

Africa's Natural Riches: Biodiversity in Southern Africa

Encompassing a wide variety of ecosystems from rain forests to deserts, southern Africa is particularly rich in biological diversity. In fact the density of different plant species in just Lesotho, Swaziland and South Africa is twice that of Brazil, four times higher than the USA and six times that of Sudan. There is also plenty of wildlife, southern Africa can boast —

- 300 species of terrestrial mammals
- a large variety of marine mammals such as whales, dolphins and the rare dugong
- 900 bird species of which 74 are endemic to the region
- 301 reptile species and 95 amphibian species and
- thousands of insect species

One of the reasons southern Africa is so rich in species is because it has a wide variety of landscapes and environmental conditions. These differences are largely based on varying rainfall intensity and distribution as well as the underlying soils and geology of each region.

Unusual ecosystems

The southernmost tip of South Africa - known botanically as the 'fynbos' - is especially important for biodiversity conservation. It contains over 7,300 species of plants, of which 5,000 are found nowhere else in the world. Most of these are dwarf shrubs and almost 500 local plant species are rare, threatened or endangered. The winter rainfall in the fynbos region means that the area is highly cultivated and grapes and wheat are particularly common. Almost 80% of the area has been cleared for agriculture. However the lucrative wildflower industry generates about US\$10 million a year from local species and this provides an incentive for local landowners to conserve and manage their wildflowers.

There are plenty of natural wetlands in the central part of southern Africa. Known locally as 'dambos', these wetlands provide grazing, natural crop irrigation, fish and crocodile breeding areas and natural wildlife refuges. The most famous and extensive wetland in the region is the Okavango delta, a vast oasis in the arid savanna of Botswana. The Okavango is a series of lagoons, palm islands and waterways, domed with water lilies and other flowers. The delta also has many birds including storks, herons, bee eaters, kingfishers, fish eagles and lilacbreasted rollers, to name but a few.

Huge water monitor lizards and crocodiles can be found on the shorelines, whilst antelope, hippo and elephant are also found in the delta. One small antelope - the sitatunga - has developed an unusual defensive posture when threatened with danger. It submerges itself under water, leaving only its nostrils exposed to breathe through.

THE MIGHTY NAMIB DESERT : FULL OF SURPRISES

Stretching 2,000 km (1243 miles) from Angola through Namibia to South Africa, the Namib Desert is majestic with its dunes, rock canyons and lunar-like landscapes. Although it does not contain a wide variety of flora and fauna species, it has some rare and endemic ones. Despite an average rainfall of only 15mm a year welwitschia plants thrive in a small central section of the desert. These large plants have 3m (10 feet) roots and some of them are over 1,500 years old and still growing. The coastal sands are covered by withered lichens that look dead but they rehydrate with coastal fogs and burst into different colours. So far over 100 species of lichen have been found and most of them are endemic.

The heading standing beetle (*Onomacris unquicufaris*) also makes use of the coastal fogs by facing the wind at the crest of a dune and tilting its head forward. The precipitating fog trickles down to its mouth and researchers have recorded that the beetle can drink as much as 40% of its body weight during one foggy spell. Many other animals are also adapted to the desert conditions. For example, the gemsbok (an oryx) has an adapted brain that allows it to survive body temperatures of 45°C (113°F). When surface temperatures soar, the sand diving lizard (*Aporosaura anchieta*) engages in a temperature-regulating dance by lifting its legs above the ground in rotation.

Other ecosystems represented in southern Africa include forests, savannas, grasslands, mangrove swamps and marine environments. The warm waters along the coast of Mozambique and Tanzania give rise to many coral reefs which contain 3,000 species, including almost one third of all marine fish species found in the world. With such a wide range of ecosystems and species, it is not surprising that 16% of the area is designated as protected and some parts have been declared world heritage sites.

Threats to biodiversity

Drought

The persistent drought that pervades the region makes the environment susceptible to soil erosion whilst it also drives rural people to more desperate measures - such as clearing woodlands - to secure their livelihood. In times of drought, the fauna and flora can be severely affected. For example, Botswana's Central Kalahari Game Reserve lost 99% of its wildebeest and 95% of its hartebeest during a prolonged drought in the 1980s.

Habitat conversion

Due to economic pressures, pristine wildlife habitat is constantly being cleared for agriculture and tree plantations, mining and human settlement. Some development programmes involve modifying the environment, affecting the composition and number of flora and fauna species left in the area. For example, thousands of animals - and quite a few people - died during the construction of Zimbabwe's Kariba Dam during the 1950s. The dam changed the flow of the Zambezi river and transformed the Marrameu floodplain from a seasonally wet, grassy plain to a dry bushy area prone to fire. Obviously the area that was flooded was lost with a resulting reduction in food for larger herbivores - such as buffalo. The remaining animals were 'compressed' along the shorelines, reducing the carrying capacity of the surrounding area. On the other hand, the creation of the new lake ecosystem attracted a new range of water birds and fishes and the local crocodile and hippo populations also flourished.

Humans are not the only species capable of changing their environment. A large herd of elephant can destroy a forest in a few years with the resulting loss in biodiversity. For example, aerial photographs from Sengwa, western Zimbabwe, show that between 1960 - 1970, 75% of forest cover had been lost due to elephant damage. Numbers of antelope, monkeys and other species declined. Similarly, the introduction of exotic species can reduce biodiversity. The introduced variety can over-run an area such as water hyacinth choking lakes and leading to the loss of local water plant species and fish.

Hunting and poaching

Under colonial administration, big game hunters decimated southern Africa's herds wiping out the quagga (a zebra) and the blaubok (the blue antelope) by 1860. Trophy hunting continues today in southern Africa but it is strictly controlled and it now contributes to conservation by generating an income for local residents who are motivated to manage and conserve their wildlife.

International poaching poses a serious threat to wildlife conservation and the rhino is especially vulnerable in southern Africa. Official figures from Zimbabwe report that in 1992 the country's rhino population reduced from 2,000 in January to 400 in December due to poaching. In other parts of southern Africa giant sable, pangolin, turtles and rare birds are also affected. Elephant poaching occurs from time to time but has not seriously affected elephant numbers in South Africa, Zimbabwe, Botswana and Namibia.

Inappropriate government policies

Sometimes government policies contribute to the loss of biodiversity or environmental degradation. A famous example comes from Botswana where an EU supported game fence was built across the country to prevent the transmission of wildlife diseases to cattle by separating the two. Unfortunately the fence cut across the occasional migration route of its wildlife with devastating consequences. In 1964, about 50,000 wildebeest died and a further 50,000 perished in 1983 because they could not reach the Okavango delta during a drought. Zebra and buffalo were also affected.

CONSERVING BIODIVERSITY IN SOUTHERN AFRICA

Southern Africa has developed policies to combine wildlife conservation with sustainable human development so that their people can contribute to biodiversity conservation whilst shaping their own development. Through game ranching, community wildlife management, eco-tourism and controlled trophy hunting, wildlife has become a production asset. Game ranching is now big business and in some cases neighbouring ranchers are pulling down their fences and pooling their wildlife resources so they can have larger wildlife conservation areas. Ranchers and communal farmers are setting aside land for wildlife, sometimes even replacing species that have not lived on their land for many years. Rural people are training as tourism enterprise managers, tourist guides and game scouts so that they benefit from sharing their land with dangerous animals and the revenues from tourism and hunting are contributing to rural development projects, household incomes and conservation efforts.

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