			
<i>Pterygodium hastatum</i> H. Bol.	+			
<i>*P. magnum</i> Reichb.	+			
<i>*Satyrium coriifolium</i> Swartz	+			
<i>S. cristatum</i> Sond.	+			
<i>*S. erectum</i> Swartz	+			
<i>S. longicauda</i> Lindl.	+			
<i>*S. microrrhynchum</i> Schltr.	+ (RARE)			
<i>S. parviflorum</i> Swartz	+			
<i>*Schizochilus bulbinella</i> (Reichb.) H. Bol.	+ (RARE)			
<i>*S. zeyheri</i> Sond.	+			
<b>DICOTYLEDONAE</b>				
<b>Salicaceae</b>				
<i>Salix mucronata</i> Thunb.		+ Stream banks		
<b>Urticaceae</b>				
<i>Obetia tenax</i> (N. E. Br.) Friis				+
<i>*Parietaria micrantha</i> Ledeb.				+?
• <i>Urtica urens</i> L.				+
<b>Clusiaceae</b>				
<i>Hypericum aethiopicum</i> Thunb.	+			
<b>Proteaceae</b>				
<i>*Protea dracomontana</i> Beard			+	
<i>P. roupelliae</i> Meisn.			+	
<i>P. subvestita</i> N. E. Br.			+	
<b>Santalaceae</b>				
<i>Thesium acutissimum</i> A. DC.	+			
<i>T. asterias</i> A. W. Hill	+			
<i>T. flexuosum</i> A. DC.	+			
<i>T. imbricatum</i> Thunb.	+			

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>T. spartioides</i> A. W. Hill	+			
<i>T. zeyherii</i> A. DC.	+			
<b>Polygonaceae</b>				
* <i>Rumex acetosella</i> L.				+
*• <i>R. nepalensis</i> Spreng.				+
*• <i>R. spathulatus</i> Thunb.				+
<i>R. woodii</i> N. E. Br.	+			
• <i>Polygonum aviculare</i> L.				+
*• <i>P. kitaibelianum</i> Sadler.				+
<b>Chenopodiaceae</b>				
*• <i>Chenopodium album</i> L.				+
*• <i>C. ambrosioides</i> L.				+
<b>Caryophyllaceae</b>				
<i>Cerastium arabidis</i> E. Mey. ex Fenzl			+	
<i>C. capense</i> Sond.			+	
<i>Dianthus basuticus</i> Burt Davy	+			
<i>Silene burchellii</i> (Otth ex) DC.	+ (NEAR THREAT-ENED)			
* <i>S. ornata</i> Ait.	+ (VULNERABLE)			
*• <i>Spergula arvensis</i> L.				+
* <i>Stellaria media</i> (L.) Vill.	+			
<b>Ranunculaceae</b>				
<i>Ranunculus baurii</i> Macowan		+		
* <i>R. meyeri</i> Harv.		+		
<i>R. multifidus</i> Forssk.	+			
<b>Papaveraceae</b>				
<i>Papaver aculeatum</i> L.				+
<b>Brassicaceae</b>				
• <i>Barbarea verna</i> (Mill.) Aschers.				+
• <i>Capsella bursa-pastoris</i> (L.) Medik.				+
<i>Erucastrum geiquense</i> (N. E. Br.) O. E. Schulz				+
<i>Heliophila carnososa</i> (Thunb.) Steud.				+
<i>Lepidium schinzii</i> Thell.				+
*• <i>Raphanus raphanistrum</i> L.				+
<i>Rorippa nudiuscula</i> Thell.		+		
<b>Droseraceae</b>				
<i>Drosera natalensis</i> Diels		+		
<b>Crassulaceae</b>				
<i>Cotyledon orbiculata</i> L.			+	
<i>Crassula alba</i> Forssk.			+	
<i>C. dependens</i> H. Bol.			+	

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>C. natalensis</i> Schönl.			+	
<i>C. natans</i> Thunb.			+	
<i>C. pellucida</i> L.			+	
<i>C. sarcocaulis</i> Eckl. et Zeyh.			+	
* <i>C. scabra</i> L.			+	
<i>C. setulosa</i> Harv.			+	
<i>C. umbraticola</i> N. E. Br.			+	
<i>C. vaginata</i> Eckl. et Zeyh.			+	
* <i>C. vaillantii</i> (Wild.) Roth			+	
<b>Vahliaceae</b>				
* <i>Vahlia capensis</i> (L.) Thunb.	+			
<b>Aizoaceae</b>				
<i>Psammotropha mucronata</i> (Thunb.) Fenzl	+			
<i>P. myriantha</i> Sond.	+			
<b>Rosaceae</b>				
<i>Alchemilla woodii</i> Kuntze	+			
<i>Cliffortia linearifolia</i> (Engl.) R. E. et T. Fries Jr.	+			
<i>Geum capense</i> Thunb.	+			
<i>Leucosidea sericea</i> Eckl. et Zeyh.			+	
* <i>Prunus africana</i> (Hook.) Kalkm.	+ (VULNERABLE)			
<i>Rubus ludwigii</i> Eckl. et Zeyh.	+			
<b>Fabaceae</b>				
<i>Argyrolobium harveyanum</i> Oliv.	+			
<i>A. pauciflorum</i> Eckl. et Zeyh.	+			
<i>A. rupestre</i> (Eckl. et Zeyh.) Walp.	+			
<i>A. tuberosum</i> Eckl. et Zeyh.	+			
<i>A. variopile</i> N. E. Br.	+			
<i>Dichilus strictus</i> E. Mey.	+			
<i>Dolichos</i> sp. L.	+			
<i>Indigofera dimidiata</i> Vogel ex Walp.	+			
<i>Lessertia depressa</i> Harv.	+			
* <i>Lotononis divaricata</i> (Eckl. et Zeyh.) Benth.	+			
<i>L. galpinii</i> Dummer	+			
<i>L. lotononoides</i> (Scott Elliot) B.-E. van Wyk	+			
* <i>L. oligocephala</i> B.E. van Wyk	+			
* <i>L. tennela</i> (E. Mey.) Eckl. et Zeyh.	+			
<i>Melolobium microphyllum</i> (L.) Eckl. et Zeyh.	+			
* <i>Psoralea pinnata</i> L.	+			
<i>Sutherlandia frutescens</i> (L.) R. Br.	+			
<i>Trifolium africanum</i> Ser.	+			
<i>T. burchellianum</i> Ser.	+			
<b>Geraniaceae</b>				

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
* <i>Geranium canescens</i> L'Herit.	Moist Grassland			
* <i>G. harveyi</i> Briq.	Moist Grassland			
* <i>G. ornithopodon</i> Eckl. et Zeyh.	Moist Grassland			
* <i>G. pulchrum</i> N. E. Br.	Marshland			
<i>G. robustum</i> Kuntze	Moist Grassland			
<i>Monsonia angustifolia</i> E. Mey. ex A. Rich.	+			
<i>Pelargonium grossularioides</i> (L.) L'Herit.	+			
* <i>P. pulcherrimum</i> Leighton	+			
<i>P. ranunculophyllum</i> (Eckl. et Zeyh.) Bak.	+			
* <i>P. salmoneum</i> R. A. Dyer	+ (DDT)			
<b>Oxalidaceae</b>				
<i>Oxalis depressa</i> Eckl. et Zeyh.	Moist grassland			
<b>Polygalaceae</b>				
<i>Muraltia saxicola</i> Chod.	+			
<i>Polygala hispida</i> Burch.	+			
<i>P. hottentotta</i> Presl	+			
<b>Euphorbiaceae</b>				
* <i>Euphorbia clava</i> Jacq.	+			
<i>E. natalensis</i> Bernh.	+			
<i>E. striata</i> Thunb.	+			
<b>Anacardiaceae</b>				
<i>Searsia discolor</i> (E. Mey. ex Sond.) Moffet	+			
<b>Linaceae</b>				
<i>Linum thunbergii</i> Eckl. et Zeyh.	+			
<b>Rhamnaceae</b>				
<i>Phylica thodei</i> Phill.	+?			
<b>Malvaceae</b>				
<i>Malva</i> sp.				+
* <i>Hibiscus trionum</i> L.				+
<b>Thymelaeaceae</b>				
<i>Lasiosiphon burchellii</i> (Meisn.) Gilg.	+?			
<i>Passerina montana</i> Thoday	+?			
<b>Apiaceae</b>				
<i>Agrocharis melanantha</i> Hochst.	+			
* <i>Alepidea basinuda</i> Pott	+ (ENDANGERED)			
<i>A. pusilla</i> Weim.	+			
<i>A. thodei</i> Dummer	+			
<i>Bupleurum mundii</i> Cham. et Schlechtd.	+			
<i>Conium chaerophylloides</i> (Thunb.) Sond.	Wet grassland			
* • <i>C. maculatum</i> L.	Wet grassland			
<i>Peucedanum caffrum</i> (Meisn.) Phill.			+	
<i>Pimpinella caffra</i> (Eckl. et Zeyh.) D. Diet.			+	

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<b>Ericaceae</b>				
<i>Erica algida</i> H. Bol.	+			
<i>E. cerinthoides</i> L.	+			
<i>E. dominans</i> Killick	+			
<i>E. frigida</i> H. Bol.	+			
* <i>E. schmidtii</i> Dulfer	+			
<i>E. thodei</i> Guth. et Bol.	+			
* <i>E. wyliei</i> H. Bol.	+			
<b>Ebenaceae</b>				
<i>Diospyros austro-africana</i> De Winter	+			
<b>Gentianaceae</b>				
<i>Chironia krebsii</i> Griseb.		+ Marshland		
<i>Sebaea erosa</i> Schniz	+			
<i>S. leiostyla</i> Gilg	+			
<i>S. rehmannii</i> Schniz	+			
<i>S. repens</i> Schniz	+			
<i>S. spathulata</i> (E. Mey.) Steud.	+			
<i>S. thomasii</i> (S. Moore) Schniz	+			
<b>Loganiaceae</b>				
<i>Buddleja salviifolia</i> (L.) Lam.			+	
<i>Gomphostigma virgatum</i> (L.) Baill.			+	
<b>Onagraceae</b>				
* • <i>Oenothera rosea</i> L'Herit ex Ait.				+
* • <i>O. tetraptera</i> Cav.				+
<b>Primulaceae</b>				
<i>Anagallis huttonii</i> Harv.		+		
<b>Lentibulariaceae</b>				
<i>Utricularia bisquamata</i> Schrank		+ Rock pool		
<i>U. livida</i> E. Mey.		+ Rock pool		
<b>Haloragaceae</b>				
<i>Gunnera perpensa</i> L.		+ Marshland		
<b>Gesneriaceae</b>				
* <i>Streptocarpus polyanthus</i> Hook.			+	
<b>Asclepiadaceae</b>				
<i>Asclepias adscendens</i> Schltr.	+			
<i>A. humilis</i> (E. Mey.) Schltr.	+			
<i>Pachycarpus macrochilus</i> (Schltr.) N. E. Br.	+			
* <i>Schizoglossum atropurpureum</i> E. Mey.	+			
* <i>Xysmalobium baurii</i> N. E. Br.	+? (EXTINCT)			
<i>X. involucratum</i> (E. Mey.) Decne.	+			
<i>X. prunelloides</i> Turcz.	+			
<b>Lamiaceae</b>				

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>Ajuga ophrydis</i> Burch. ex Benth.				+
<i>Mentha longifolia</i> L.		+		
* <i>Rabdosiella calycina</i> (Benth.) Codd				+
<i>Stachys rugosa</i> Ait.				+
<i>S. sessilis</i> Guerke				+
<b>Solanaceae</b>				
* • <i>Datura starmonium</i> L.				+
* <i>Solanum giganteum</i> Jacq.				+
<i>S. retroflexum</i> Dun.				+
<b>Scrophulariaceae</b>				
* <i>Buchnera dura</i> Benth.	+			
<i>B. glabrata</i> Benth.	+			
<i>Diascia capsularis</i> Benth.	+			
<i>D. integerrima</i> Benth.	+			
<i>D. purpurea</i> N. E. Br.	+			
<i>Diclis reptans</i> Benth.	Moist Grassland			
<i>Glumicalyx nutans</i> (Rolfe) Hilliard et Burt	+			
* <i>Harveya coccinea</i> (Harv.) Schltr.	Moist Grassland			
<i>Hyobanche</i> sp.	+			
<i>Jamesbrittenia breviflora</i> N. E. Br.	+			
<i>J. caerulea</i> (L.) Hiern	+			
<i>J. hispida</i> (Thunb.) Druce	+			
<i>J. pristisepala</i> Hiern	+			
* <i>Limosella australis</i> R. Br.		+ Marshland		
<i>L. grandiflora</i> Benth.		+ Marshland		
<i>L. longiflora</i> Kuntze		+ Rock pool		
* <i>Linderia bolusii</i> Hiern		+ Rock pool		
<i>Manulea bellidifolia</i> Benth.	Moist Grassland			
* <i>Nemesia calcarata</i> E. Mey. ex Benth.	+			
<i>N. melissifolia</i> Benth.	+			
<i>Phygelius capensis</i> E. Mey ex Benth.	+			
<i>Sopubia cana</i> Harv.	+			
<i>Strobilopsis wrightii</i> Hilliard et Burt	+			
<i>Zaluzianskya maritima</i> (L.) Walp.	+			
* <i>Z. mirabilis</i> Hilliard	+ (RARE)			
<i>Z. pulvinata</i> Killick	+			
<b>Selaginaceae</b>				
<i>Hebenestretia comosa</i> Hochst.	+			
* <i>H. dentata</i> L.	+?			
<i>Selago flanaganii</i> Rolfe	+			
* <i>S. rudolphii</i> (Hiern) Levyns	+			
<i>S. schlechteri</i> Rolfe	+			

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<b>Boraginaceae</b>				
<i>Cynoglossum austroafricanum</i> Hilliard et Burt		+?		
<i>C. lanceolatum</i> Forssk.		+?		
* • <i>Echium plantagineum</i> L.				+
<i>Lithospermum papillosum</i> Thunb.			+	
<i>Myosotis afropalustris</i> C. H. Wr.		+		
* <i>M. sylvatica</i> Hoffm.		+		
<b>Plantaginaceae</b>				
* • <i>Plantago lanceolata</i> L.				+
<b>Sterculiaceae</b>				
* <i>Hermannia cernua</i> Thunb.	+			
* <i>H. cordifolia</i> Harv.	+ (DDD)			
<b>Achariaceae</b>				
<i>Guthriea capensis</i> H. Bol.	+			
<b>Rubiaceae</b>				
<i>Anthospermum hispidulum</i> E. Mey. ex Sond.	+			
* <i>A. dregei</i> Sond.	+			
<i>Galium capense</i> Thunb.	Moist Grassland			
* <i>G. mucroniferum</i> Sond.	Moist Grassland			
<i>G. spurium</i> L.	Moist Grassland			
<i>Kohautia amatymbica</i> Eckl. et Zeyh.	+			
<i>Nenax microphylla</i> (Sond.) Salter	+			
<i>Pentanisia prunelloides</i> (Klotzsch) Walp.	+			
<b>Dipsacaceae</b>				
<i>Scabiosa columbaria</i> L.				+
<b>Cucurbitaceae</b>				
* <i>Cucumis kalahariensis</i> A. Meeuse				+
<b>Campanulaceae</b>				
<i>Craterocapsa congesta</i> Hilliard et Burt	+			
* <i>Wahlenbergia fasciculata</i> V. Brehm.	+			
<i>W. polytrichifolia</i> Schltr.	+			
<i>W. undulata</i> (L.) A. DC.	+			
* <i>W. wyleyana</i> Sond.	+			
<b>Lobeliaceae</b>				
* <i>Lobelia decurrentifolia</i> (Kuntze) K. Schum.		+ (DDT)		
<i>L. erinus</i> L.		+		
<i>L. flaccida</i> (Presl) A. DC.		+		
<i>L. preslii</i> A. DC.		+		
<i>L. vanreenensis</i> (Kuntze) K. Schum.		+		
<b>Asteraceae</b>				
* <i>Athanasia spathulata</i> (DC.) D. Dietr.	+ (VULNERABLE)			
* <i>A. trifurcata</i> L.	+			



Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>Athrixia angustissima</i> DC.	+			
<i>A. fontana</i> MacOwan	+			
<i>Berkheya cirsiifolia</i> (DC.) Rossl.		+ Stream banks		
<i>B. multijuga</i> (DC.) Rossl.	+			
<i>B. rhapontica</i> (DC.) Hutch. et Burtt Davy	+			
* <i>Chrysocoma strigosa</i> E. Bayer	+			
<i>Cineraria aspera</i> Thunb.	+			
<i>C. geifolia</i> L.	+			
<i>C. lyratiformis</i> DC.	+			
<i>C. mollis</i> E. Mey. ex DC.	+			
<i>Cirsium vulgare</i> (Savi) Ten.				+
* <i>Cotula leptalea</i> DC.			+?	
<i>C. socialis</i> Hilliard	+			
* • <i>Crepis capillaris</i> (L.) Wallr.				+
<i>Denekia capensis</i> Thunb.				+
* • <i>Erigeron bonariensis</i> (L.) Cronq.				+
* <i>E. pinnata</i> (L.) Kuntze	+			
<i>Eriocephalus eximius</i> DC.	+			
<i>Eumorphia prostrata</i> H. Bol.	+			
<i>Euryops evansii</i> Schltr.	+			
<i>E. montanus</i> Schltr.	+			
<i>E. tysonii</i> Phill.	+			
<i>Felicia filifolia</i> (Vent.) Burtt Davy	+			
<i>F. linearis</i> N. E. Br.	+			
<i>F. muricata</i> (Thunb.) Nees	+			
<i>F. petiolata</i> (Harv.) N. E. Br.	+			
<i>F. quinquenervia</i> (Klatt) Grau	+			
<i>F. rosulata</i> Yeo	+			
* • <i>Galinsoga parvifolia</i> Cav.				+
<i>Helichrysum infaustum</i> Wood et Evans	+			
* <i>H. krebsianum</i> Less.	+			
<i>H. krookii</i> Moeser	+			
* <i>H. lambertianum</i> DC.	+			
* <i>H. marmarolepis</i> S. Moore	+(NEAR THREAT- ENED)			
<i>H. miconiifolium</i> DC.	+			
<i>H. nanum</i> Klatt	+			
<i>H. odoratissimum</i> (L.) Sweet	+			
<i>H. paleatum</i> Hilliard	+			
<i>H. pallidum</i> DC.	+			
<i>H. pilosellum</i> (L.) Less.	+			
<i>H. sessilioides</i> Hilliard	+			

Table 1. (Contd.)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>H. spiralepis</i> Hilliard et Burt	+			
<i>H. splendidum</i> (Thunb.) Less.	+			
<i>H. subglomeratum</i> Less.	+			
* <i>H. subluteum</i> Burt Davy	+			
<i>H. trilineatum</i> DC.	+			
<i>Hirpicium armerioides</i> (DC.) Rossl.	+			
* • <i>Hypochoeris radicata</i> L.				+
<i>Lactuca capensis</i> Thunb.				+
* <i>Macowania glandulosa</i> N. E. Br.	+			
<i>M. sororis</i> Compton	+			
* <i>Metalasia muraltiifolia</i> DC.	+			
<i>Nidorella agria</i> Hilliard				+
<i>N. auriculata</i> DC.				+
<i>N. undulata</i> (Thunb.) Sond. ex Harv.				+
* <i>Osteospermum caulescens</i> Harv.	+			
* <i>O. junceum</i> Berg.	+			
<i>Othonna</i> sp. L.	+			
* <i>Printzia huttoni</i> Harv.	+			
<i>Relhania acerosa</i> (DC.) Bremer	+			
<i>Pentzia cooperi</i> Harv.	+			
<i>Senecio achilleifolius</i> DC.	+			
<i>S. arabidifolius</i> O. Hoffm.	+			
<i>S. asperulus</i> DC.	+			
* <i>S. barbertonicus</i> Klatt	+			
* <i>S. cathcartensis</i> O. Hoffm.	+			
* <i>S. caudatus</i> DC.	+			
<i>S. coronatus</i> (Thunb.) Harv.	+			
<i>S. cryptolanatus</i> Killick	+			
<i>S. decurrens</i> DC.	+			
<i>S. erubescens</i> Ait.	+			
<i>S. gramineus</i> Harv.	+			
* <i>S. heliopsis</i> Hilliard et Burt	+			
* <i>S. hygrophilus</i> R. A. Dyer et C. A. Sm.	+			
<i>S. inaequidens</i> DC.	+			
<i>S. inornatus</i> DC.	+			
<i>S. macrospermum</i> DC.	+			
<i>S. othonniflorus</i> DC.	+			
<i>S. polyodon</i> DC.	+			
<i>S. rhomboideus</i> Harv.	+			
<i>S. serrulatus</i> DC.	+			
<i>S. speciosus</i> Willd.	+			
<i>S. subcoriaceus</i> Schltr.	+			

**Table 1.** (End)

Species	Grassland	Wetland	Rock-land	Disturbed land
<i>S. scitius</i> Hutch. et Burtt Davy	+			
<i>S. hastatus</i> L.	+			
* <i>Sonchus jacottetianus</i> Thell.	+			
<i>S. nanus</i> Sond ex Harv.	+			
* • <i>Tagetes minuta</i> L.				+
* • <i>Taraxacum officinale</i> Weber				+
* • <i>Tragopogon dubius</i> Scop.				+
<i>Tolpis capensis</i> (L.) Sch. Bip.	+			
* <i>Ursinia alpina</i> N. E. Br.	+			
• <i>Zinnia peruviana</i> L.				+

Note: An asterisk (\*) indicates a species with the first record in Lesotho (based on Jacot-Guillarmod, 1971; Schmitz, 1984; Arnold, de Wet, 1993). A dot (•) indicates an alien species. Red List categories follows SANBI (2017). The nomenclature and taxonomy of plants follow Arnold & de Wet (1993), updated by SANBI (2017).

Of significance is the fact that the majority (65.8%) of the land consists of Escarpment Basalt, a high percentage of which is rock outcrop, and some of which forms sheer vertical cliff faces. Furthermore, approximately 92.5% of the total area exceeds 35% in slope. The implication of this factor for erosion control is evident. Throughout the park there exists a variety of areas, both large and small, where the soil has been denuded of vegetation. These areas commonly coincide with land which has been severely impacted due to its use as cattle tracks and kraals.

Sehlabathebe National Park can be divided into four habitat units and 17 subunits:

I. Grassland; 75%; soil dry to moist

1. *Themeda* grassland
2. *Themeda-Stiburus* grassland
3. *Pentaschistis* grassland
4. Other

II. Wetland; 10%; soil from wet to soggy, at least in rainy season

1. Marshland
2. Stream and river banks
3. Bogs
4. Ponds
5. Rock pools

III. Rockland; 10%; shallow soil

1. Outcrops
2. Crevices/overhangs
3. Dolerite dykes
4. Ridges and rocky slopes

IV. Disturbed land; 5%

1. Kraals
2. Tracks
3. Road shoulders
4. Old fields

### Grassland

*Themeda triandra* is the dominant grassland species. In spite of the Acocks (1988) name: *Themeda-Festuca*, *Festuca caprina* is not a dominant species in the park. The park is predominantly *Themeda* grassland, frequently associated are *Trachypogon spicatus* and *Helictotrichon* spp. In valleys and where slopes are slight, *Stiburus* spp. is often as much in evidence as *Themeda*. This may be due to the slightly higher soil moisture content.

The steep south-facing slopes are almost exclusively *Pentaschistis* spp. grassland. Woody sub-shrubs also appear to be invading the grassland in a few places. In the area east of the lodge, *Cliffortia nitidula* has begun to appear. At least in two other places, heather *Erica* spp. appears to be invading. Small to large grey-green patches of *Helichrysum aureonitens* are also scattered through the grassland. It is not clear whether these patches represent areas recovering from heavy past utilization of the veld or whether they represent a stage of degradation.

### Wetlands

Schwabe (unpubl. rep.) distinguished three types of wetlands within the SNP: tarns (depressions in the sandstones filled with water), riparian marshes and inland freshwater marshes.

Wetlands occupy the flood plain of the Tsoelikana River, the banks of some of the tributaries, and other areas where standing water is present at the surface or where the soil is saturated with water.

Marshes are characterised by standing water and boggy, wet soils along streams. They are characterised by sedges and/or grasses, such as *Scirpus*, *Carex*, *Pennisetum*, *Fingerhuthia*, *Anthoxanthum*, *Phalaris*, *Fuirena*, etc.

In the grassland, where streams have cut down into the ground, *Danthonia macowanii* is a common and readily recognized species. Sand and gravel bars in rivers and streams are colonized by *Juncus* spp. and *Moraea huttonii*. On steep, rocky slopes, particularly on Thaba Ntšo, *Peucedanum caffrum* and *Berkheya multijuga* commonly occur.

Bogs are scattered all over the park. *Haplocarpha nervosa* is generally the dominant species in the bogs, but *Limosella* sp. and *Ranunculus meyeri* are also characteristic of these habitats. Ponds, i.e. pools of water with muddy bottoms, occur on the Tsoelikana flood plain (oxbows), in the rock pools area, N of the lodge, and in Maal Cof. Pond margins are characterised by a gradation inward from emergent aquatics (e.g. *Juncus* spp., *Eleocharis* sp., *Scirpus* spp.) to floating aquatics (e.g. *Potamogeton thunbergii*, *Crassula natans*, *Scirpus fluitans*) in deeper water.

Rock pools, found in five areas (north of the lodge, Leqooa drainage, Maal Cof, the ridge from Thaba Moea to the falls, and the KwaZulu-Natal border ridge NE of Mofuqoi Valley), are shallow to deep pools scoured out of sandstone outcrops. These pools generally have a sand and gravel bottom and support floating and submerged aquatic species, such as *Limosella capensis*, *Crassula* sp., *Ilysanthes conferta*, *Isoetes* sp. and the rare and endangered *Aponogeton ranunculiflorus*, which is restricted to 2 of the 5 rock pool areas.

### Rocklands

Sandstone outcrops and cliffs are important for the growth of woody plants. Typical species of outcrops are *Relhania acerosa*, *Felicia filifolia*, *Euryops tysonii* and *Passerina montana*. Species such as *Rhus divaricata* and *Printzia laxa* are common in crevices on cliffs. Shady crevices and shady spots beneath sandstone overhangs are typical habitats for fern species and some flowering plants. Some of the dolorite dykes are quite barren and rocky, and constitute a habitat of species seldom encountered elsewhere in the park. Ridge tops and some slopes are quite rocky and have extremely thin soil layer. *Eragrostis capensis*, *Elionurus argenteus* and *Sporobolus centrifugus* are characteristic species.

*Disturbed lands*

Areas which have been disturbed by man, have quite distinctive vegetation, with introduced weeds and pioneer species. Kraal areas, used in the past as summer cattle posts by Basotho herders, are characterized by dense stands of *Bromus willdenowii*. Also common in these areas are *Cirsium vulgare* and *Urtica urens*. Abandoned cattle tracks, where soil has been removed down to the bedrock, or unconsolidated rocks are dominated by sub-shrubs (e.g. *Helichrysum infaustum*) and pioneer grasses *Eragrostis* spp.

Construction of roads produced altered habitat along the roads. In many areas, particularly in valleys, *Eragrostis curvula* and *Eragrostis caesia* form dense stands. Other areas, particularly along the road up and over the neck between Tsenola and Khubetsuana, have *Chrysocoma tenuifolia* and *Senecio inaequidens* lining the roadside.

The area in the Leqooa drainage, around the Rest Hut, was cultivated and grazed in the past and is still heavily overgrazed. With the grasses eaten down, field weeds such as *Raphanus raphanistrum*, *Cineraria lyrata*, *Hibiscus trionum*, *Spergula arvensis* and *Monsonia angustifolia* are readily noticed. Some of these exotics were probably introduced by itinerant travellers and were mixed with the seed brought in for planting in the field.

## FLORA

Variation in topography (ridges, valleys, slopes etc.), soil types and depth, hydrology and the presence or absence sandstone outcrops combine in various ways to produce a variety of habitats, each with a characteristic plant community. The park vegetation is, however, significant as it constitutes perhaps the only area within Africa in which the *Themeda-Festuca* Subalpine veld is protected.

As a testimony to the park's richness in species diversity is the fact that 597 different species and sub-species have been recorded, most by ourselves, from 1973 to 2002 (this study). Some of the specimens collected were deposited in the Herbarium of the National University of Lesotho at Roma. As indicated by the Table 1, these species are represented by 74 families and 271 genera. Four families appear particularly significant in terms of their species abundance and habitat dominance. The grass of the family Poaceae, representing 42 genera and 63 species, is the most dominant plant family in terms of both number of individuals and total ground cover. The sedge family (Cyperaceae), containing 12 genera and over 25 species, dominance the marsh habitats. The Aster or Compositae family (Asteraceae), consists of 45 genera and 143 species some of which are often the most conspicuous and colourful of the park's flora. The orchid family (Orchidaceae), contains 12 genera and 40 species.

Several species are of great significance, both to the park and to science. *Aponogeton ranunculiflorus* is listed as "endangered" according to IUCN criteria. It was unknown to science prior to 1970, the year which it was first discovered in Sehlabathebe by Jacot-Guillarmod & Marais (1972). This aquatic species favours the clear, still water and coarse, sandy-gravel bottoms of sand-stone rock pools. A recent survey of Sehlabathebe National Park indicates that *A. ranunculiflorus* is confined to an area of approximately 25 km<sup>2</sup>, plus one of the main rock pool area. It grows nowhere else in the world. Of the 76 pools in which the species was noted during the period from October 1976 to April 1977, 66 of them were located within the boundaries of the Park and concentrated in the area termed the Rock Pools Areas (located northeast of the Lodge). The significance of Sehlabathebe National Park is, therefore, enhanced by its role in protecting the habitat and range of this endangered species. Also of importance is that several species of wider distribution reach their maximum-known altitude in the Park. This includes the orchids, *Disa cooperi* and *Disa chrysostachya*, and the tree fern *Cyathea dregei*. This tree fern is of further significance as only one individual plant has been sighted in the park, and it is thought to be the only representation of this species in all of Lesotho.

An asterisk (\*) indicates a species with the first record in Lesotho (based on Jacot-Guillarmod 1971; Schmitz 1984; Arnold & de Wet 1993). An asterisk (\*) in next column indicates an

alien species. Red List categories follows SANBI (2017). The nomenclature and taxonomy of plants follow Arnold & de Wet (1993), updated by SANBI (2017).

### CONCLUSION

Variation in topography (ridges, valleys, slopes etc.), soil types and depth, hydrology and the presence or absence of sandstone outcrops combine in various ways to produce a variety of habitats, each with a characteristic plant community. The park vegetation is, however, significant as it constitutes perhaps the only area within Africa in which the *Themeda-Festuca* Subalpine veld is protected.

As a testimony to the park's richness in species diversity is the fact that 597 different species and sub-species have been recorded, most by ourselves, from 1973 to 2002 (this study). Some of the specimens collected were deposited in the Herbarium of the National University of Lesotho at Roma. As indicated by the list below, these species are represented by 74 families and 271 genera. Four families appear particularly significant in terms of their species abundance and habitat dominance. The grass of the family Poaceae, representing 42 genera and 63 species, is the most dominant plant family in terms of both number of individuals and total ground cover. The sedge family (Cyperaceae), containing 12 genera and over 25 species, dominates the marsh habitats. The Aster or Compositae family (Asteraceae), consists of 45 genera and 143 species some of which are often the most conspicuous and colourful of the park's flora. The orchid family (Orchidaceae), contains 12 genera and 40 species.

Several species are of great significance, both to the park and to science. *Aponogeton ranunculiflorus* is listed as "endangered" according to IUCN criteria. It was unknown to science prior to 1970, the year which it was first discovered in Sehlabathebe by Jacot-Guillarmod & Marais (1972). This aquatic species favours the clear, still water and coarse, sandy-gravel bottoms of sand-stone rock pools. A recent survey of Sehlabathebe National Park indicates that *A. ranunculiflorus* is confined to an area of approximately 25 km<sup>2</sup>, plus one of the main rock pool area. It grows nowhere else in the world. Of the 76 pools in which the species was noted during the period from October 1976 to April 1977, 66 of them were located within the boundaries of the Park and concentrated in the area termed the Rock Pools Areas (located northeast of the Lodge). The significance of Sehlabathebe National Park is, therefore, enhanced by its role in protecting the habitat and range of this endangered species. Also, of importance is that several species of wider distribution reach their maximum-known altitude in the Park. This includes the orchids, *Disa cooperi* and *Disa chrysostachya*, and the tree fern *Cyathea dregei*. This tree fern is of further significance as only one individual plant has been sighted in the park, and it is thought to be the only representation of this species in all of Lesotho.

### ACKNOWLEDGEMENTS

The following persons are gratefully acknowledged for collecting and identifying plant species: A.C. Bayerley, O.M. Hilliard, L. Fokothi, E.A. Schlege, M. Rutledge and the Botanic Research Institute in Pretoria. Our thanks are also due to Dr Adam Rostański from Silesian University, Katowice, and to Dr. Craig Peter for their comments and corrections on an early draft of this paper.

### REFERENCES

- Acocks J.P.H. 1975. Veld Types of South Africa. Mem. bot. Surv. S. A., 40: 1–128.
- Arnold T.H., De Wet BC (Eds.) 1993. Plants of Southern Africa: Names and Distribution. Pretoria: National Botanic Institute. 825 p.
- Barnes K.N. 1998. Important Bird Areas of Lesotho. – In: Barnes K.N. (ed.). The Important Bird Areas of Southern Africa. Johannesburg: BirdLife South Africa. P. 282–294.
- Chew G.S. 1978. A survey of the rock paintings in Sehlabathebe National Park, Lesotho. Unpubl. rep.
- Jacot Guillarmod A. 1971. Flora of Lesotho. Lehre: Verlag von J. Cramer. 474 p.

- Jacot Guillarmod A., Marais W. 1972. A new species of *Aponogeton* (Aponogetonaceae). Kew Bulletin, 27: 563–565.
- Howard R. 1977. Lesotho bird list. Mimeogr. rep. 5 p.
- Hodhetts N.G., Matcham H.W., Duckett J.G. 1999. Bryophytes collected in Lesotho, the Natal Drakensberg and the Orange Free State, southern Africa. — J. Bryology. 21: 133–155.
- Kopij G. 2000. Catalogus Faunae Invertebratae Lesotho. Roma (Lesotho): National University of Lesotho.
- Kopij G. 2001. Areas Proposed for Environmental Education and Biodiversity Conservation in Maseru District, Lesotho. — In: Mokuku T., Bitso L., and Lana A.F. (eds.) Environmental Education for Sustainable Development: African Perspectives. Maseru, October 2001. P. 150–167.
- Kopij G. 2002. The birds of Sehlabathebe National Park, Lesotho. Koedoe, 45: 65–78.
- Kopij G. 2006a. Lepidoptera fauna of Lesotho. — Acta zool. cracov. 49B (1/2): 137–180.
- Kopij G. 2006b. The grey rhebok *Pelea capreolus* in Sehlabathebe National Park, Lesotho. — African Journal of Ecology. 43: 277–278.
- Kopij G. 2017. Lower invertebrates of Sehlabathebe National Park, Lesotho. — Biosystems Diversity. 23 (4): 312–317.  
<https://doi.org/10.15421/011747>
- Lynch C.D., Watson J.P. 1990. The mammals of Sehlabathebe National Park. Navors. Nas. Mus., Bloemfontein. 6 (12): 523–554.
- Mucina L., Rutherford M.C., Powrie L.W. (eds.) 2007. Vegetation map of South Africa, Lesotho and Swaziland. 2nd ed. Pretoria: SANBI.
- Pike T., Tedder A.J. 1973. Rediscovery of *Oreodaimon quathlambe* (Bernard). Lammergeyer. 19: 9–15.
- Pomela E.M., Mokuku C., Sekoli M., Phororo R., Makoae M., Majoro M., May D., Ambrose D., Talukdar S. 2000. Biological Diversity in Lesotho. A Country Study. Maseru: National Environment Secretariat.
- Pooley E. 1998. A Field Guide to Wild Flowers of KwaZulu Natal and the Eastern Region. Durban: Natal Flora Publication Trust.
- SANBI, 2017. Red List of South African Plants. Version 2017.1. [www.redlist.sanbi.org](http://www.redlist.sanbi.org). Accessed: November 2018.
- Schmitz M.O. 1984. An Illustrated Key for the Identification of Grasses of Lesotho. Roma: National University of Lesotho.
- Willis C., Smith G., Kose L. 1999. Sehlabathebe National Park, Lesotho's Mountain Paradise. — Sabonet News. 4 (2): 147–156.

## ФЛОРА НАЦИОНАЛЬНОГО ПАРКА СЕХЛАБАТЕБЕ, ЛЕСОТО

Гжегож Копий<sup>a, #</sup>, Фред Хенер<sup>b</sup>

<sup>a</sup> Отдел экологии позвоночных Вроцлавский университет естественных наук  
ул. Кожуховска 5b, Вроцлав, 51-631, Польша

<sup>b</sup> Совет парков Лесото, Масеру, Лесото

<sup>#</sup>e-mail: [gkopij@unam.na](mailto:gkopij@unam.na)

Национальный парк Сехлабатебе (НПС) площадью 6805 га был основан 27 февраля 1970. Он расположен в районе Цгачас-Нек, Лесото, Южная Африка (29°52'–29°58' ю. ш. и 29°02'–29°08' в. д.). Геологические формации НПС отражают геологические процессы, охватывающие период 200 млн лет, т.е. от триаса по настоящее время. Парк в целом можно подразделить на три геологические формации: осадочные породы, представленные разнообразными песчаниками, аргиллитами и сланцами; магматическими породами, представленными базальтовыми лавами Драконовых гор; и интрузивными породами, представленными многочисленными долеритами и силлами. Основные типы почв включают: комплекс обнажений Лехолонг-Рок (6744 акров, или 37.7% площади парка), суглинки Лехолонга (11.6%) песчаники Рокланда (10.5%). Воды НПС подразделяются на: а) реки и ручьи; б) старицы; в) болота; г) скальные водоемы; д) искусственные запруды. В НПС находятся два речных бас-

сейна: р. Лекоа и р. Целикане. НПС подразделяется на три типа местообитаний и несколько подтипов: злаковые сообщества (75%), в том числе злаковники с *Themeda* и *Stiburus* и с *Pentaschistis*; водно-болотные угодья (10%) в том числе марши, берега проточных водоемов, болота, пруды и скальные водоемы; каменистые местообитания (10%), в том числе скальные выходы, расщелины/уступы, долеритовые дайки и кряжи, каменистые склоны; нарушенные земли (5%), в том числе краали, дороги, обочины и залежи. В НПС выявлены 596 видов и подвидов сосудистых растений из 74 семейств и 270 родов. Особенно значимы 4 семейства: Poaceae (42 рода и 63 вида), Surraceae (12 родов, более 25 видов), Asteraceae (45 родов, 143 вида) и Orchidaceae (12 родов, 40 видов).

*Ключевые слова:* охрана природы, национальные парки, флора, растительность, Драконовы горы, Лесото

#### БЛАГОДАРНОСТИ

Мы признательны за сбор и определение видов растений следующим лицам: А.К. Бейверли, О.М. Хиллард, Л. Фокоти, Э.А. Шлеге, М. Ратледж, а также Ботаническому исследовательскому институту Претории. Мы также благодарим д-ра Адама Ростаньски, Силезский университет, Катовице, и д-ра Крэйга Питера за замечания и исправления черновой рукописи статьи.