

A. brevifolia, *Garcinia livingstonei* and *Bridelia micrantha*. Species differentiating the field layer are *Melhania forbesii*, *Justicia kraussii*, *Sporobulus panicoides*, *Bidens pilosa*, *Calostephane divaricata*, *Hemizygia elliotii*, *Hibiscus sidiformis* and *Ocimum americanum*. A rare species of grass, *Schizachyrium exile* also occurs in this landscape. *Sansevieria hyacinthoides* is common in this as in all other rugged veld in the KNP.

The field layer seldom develops further than the pioneer stage and the grasses which normally dominate are *Rhynchelytrum repens*, *Sporobulus panicoides*, *Bothriochloa radicans*, *Digitaria eriantha* var. *pentzii*, *Panicum maximum*, *Aristida congesta* subsp. *barbicollis*, *Brachiaria xantholeuca*, *Enneapogon cenchroides*, *Tragus berteronianus*, *Fingerhutia africana*, *Aristida congesta* subsp. *congesta*, *Enteropogon monostachus*, *Aristida curvata*, *Oropetium capense* and *Cymbopogon plurinodis*. Forbs, on the other hand, are relatively common and the following species dominate: *Hibiscus sidiformis*, *Melhania forbesii*, *Hemizygia elliotii*, *Xerophyta retinervis*, *Achyranthus aspera*, *Justicia kraussii*, *Asparagus plumosus*, *Bidens pilosa*, *Crabbea velutina*, *Melhania rehmannii*, *Hibiscus micranthus*, *Phyllanthus asperulatus*, *Heliotropium steudneri*, *Mariscus rehmannianus*, *Tephrosia polystachya*, *Commelina bengalensis*, *Cyphocarpa angustifolia*, *Corchorus asplenifolius*, *Solanum panduraeforme*, *Calostephane divaricata*, *Waltheria indica* and *Abutilon austro-africanum*.

Fauna

A large variety of game occurs in this landscape despite the sparse veld. Elephant are regularly found along the Tshutshi and Manyukelani, while zebra are common but in small groups. Impala are plentiful along the rivers, but buffalo herds only move sporadically into the area. Giraffe, kudu and waterbuck (*Kobus ellipsiprymnus*) are relatively abundant. A herd of sable antelope are also found in this landscape every year during the aerial census. Lion, leopard and spotted hyaena are the most important carnivores.

8. Phalaborwa Sandveld

Location and Geomorphology

- * This landscape occupies the largest portion of the watershed between the Olifants and Letaba Rivers. It is high lying (between 350 and 450 metres) and the underlying material consists mainly of granite and gneiss. Isolated plugs of syenite from the Phalaborwa Igneous Complex have penetrated into the granite to form koppies of which Masorini, Shishwani, Shikumbu, Shivulani and Vodogwa are the most outstanding. The area is situated on the upper courses of a few spruits that drain into the Letaba and Olifants Rivers. Most important of these are the Tshutsi, Mulalane and Misumane which drain into the Olifants River and the Malopene, Ngwenyeni and Nwanedzi into the Letaba River. This undulating landscape occupies 396 km² or 2 percent of the KNP.

Climate

As a result of the higher altitude of this landscape the rainfall increases slightly. Letaba, to the east of this area has an annual rainfall of 462 mm, while Phalaborwa

receives 481 mm per year. High temperatures are registered during the summer and frost is generally non-existent in the winter because of the relatively higher altitude.

Soil Pattern

The soil pattern of the landscape is much the same as that of Landscapes 5, 6 and 11. The soils on the uplands are sandy, light-yellow to grey in colour and belong mainly to the Clovelly Form. The clay contents of the A-horizon is less than 10 percent.

As a result of the lower rainfall the seepline is poorly developed, if at all present. Normally the soils becomes gradually more clayey towards the bottomlands with dominant Forms Glenrosa, Valsrivier and Sterkspruit.

Two important characteristics of this landscape are firstly, the occurrence of large numbers of termite mounds on the uplands. These mounds are comprised of light grey soil and are clearly visable on aerial photographs. Secondly, the syenite plugs form prominent koppies which give a unique appearance to the landscape. The soil on the koppies is shallow and can be described as lithosols.

Vegetation

The vegetation on the uplands of this landscape is dominated by *Terminalia sericea* (Fig. 19). Depending on the clay content of the soil the following species occur in association with *Terminalia sericea*, *Combretum apiculatum*, *Colophospermum mopane*, *Peltophorum africanum*, *Tephrosia sericea*, *Dalbergia melanoxylon*, *Strychnos madagascariensis*, *Albizia harveyi*, *Commiphora africana*, *Grewia bicolor*, *Lannea stuhlmannii*, *Cissus cornifolia*, *Dichrostachys cinerea* subsp. *africana*, *Sclerocarya caffra*, *Ozoroa engleri* and *Ziziphus mucronata*. *Combretum zeyheri* and *Pseudolachnostylis maprouneifolia* are also present on the heavily leached sandy uplands.



Fig. 19. Landscape 8. Upland Phalaborwa Sandveld with termite mound.

As the soil becomes more clayey towards the bottomlands (Fig. 20), *Terminalia sericea* disappear together with a few of the above-mentioned species which occur on sandy soils. Woody species more common in the bottomlands are: *Colophospermum mopane*, *Acacia nigrescens*, *Combretum hereroense*, *Acacia tortilis*, *Bridelia mollis*, *Cassia abbreviata*, *Lonchocarpus capassa*, *Grewia flavescens*, *Acacia exuvialis*, *Maerua parvifolia*, *Euclea divinorum*, *Securinea virosa*, *Acacia gerrardii* and *Ximenia caffra*.

Dominant species in the field layer of the landscape are *Digitaria eriantha* var. *pentzii*, *Pogonarthria squarrosa*, *Andropogon gayanus*, *Brachiaria nigropedata*, *Panicum maximum*, *Eragrostis rigidior*, *Schmidtia pappophoroides*, *Aristida congesta* subsp. *barbicollis*, *Heteropogon contortus*, *Cassia absus*, *Hemizygia elliotii*, *Clerodendrum ternatum*, *Cyphocarpa angustifolia*, *Evovulus alsinoides*, *Kohautia virgata*, *Tephrosia polystachya* and *Limeum fenestratum*.

The following species are more typical of the field layer on the uplands: *Aristida argentea*, *A. meridionalis*, *Perotis patens*, *Trichoneura grandiglumis*, *Rhynchelytrum repens*, *Tricholaena monachne*, *Ipomoea magnusiana*, *Crotalaria schinzii*, *Merremia tridentata*, *Polygala sphaenoptera*, *Oxygonum alatum*, *Hemizygia bracteosa*, *Tephrosia longipes*, *Agathisanthemum bojeri*, *Arthrosolon serricocephalus*, *Striga bilabiata*, *Jatropha zeyheri* and *Aptosimum lineare*. Differentiating species of the field layer in the bottomlands are: *Enneapogon cenchroides*, *Urochloa mosambicensis*, *Cymbopogon plurinodis*, *Tragus berteronianus*, *Aristida congesta* subsp. *barbicollis*, *Panicum coloratum*, *Brachiaria xantholeuca*, *Eragrostis superba*, *Bothriochloa radicans*, *Urochloa brachyura*, *Themeda triandra*, *Corchorus asplenifolius*, *Ceratotheca triloba*, *Heliotropium steudneri*, *Cucumis africanus*, *Solanum panduraeforme*, *Melhania forbesii*, *Orthosiphon australis*, *Crotalaria virgulata*, *Blepharis integrifolia*, *Hermannia odorata* and *Asparagus plumosus*.



Fig. 20. Landscape 8. Bottomland Phalaborwa Sandveld.

The koppies in the landscape give a unique character to the surroundings (Fig. 21). The plants occurring on the koppies are usually also unique and the following woody species are noted: *Kirkia acuminata*, *Steganotaenia araliacea*, *Homalium dentatum*, *Sclerocarya caffra*, *Combretum apiculatum*, *Maerua angolensis*, *Berchemia discolor*, *Ficus soldanella*, *Commiphora mollis*, *Manilkara mochisia*, *Sterculia rogersii* and *Croton gratissimus*. The riverine vegetation is the same as that described in Landscape 6.

Fauna

The *Terminalia sericea* sandveld is preferred habitat for sable antelope. They occur fairly generally in this landscape and represent one of the highest concentrations of this species in the KNP. Buffalo occur in large herds, but elephants are usually represented by lone bulls. Kudu, impala and giraffe are well represented, but warthog especially are plentiful in the brackish spots around Phalaborwa. The presence of zebra is determined by whether the veld was burnt the previous year or not. The danger exists of an increased zebra population becoming a threat to the sable. Small game such as steenbok and duiker occur predictably and each koppie has its own one or two pairs of klipspringer. It is interesting to note that the koppies in this landscape form an important habitat for dassies (*Procavia capensis*). Further south in the KNP this species occurs only on the Lebombo mountains and in an isolated spot at Ntlokweni in Landscape 2.

Termitaria in this area, as in many other landscapes on granite, have an interesting vegetation. There are three species of termites which occur in the KNP viz. *Macrothermes bellicosus*, *M. natalensis* and *M. swaziae*. The former two species build sharply pointed termite mounds that normally have no vegetation cover. The latter species builds a rounded mound with a very interesting vegetation composition. It would appear that the plant species occurring on the termite mounds normally have an affinity for sodic soils. Such species are *Euclea divinorum*, *Ehretia rigida*, *Rhus spinescens* and *Spirostachys africana*. It could possibly be that these species bear an edible fruit that have been transported to the mounds by birds. The most common species of grass found on termite mounds are *Cenchrus ciliaris*,



Fig. 21. Landscape 8. Shishwani, a syenite plug.

Chloris roxburghiana and *Enneapogon cenchroides*. The fact remains that these termite mounds make an important contribution to the physiognomy of the landscape.

9. *Colophospermum mopane* Savanna on Basic Soils

Location and Geomorphology

The parent material underlying this landscape is mainly amphibolite from the Swaziland System and to a lesser degree granite and gneiss mixed with weathered material from gabbro and dolerite (Schutte 1974). It is a relatively flat landscape in comparison with the adjacent undulating terrain on granite. This area is situated north of the old Letaba/Phalaborwa tourist road and south of the Letaba River, excluding the direct southerly drainage to the Letaba River. It is drained by the Ngwenyeni, Malopene and Nwanedzi spruits, and is situated between 300 and 380 metres above sea level. This landscape occupies 546 km² or 2.8 percent of the KNP.

Climate

There is no reason to believe that the climate of this landscape differs much from Landscapes 8 and 10. Surrounding weather stations and their annual average rainfall are Mahlangene 490 mm, Phalaborwa 481 mm, Letaba Ranch 487 mm and Letaba 471 mm (Gertenbach 1980). As a result of the flat terrain the possibility of frost in winter is poor (See Table 5 for temperature data).

Soil Pattern

Considering that this landscape is reasonably flat, there is no great variation in soil types. There is a gradation in the clay content of the soil from the uplands to the bottomland areas with the more clayey soils occurring in the latter. The soil is normally red in colour and the following soil Forms and series can be expected: Glenrosa/Dunvegan — Lomondo — Dothole — Achterdam — Ponda and Hutton/Malonga — Vergenoeg — Shigalo — Hardap. A characteristic of this landscape is the presence of small pans which once again indicates that the landscape is reasonably flat. It sometimes happens that weathered granite mix with material originating from the great gabbro sills that intersect the landscape. In such cases soils of the Mayo Form can be expected.

Vegetation

The vegetation of this landscape is an open savanna with a sparse shrub layer and a relatively dense grass cover (Fig. 22). The structural analysis of the woody component of the landscape is approximately as follows:

Stratum	Percentage Crown Cover
5 - 10 metres	1
2 - 5 metres	12
1 - 2 metres	5
0,5 - 1 metre	3
Field layer	80
	41