



Share-Net



objectives: the conservation of biological diversity; the sustainable use of biological resources; and, the fair and equitable sharing of benefits arising from the use of genetic resources (see Enviro Facts *Environmental Conventions*).

Further reading

Namaqualand and the Richtersveld: Nature's spectacular canvas. 2008. M. P. Heigan.

Vegetation of southern Africa. 2003. R. M. Cowley, Richardson, D.M. and Pierce, S.M. (eds). Dock House: Cape Town.

Share-Net's Beginners guides. Low-cost identification guides for beginners – a variety of animals and plants covered. Contact Share-Net (see *Useful addresses* below).

The New Gaia Atlas of Planet Management. 2005. N. Myers and Kent, J. (eds). University of California: Berkley.

Useful addresses

Department of Environmental Affairs and Tourism. Private Bag X447, Pretoria, 0001. Tel (012) 310 3911; Call Centre no. 086 111 2468; E-mail callcentre@deat.gov.za; Website www.deat.gov.za

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Endangered Wildlife Trust. Private Bag X11, Parkview, 2122. Tel (011) 486 1102; Fax (011) 486 1506; E-mail ewt@ewt.org.za; Website www.ewt.org.za

WWF South Africa. Private Bag X2, Die Boord, Stellenbosch, 7613. Tel (021) 888 2800; Fax (021) 888 2888; Website www.wwf.org.za



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Biodiversity

Biological diversity - or biodiversity - is the number and variety of living organisms on Earth, the millions of plants, animals, and micro-organisms, the genes they contain, the evolutionary history and potential they encompass, and the ecosystems, ecological processes, and landscapes of which they are integral parts. Biodiversity thus refers to the life-support systems and natural resources upon which we depend.

The main components of biodiversity

- **Genetic diversity** refers to the variation of genes within species. This makes it possible to develop new breeds of crop plants and domestic animals, and allows species in the wild to adapt to changing conditions.
- **Species diversity** refers to the variety and abundance of species within a geographic area.
- **Ecosystem diversity** refers to the variety of ecosystems found within a certain political or geographical boundary, or to the variety of species within different ecosystems.

Biodiversity in South Africa

South Africa is the third most biologically diverse country in the world. It occupies only 2% of the world's land surface yet is home to nearly 10% (more than 23 000) of the planet's plant species and 7% of the reptile, bird and mammal species. It is thus of major global importance for biodiversity conservation. The remarkable richness of this biodiversity is largely a result of the mix of tropical and temperate climates and habitats in the country.

In addition, South Africa is the only country on Earth to have within its borders an entire plant kingdom - one of just six in the world. Known as the Cape Floral Kingdom (see Enviro

Facts *Fynbos*), this area has the highest recorded species diversity for any similar sized temperate or tropical region in the world. It is the world's 'hottest hotspot' of global conservation concern. The term 'hotspot' refers to areas where high levels of species richness, endemism, and threat coincide. Another biome of global conservation significance is the Succulent Karoo (see Enviro Facts *Succulents* and *Succulent Karoo*) – nearly one third of the world's succulent plant species are found in South Africa.

The figures in the table below are only an estimate, as the exact number of species in South Africa is not known. Estimates of total species numbers in the country vary from 250 000 to 1000 000, a richness which is reflected in the many ways our biological resources are used by rural and urban people, and industrial concerns.

Biodiversity under threat

Human activity has been changing South African ecosystems for thousands of years, but the pace and extent of change increased rapidly with agricultural and industrial development. Already over 10% of South Africa's plant species, almost 10% of birds and frogs, 36% of freshwater fish and 20% of its mammals are threatened. In addition, many important ecosystems have been degraded, and ecological processes impaired. Trends indicate that growing human populations and resource consumption will continue to impact on biodiversity.

Species richness in South Africa		
	Total in SA	Vulnerable or endangered
Mammals	295	57
Birds	800	26
Amphibians & reptiles	370	46
Freshwater fish	220	28
Marine fish	2 150	-
Invertebrates	80 000	-
Vascular plants	20 300	2 000

Causes of biodiversity loss

- **Habitat loss.** All plants and animals rely on their habitat for food, water, shelter, and living space. Increased agricultural, industrial and urban development, afforestation, mining and dam building is destroying species habitats on a huge scale (see Enviro Facts *Timber Plantations*).
- **Pollution.** Various forms of pollution contribute to the loss of plants and animals (see Enviro Facts *Pollution, Coastal and Marine Pollution, Energy and Environment*). For example, marine turtles often mistake plastic bags floating in the sea for jelly fish, and eat them (see Enviro Facts *Marine Turtles*). This may choke turtles to death or prevent them from eating properly. Scavenging birds are vulnerable to poison baits put out by farmers in an attempt to control stock predators.

- **Wildlife trade.** Trade in wild plants and animals threatens many species with extinction. Despite laws passed to protect threatened species (see Enviro Facts *Environmental Conventions*), the illegal trade in wildlife continues. Species affected by trade include rhinos (see Enviro Facts *Rhinos*); cycads (see Enviro Facts *Cycads*); many succulent plants (see Enviro Facts *Succulents*); indigenous plants used as traditional medicine (see Enviro Facts *Traditional Medicine*) such as wild ginger and the pepper-bark tree; and line fish such as galjoen and kabeljou (see Enviro Facts *Harvesting the Sea*).

- **Alien species.** When an alien species is introduced to an area it may have advantages, such as few predators and pathogens, which allow it to survive better than do indigenous species, and may thus threaten these local species with extinction. Cape fynbos, for example, is threatened by Australian acacias which were originally brought in to stabilise the dunes. Alien species sometimes interbreed with indigenous species, as has happened with the domestic cat and the African wild cat (see Enviro Facts *Indigenous, Alien and Invasive Explained*).

- **Poaching and hunting.** This is often, but not always, linked to trade in, or commercial use of a particular species. The African wild dog, for example, has been in conflict with stock farmers for a long time and has been hunted relentlessly, making it South Africa's most threatened carnivore (see Enviro Facts *Hunting*).

Protection of South Africa's biodiversity

- Red Data Books, or RDBs, are lists of threatened plants and animals specific to a certain region. Initiated in 1963 by Sir Peter Scott, the IUCN (International Union for Conservation of Nature) RDBs document and highlight biodiversity losses of different species and are important tools for guiding the conservation activities of governments and conservation organisations. South Africa has published RDBs covering terrestrial and marine mammals; birds; reptiles and amphibians; fishes; and butterflies.
- South Africa has over 950 protected areas, covering 6% of the country. These protected areas include National Parks, Provincial and Local Authority Nature Reserves and Forest Nature Reserves, known as Type 1 Protected Areas; and Mountain Catchment Areas, Wildlife Management Areas, private nature reserves, National Heritage Sites, Forest Areas, bird sanctuaries and botanical gardens (Type 2). Protected areas are arguably the best way of conserving our biodiversity.
- The Convention on International Trade in Endangered Species, or CITES, signed by 175 countries, including South Africa, controls and in some cases prohibits trade in threatened species (see Enviro Facts *Environmental Conventions*).
- South Africa is a signatory to the Convention on Biological Diversity (see Enviro Facts *Environmental Conventions*). The convention has three