# 5.7 SWAZILAND

## Introduction

Swaziland lies between latitudes 25°42'-27°23'S and longitudes 30°51'-32°12'E with an area of just 17 365 km$^2$. It has a population (1982) of 634 678, which represents a mean density of 21 persons/km$^2$, showing an increase of over 40% during the decade 1972-1982. The bulk of the population is found on the high veld, with centres on the middle and low veld regions. In general the low veld is very sparsely populated. The country is landlocked, being almost enclosed by South Africa, but having a short border with Mozambique in the east. The Lebombo Mountains, rising to some 600 m asl, lie along this border and fall steeply to the low veld of Swaziland. This is gently undulating country, 150-300 m asl, which supports a thorn savanna. The low veld comprises about 33% of the total national area, and rises towards the west, to the middle veld, and then steeply to the high veld on the rim of the central plateau of southern Africa. Much of the highveld, which comprises 45% of the total national area, is situated 1100-1400 m asl, but numerous peaks rise above this. The highest are Ngwenya (1829 m asl) and Embelembe (1862 m asl) in the northwest.

Drainage is predominantly from west to east across the country. Two major rivers, the Umbeluzi and Ingwavuma, rise on the high veld, while two others, the Komati and Usutu, have their sources in South Africa. These latter streams have cut dramatic valleys through the high veld where they enter the country, and all four rivers flow through narrow gorges in crossing the Lebombo Mountains to Mozambique.

## Climate

The low veld is hot and arid, being in the rain shadow of the Lebombo Mountains. Mean annual rainfalls at stations in this region are in the range 550-770 mm. The middle veld is cooler, with higher rainfalls, c. 1250 mm, while on the peaks of the high veld, where it is substantially cooler, annual precipitation often exceeds 2000 mm.

## Wetlands

There are no major wetlands in Swaziland, and of those that occur there the most important are sponges found at elevations of 1400-1800 m on the summits of the mountainous western parts of the country. These have formed above springs, or below seepages from clefts and discontinuities in the bedrock. They provide perennial reservoirs for the headwaters of countless streams, upon which much of the local population depends directly, and which feed the principal rivers. Small swamp and peat bog areas, and numerous pools, occur along these streams wherever they traverse flat areas. The upland terrain is smooth and rounded, with occasional rugged outcrops, but it is deeply

dissected by river valleys. Grassland predominates over the high veld, except for small areas protected from burning (which happens every year) and grazing (which is intense). These areas include the many deeply incised valley heads, clefts in rock faces and large granite boulder clumps which are scattered all over the mountain sides. In such places the remnants of a once extensive forest persist. Many streams flow underground, even on steep slopes, where boulders and soil have collapsed into their channels, forming a grassy roof The courses of these streams are visible as shallow depressions lined by tree ferns, and they are interrupted by sink holes, around which some arborescent vegetation is usually clustered. Small reed swamps occur on the margins of numerous farm ponds and dams, and along the courses of rivers over a wide altitudinal range. Some isolated saline pans occur in the low veld.

A number of larger dams (that on the Sand River near Tshaneni is 27 m deep) are used for irrigation. The reed-fringed storage ponds at Edalweni and Magaduza, between the Little Usutu and Great Usutu Rivers near their confluence, are used principally for hydroelectric generation. Another artificial water body is produced by the Mnkomo Weir in the town of Manzini, and the Pongolo River, which is dammed at Pongolopoort in South Africa, has created an upstream lake which extends back into the southeastern corner of Swaziland.

**Wetland Flora**

The flora of the upland swamps is particularly rich and includes, in addition to many grasses and sedges, a large number of other monocotyledons. Among these are *Anoiganthus breviflorus, Brunsvigia natalensis (Amaryllidaceae); Hypoxis acuminata, H. filiformis, H. gerrardii, H. angustifolia (Hypoxidaceae); Aristea woodii, Dieraina medium, Gladiolus papilio, Hesperantha lactea, Moraea marionae, M. pubiflora (Iridaceae); Albuca fastigiata, Aloe boylei, Anthericum haygarthii, Bulbine stenophylla, Drintia neriniformis, Drinziopsis maculata, Eriospermunt cooperi, Euconzis poleevansii, Kniphofia nzultifiora, K. porphyrantha, K. praecox, K. umbrina (Liliaceae); and Disa versicolor, Disperis tysonii, Eulophia parvilabris, Habenaria cornuta, H. dives, Neobolusia tysonii, Satyriunz atherstonii, S. cristatunt, S. macrophyllum, S. ocellatum* and *Schizochilus strictus (Orchidaceae).*

The drainage of swamps in the catchment of the Black Mbeluzi River has virtually eradicated *Brunsvigia natalensis* from an area where it was once abundant.

Permanently swampy areas on valley floors support medium to tall grassland, with *Agrostis barbuligera, Andropogon appendiculatus, Helictotrichon turgidulum, Hyparrhenia dregeana, Pennisetunt macrourum, P. sphacelatum, P. thunbergii, Setaria rigida* and *Stiburus alopecuroides*, either dominant or co-dominant.

**Wetland Fauna**

The freshwater crab, *Potanzon sidneyi*, is common in streams and pools throughout the

country and *Oreochronzis mossambicus* occurs in many of the larger impoundments. *Alestes* sp., *Anguilla bicolor, Barbus paludinosus, B. toppini, B. trimaculatus, Chiloglanis swierstrae, Clarias gariepinus, Eutropius depressirostris, Marcusenius macrolepidotus, Petrocephalus catostema* and *Synodontis zambezensis* are among species found in the Usutu River on the low veld. Many of these also occur in Pongolapoort Dam. There are several amphibians associated with the wetlands, including *Breviceps adspersus, Bufo gutturalis, Cacosternum boettgeri, Heleophryne natalensis, Phrynobatrachus natalensis, Pyxicephalus adspersus, P. natalensis, Rana angolensis, R. fasciata, R. grayii* and *R. vertebralis*. Among reptiles *Crocodylus niloticus* is now endangered in the rivers and dams of the middle and low veld regions, but Pelusios spp. are not uncommon. Ten snakes are known to be associated with wetlands of Swaziland, namely *Amblyodipsas polylepis, Crotaphopeltis hotamboiea, Lycodonomorphulus rufulus, Philothamnus hoplogaster, P. natalensis, Psammophis crucifer, P. sibilans, Psammophylax rhombeatus, P. taeniatus* and *Python sebae*. These are more common in the lowlands than in the mountains. Waterfowl occur on dams and ponds in the middle and low veld regions, while *Ardea purpurea, Ardeola ralloides, A. rufiventris, Ardierallus sturmii, Butorides striatus, Casmerodius albus, Nycticorax nycticorax* and *Scopus umbretta* frequent the rivers and dams. Bubulcus *ibis, Chalcomitra amethystina, Cinnyris chalybeus, Hagedashia hagedash* and *Nectarinia famosa* frequent montane bogs and swamps. *Hippopotamus amphibius* has been re-introduced to the Mlilwane Game Sanctuary, but otherwise the only mammals associated with wetlands are small species. They comprise Aonyx *capensis, Atilax paludinosus, Dasynzys incomtus, Lutra macaulicollis* and *Otomys irroratus*.

**Human Impact & Utilisation:** Irrigation schemes producing citrus fruit, pineapples, rice, tobacco, cotton and sugar, have led to the disappearance of several swampy areas adjacent to rivers in the middle and low veld, while the hillsides of the high veld are heavily overgrazed by goats and domestic cattle, and are fired every winter, when even the swamps may be burnt. It has been estimated that there are some 770 000 cattle in the country, of which as many as 550 000 are owned privately by small farmers. Grazing rights on the hillsides are communal, and little if any provision is taken for rotation grazing. Overgrazing, together with burning, has brought about significant changes in the grassland flora over the past 50 years. The small bogs and sponges are heavily trampled, and tend to dry and erode in consequence. Most bog pools, which are used as water holes, have been degraded and their banks broken down, so that they drain by streams rather than by a gentle outwelling over their lips through the bog vegetation. Intensive farming is virtually confined to the irrigation regions of the middle and low veld. Fish are taken on a small scale from the rivers, ponds and reservoirs by the local people, but there is no commercial fishing.

**Conservation Status:** Two substantial herb swamps occur in valleys in the Malolotja Nature Reserve (26°00'S/31°03'E), while towards the high southern boundary of the park there are extensive and relatively undisturbed areas of sponge and peat bog. The reserve was first established in 1972, and proclaimed a Nature Reserve under Notice 22 of the National Trust Commission Act in 1977. It comprises some 18 000 ha of high veld in the Ngwenya Hills in the northwest of the country. Land in the reserve has an altitudinal range of 1213 m, from a low point on the floor of the Komati River valley (615 m asl) to

the summit of Ngwenya (1828 m asl). The reserve has been fully protected since its inception, but a rest camp has recently been established and visitors will be encouraged. Buffer zones are to be established around the rest camp, the access roads, the administration buildings and a site of archaeological interest.

A number of small wetland areas have also received a degree of protection in the Mlilwane Wildlife Sanctuary (26°28'S/31°05'E) since its establishment under private ownership in 1960. This area, of 4545 ha, was finally declared a Public Nature Reserve in 1977. The sanctuary spans 777 m in altitude, straddling the escarpment between the middle and high veld regions. It reaches a high point of 1437 m asl, and is centred on the Ezulweni Valley. Abandoned open cast tin mining pits have been transformed into small swamps and lakes which support waterfowl and *Hippopotamus amphibius*, and there are small montane bogs and valley swamps in the area. Four rivers, including the Little Usutu, traverse the reserve.

Some small saline pans occur on the Usutu River in the Mkhaya Nature Reserve on the low veld near Big Bend (26°48'S/31°56'E). This reserve covers 6000 ha including limited areas of river and riverine forest. *Crocodylus niloticus* is protected in this reserve.