SOUTH AFRICA

AREA 1,223,405 sq. km

POPULATION 24,920,000 (1974 estimate)

PARKS AND RESERVES LEGISLATION The legislative basis of the National Parks is the National Parks Act 1962. The Act provides inter alia that only State-owned land can be designated as National Park. The basis for the establishment of Nature Reserves under Provincial ownership or control is the Financial Relations Consolidation and Amendment Act No. 38 of 1945.

PARKS AND RESERVES ADMINISTRATION Responsibility for National Parks is vested primarily in the National Parks Board of Trustees appointed by the President of the Republic. For Provincial parks and reserves the administration is in the hands of a variety of Boards, Councils and Committees.

ADDRESS The National Parks Board of Trustees, P.O. Box 787, Pretoria, Transvaal.

TOTAL AREA UNDER PROTECTION 4,067,336 ha (listed areas only)

PROTECTED AREAS

1.1 Kruger National Park 1,948,528 ha
1.2 Kalahari Gemsbok National Park 953,103 ha
1.3 Fort Pato Nature Reserve (Cape Province) 691,775 ha
3.1 Cedarberg Wilderness Area (Cape Province) 71,000 ha
3.2 Umfolozi Game Reserve (Natal) 47,753 ha
3.3 St. Lucia Game Reserve (Natal) 36,826 ha
3.4 Giant's Castle Game Reserve (Natal) 34,284 ha
3.5 Marion Island Reserve 29,000 ha
3.6 Mkuzi Game Reserve 25,091 ha
3.7 Blyde River Nature Reserve (Transvaal) 24,000 ha
3.8 Hluhluwe Game Reserve (Natal) 23,067 ha
4.1 Kogelberg Nature Reserve (Cape Province) 16,500 ha
4.2 Suikerbosrand Nature Reserve (Transvaal) 13,337 ha
4.3 Loskop Dam Nature Reserve (Transvaal) 12,762 ha
4.4 St. Lucia Park (Natal) 12,545 ha
4.5 Ndumu Game Reserve (Natal) 10,117 ha
4.6 Willem Pretorius Game Reserve (Orange Free State) 9,000 ha
4.7 Royal Natal National Park (Natal) 8,856 ha
4.8 Italia Nature Reserve (Natal) 8,489 ha
4.9 Addo Elephant National Park 6,852 ha
4.10 Cape of Good Hope Nature Reserve (Cape Province) 6,700 ha
4.11 Mountain Zebra National Park 6,536 ha
4.12 Doordraai Dam Nature Reserve (Transvaal) 6,000 ha
4.13 Augrabies Falls National Park 5,403 ha
4.14 Hans Merensky Nature Reserve (Transvaal) 5,185 ha
5.1 Golden Gate Highlands National Park 4,792 ha
5.2 Prince Edward Island Reserve 4,400 ha
5.3 Loteni Nature Reserve (Natal) 3,984 ha
5.4 S.A. Lombard Nature Reserve (Transvaal) 3,730 ha
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<td>Roodeplaat Dam Nature Reserve (Transvaal)</td>
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**NAME**  Kruger National Park

**TYPE**  NP

**LEGAL PROTECTION**  Total

**DATE ESTABLISHED**  31 May 1926, as National Park; originally proclaimed as the 'Sabi Game Reserve' on 26 March 1898.

**GEOGRAPHICAL LOCATION**  Eastern Transvaal lowveld on border with Mozambique: S 22°20'-25°30'; E 30°45'-32°02'

**ALTITUDE**  210-800 metres

**AREA**  1,948,528 hectares

**LAND TENURE**  Government lands by law

**PHYSICAL FEATURES**  On the west undulating country varied with doleritic dykes and granite and sandstone kopjes, becoming flatter on the eastern basaltic plains which lead up to the Lebombo range along the border. Three permanent rivers and six others have their catchment in the park and impoundments and boresholes provide additional water. Hot springs occur in the north of the park. Soils vary widely from deep sands to clay pan with gleying and include ferrallitic and saline types. Mean temperatures 2°C-42.5°C, mean annual rainfall 695 mm in the south and 391 mm in the extreme north-east, with a distinct dry season in winter.

**VEGETATION**  Ranging from evergreen and deciduous forest through deciduous woodland and scrub to tree savanna and grassland. Notable species of the evergreen forest are Androstachys johnsonii, Euphorbia confinalis, Syzygium sp., Ardisia microcephala and Ficus sycomorus, and of the deciduous forest Combretum mopane, Spionetta-Euclea and Pseudolachnostylis-Terminalia sericea associations, and Acacia spp. The deciduous woodland is dominated by Combretum apiculatum-Terminalia, Combretum-Acacia and Burkea africana-Diplorrhynchus condylocarpus associations and some mopane. The scrubland is mainly covered by Combretum suavensis-Pterocarpus rotundifolius or Combretum-Colophospermum associations. The tree savannas are dominated by Acacia spp., Sclerocarya caffra and Dichrostachys cinerea, the grasslands by Sporobolus and Lonchocarpus. A large number of species of special interest include the protea Faurea speciosa, Sesamothamnus juglandii and Cussonia natalensis.

**NOTEWORTHY FAUNA**  Mammals of arid and semi-arid habitats are well represented, e.g. Cape hedgehog Erinaceus frontalis, diadem and vervet monkeys Cercopithecus mitis and C. aethiops, bat-eared fox Otocyon megalotis, Meller's mongoose Rhynchogale melleri, spotted hyaena Crocuta crocuta and brown hyena Hyaena brunnea, classified as vulnerable in the Red Data Book, the aardwolf Proteles cristatus, lion Panthera leo, leopard P. pardus and cheetah Acinonyx jubatus (both classified as 'vulnerable'), elephant Loxodonta africana, zebra Equus burchelli, the southern white rhino Ceratotherium s. simum (reintroduced, as have some black rhino), bushpig Potamochoerus porcus, warthog Phacochoerus aethiopicus, hippo Hippopotamus amphibius giraffe Giraffa camelopardalis, nyala Tragelaphus angasi, eland Taurotragus oryx (reintroduced), buffalo Syncerus caffer, duku Cephalophus natalensis, reedbuck Reduncus fulvorufus and R. arundinum, roan and sable Hippotragus equinus and R. niger, tsessebe Damaliscus lunatus, oribi Oreotragus oreotragus, sundi Nesotragus moschatus and impala Aepyceros melampus.

**ZONING**  Tourist development has been limited to the camp sites and roads.
DISTURBANCES OR DEFICIENCIES

Road and dam construction, borehole drilling, poaching and localized effects of pesticides applied on adjacent farms. Enforced culling of buffalo, impala and elephant.

TOURISM

Well developed facilities at 14 camps served by over 2000 km of road (mostly tarred). Accommodation for over 2500. 330,565 visitors and 85,836 vehicles in 1972/73.

SCIENTIFIC RESEARCH

Special research section under an Assistant Director appointed for that purpose.

SPECIAL SCIENTIFIC FACILITIES

Well-equipped laboratory with darkroom, documented reference library and herbarium.

PRINCIPAL REFERENCE MATERIAL

Various publications deal with the history, trees and shrubs, mammals and fish of the park but the main source of information is the journal KOEDOE, which now appears annually; 17 issues had been published up to mid-1975. See also:


STAFF

Totals 2750

BUDGET

About R 6,000,000 (U.S. $ 7 million approximately)

LOCAL PARK ADMINISTRATION

Director, Department of Nature Conservation, Private Bag X404, Skukuza 1350.
SOUTH AFRICA

NAME Kalahari Gemsbok National Park
TYPE NP
BIOTIC PROVINCE 4.11.3

LEGAL PROTECTION Total

DATE ESTABLISHED 17 June 1931

GEOGRAPHICAL LOCATION Extreme north of Cape Province, between South-west Africa and Botswana: S 22°25'-26°29'; E 20°00'-20°50'

ALTITUDE 872-1036 metres

AREA 953,103 ha

LAND TENURE Government lands by law

PHYSICAL FEATURES A semi-desert region largely covered by long parallel dunes of red and white sands oriented northwest-southeast. The wide bed of the Nossob R. forms the north-eastern boundary over 280 km and the Auob R. crosses the southern part of the park. Both are usually dry, only flowing a few times a century. Geologically composed of a 12-60 m thickness of Kalahari sands over blue shales of the Dwyka series, Karroo system. Pans and calcrete flats occur locally. Temperatures range from below 0°C in winter to over 40°C in summer; 127 mm mean annual rainfall, mainly in summer.

VEGETATION Elements of the Karroo and savanna flora form communities of sparse scrub and grassland largely of Panicum coloratum and Psoralea obtusifolia, although there are limited areas of Stipagrostis obtusa and Sporobolus rangel, and rare tall grass stands of Diplachne fusca and Eragrostis rotifer on poorly-drained phosphate-rich clay. Extensive dune communities comprise a Stipagrostis amabilis-Crotalaria spartioides-Eragrostis atherstonei association on crests; Arrhenatherum glaucium-E. lehmanniana on slopes and Stipagrostis uniplumis-S. ciliata-Rhigosum trichotomum in valleys and flats. Sparse woodland of Acacia giraffae, A. haematoxylon and Lebeckia spinescens is fairly extensive on loamy sands. Hybrids between these Acacia species are of particular interest as are a number of other plants including the shepherd's tree Boscia albitrunca and Schmidtia kalahariensis (Gramineae).

NOTEWORTHY FAUNA Mammals include the Cape pangolin Manis temmincki, bat-eared fox Otocyon megalotis, Cape hunting dog Lycaon pictus, spotted hyena Crocuta crocuta; brown hyena Hyaena brunnea, classified as vulnerable in the Red Data Book, as are two other species present, leopard Panthera pardus and cheetah Acinonyx jubatus; lion Panthera leo, black-footed cat Felis nigripes, kudu Tragelaphus strepsiceros, eland Taurotragus oryx, grey duiker Sylvicapra grimmia, gemsbok Oryx gazella, red hartebeest Alcelaphus buselaphus caama, blue wildebeest Connochaetes taurinus, steenbok Raphicerus campestris and springbok Antidorcas marsupialis. Birds include ostrich Struthio camelus and secretary bird Sagittarius serpentarius.

ZONING None

DISTURBANCES OR DEFICIENCIES Poaching on a limited scale.

TOURISM Three rest camps with overnight accommodation and 400 km of tourist road, along the two riverbeds with a connecting road.
SCIENTIFIC RESEARCH

Resident research officer and many projects by visiting scientists. Regular aerial census is undertaken and detailed studies of carnivores, including the brown hyaena.

SPECIAL SCIENTIFIC FACILITIES

Laboratory at Nossob Rest Camp

PRINCIPAL REFERENCE MATERIAL


STAFF

3 Nature Conservation staff, 6 tourism and technical services and 31 other: total 40.

BUDGET

R. 225,000 (about U.S. $ 260,000)

LOCAL PARK ADMINISTRATION

Nature Conservator, Twee Rivieren, P.O. Gemsbokpark, 8815, R.S.A.
NAME  Umfolozi Game Reserve (Natal)

TYPE  PP  BIOTIC PROVINCE  4.6.4

LEGAL PROTECTION  Total

DATE ESTABLISHED  1897, but only under full control of the Natal Parks Board since 1952.

GEOGRAPHICAL LOCATION  Zululand, c. 200 km NNE of Durban: S 28°15'-28°30'; E 31°30'-32°00'

ALTITUDE  About 170-500 metres

AREA  47,753 ha

LAND TENURE  Not specified

PHYSICAL FEATURES  An area of undulating country crossed by two major rivers, one permanent and one seasonal, both having sandy beds and a few shallow rapids. A number of other permanent or seasonal streams also occur. Soils are partly sandy and partly sandy loam. Hot in summer and mild in winter with rainfall of around 700 mm annually.

VEGETATION  Tropical drought-deciduous lowland woodlands and thornveld, somewhat modified by controlled burning used for management purposes. A fringe of Ficus sycomorus occurs along river beds. Acacia species are typical of the bush country, especially Acacia nigrescens.

NOTEWORTHY FAUNA  Larger mammals include spotted hyaena Crocuta crocuta, serval Felis serval, lion Panthera leo, leopard P. pardus and cheetah Acinonyx jubatus (both classified as 'vulnerable' in the Red Data Book), zebra Equus burchelli square lipped (= white) rhino Ceratotherium simum simum (the reserve being the stronghold of the southern subspecies), warthog Phacochoerus aethiopicus, giraffe Giraffa camelopardalis, kudu Tragelaphus strepsiceros, nyala T. angasi, bushbuck T. scriptus, buffalo Syncerus caffer, waterbuck Kobus ellipsiprymnus, the reedbuck Redunca arundinum and R. fulvorufa, wildebeest Connochaetes taurinus, klipspringer Oreotragus oreotragus, steenbok Raphicerus campestris and impala Aepyceros melampus. Among the larger birds are black stork Ciconia nigra, yellow-billed stork Ibis ibis and martial eagle Polemaetus bellicosus. The Nile crocodile Crocodylus niloticus (also 'vulnerable') is now largely confined, in Natal, to this and neighbouring reserves.

ZONING  About 20,000 ha are zoned as 'wilderness'

DISTURBANCES OR DEFICIENCIES  There is a proposal to excise some of the reserve for transfer to the Kwa Zulu homeland. Some poaching occurs and also some uncontrolled burning.

TOURISM  Camp with 12 huts giving accommodation for 24 persons. Access by car 51 km from Mtubatuba. Game guides available.

SCIENTIFIC RESEARCH  Studies of the biology of the wildebeest and the warthog are among current management-oriented research projects.
SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL
VINCENT, J. 1970. The history of Umfolozi Game Reserve, Zululand, as it relates to management. The Lammergeyer 11: 7-49

STAFF  8 officers (3 management, 2 rhino capture, 2 wilderness trails, 1 tourist) and 55 game guards: total 63.

BUDGET  R. 45,000 (U.S. $ 52,260), excluding staff salaries

LOCAL PARK ADMINISTRATION  Officer in Charge, Umfolozi Game Reserve, P.O. Box 99, Mtubatuba 3935.
NAME: St. Lucia Game Reserve (Natal)

TYPE: PP

BIOTIC PROVINCE: 4.6.4

LEGAL PROTECTION: Total

DATE ESTABLISHED: 27 April 1897

GEOGRAPHICAL LOCATION: On the coast of north-eastern Natal: S 28°00'-28°25'; E 32°25'-32°30'

ALTITUDE: Sea level

AREA: 36,826 ha

LAND TENURE: Not specified

PHYSICAL FEATURES: Flat to undulating country around the St. Lucia lake system, the largest lagoon-estuary complex in South Africa. The lakes are fed by five major rivers, the largest of which has been diverted into the sea to avoid siltation of the estuary mouth.

VEGETATION: Coastal forest, thicket and grassland, with reedbeds of Phragmites communis and mangroves lining the lake shores. Marine vegetation includes eel grass Zostera nana.

NOTEWORTHY FAUNA: The majority of the larger mammals occur in the Park which adjoins this reserve (see area 4.4). However, the reserve still supports plentiful hippo Hippopotamus amphibius, as well as an outstanding avifauna of around 350 species. Among these are white pelican Pelecanus onocrotalus, pink-backed pelican P. rufescens, open-bill stork Anastomus lamelligerus, saddle-bill stork Ephippiorhynchus senegalensis, yellow-billed stork Ibis ibis, crested guineafowl Guttera edouardii, broadbill Smithornis capensis, Woodward's flycatcher Batis fratrunc, Natal thrush Turdus fischeri and Rudd's apalis Apalis ruddi (a rare species of extremely limited distribution). The crocodile Crocodylus niloticus (classified as 'vulnerable' in the Red Data Book and with a Natal population estimated at 800 in 1971 and largely confined to this and neighboring reserves) is still present, as are a large number of estuarine fish species.

ZONING: None

DISTURBANCES OR DEFICIENCIES: Development in the catchment area has affected water quality and quantity and increased salinity has affected mammals and birds. Some fish poaching occurs.

TOURISM: Camping sites and two huttered camps with accommodation. Boats are available for hire, also launch tours. The main interest of the area lies in bird watching and fishing, both under strict control. See St. Lucia Park (4.4) for further details.

SCIENTIFIC RESEARCH: Studies of hippopotamus biology, and of the fish and prawn ecology in the estuary, both directed towards management.
SPECIAL SCIENTIFIC FACILITIES
See St. Lucia Park

PRINCIPAL REFERENCE MATERIAL

STAFF
Shared with St. Lucia Park (q.v.)

BUDGET
Covered by that for St. Lucia Park (q.v.)

LOCAL PARK ADMINISTRATION
Officer in charge, Charter's Creek, Post Bag 7205, Mtubatuba 3935.
NAME Giant's Castle Game Reserve (Natal)

TYPE PP

Biotic Province 4.6.4/4.8.4

Legal Protection No information

Date Established 29 October 1903

Geographical Location West of Estcourt along the edge of the Drakensberg escarpment: S 29°00'; E 29°30'

Altitude 1400-3200 metres

Area 34,284 ha

Land Tenure Not specified

Physical Features A rugged area forming part of the Drakensberg escarpment and adjoining foothills and including the headwaters of the Buchmans and Little Tugela rivers. Geologically composed of a variety of rocks, basalt at the higher elevations, cave sandstones and others forming the lower strata. Mild summers; winters with some snow and frost. Average rainfall around 800 mm annually.

Vegetation About 30,000 ha of high altitude meadow (mid-grass prairie) and 4000 ha of broad-leaved cold deciduous woodland. The latter, which is fairly extensive, is of an open type dominated by Protea roupelliae and P. multibracteata together with the bottlebrush Greyia sutherlandi and yellowwood Podocarpus latifolius. There are also some small patches of Widdringtonia dracomontana, South Africa's only indigenous conifer. Tree ferns and ground orchids are also widespread.

Noteworthy Fauna Larger mammals include bushbuck Tragelaphus scriptus, eland Taurotragus oryx, grey duiker Sylvicapra grimmia, the reedbuck Redunca arundinum and R. fulvorufa, Vaal rhebok Pelea capreolus, blesbok Damaliscus dorcas, red hartebeest Alcelaphus buselaphus and black wildebeest Connochaetes gnou (both reintroduced) and probably klipspringer Oreotragus oreotragus and oribi Ourebia ourebi. Birds include the lammergeyer Gypaetus barbatus and black eagle Aquila verreauxi.

Zoning None

Disturbances or Deficiencies Some poaching and illegal burning

Tourism Accommodation provided in a small huttered camp; facilities for horse riding and 2-3 day guided tours. A museum is located at the site of a former bushman encampment. Trout fishing is available. 14,000 visitors in 1973/74.

Scientific Research Management studies of francolin, also burning experiments

Special Scientific Facilities None

Principal Reference Material None listed

Staff 5 officers (4 management, 1 tourist) and 40 game guards: total 45

Budget R. 17,000 (excluding salaries etc.) (U.S. $ 19,740)

Local Park Administration Officer-in-charge, Giant's Castle Game Reserve, Private Bag 755, Estcourt 3310, R.S.A.
SOUTH AFRICA

NAME Marion Island Reserve

TYPE NR

BIOTIC PROVINCE 7.1.2

LEGAL PROTECTION Total

DATE ESTABLISHED 29 December 1947

GEOGRAPHICAL LOCATION About 2000 km S.W. of Port Elizabeth, at western end of the Prince Edward-Crozet ridge: S 46°54'; E 37°45'

ALTITUDE Sea level to 1230 metres

AREA 29,000 ha

LAND TENURE Government land by annexation

PHYSICAL FEATURES An oceanic island formed by the summit of a shield volcano arising from the flank of the mid-ocean ridge. It is considered that two stages of intense volcanic activity were separated by a period of glaciation and tectonic adjustment leading to radial fracturing of the island. The lavas are all alkali basalts and trachy-basalts with typical flow characteristics and scoria cones having been built up over the vents and tuff cones formed near sea level. Cool temperate oceanic climate with frequent winds.

VEGETATION 35 species of vascular plant (all dwarf shrubs or graminoids) have been listed: they form closed plant communities only below 500 m in a mosaic of herbfield and mire areas; the montane vegetation, occupying the more rocky wind exposed plateaux and ridges, is very much sparser. Trees and tall shrubs are absent but over 40 bryophyte species have been identified.

NOTEWORTHY FAUNA The fur seal Arctocephalus tropicalis and the elephant seal Mirounga leonina, once in danger of extermination from fur hunters, have again become well established. Killer whales Orcinus orca are regularly seen offshore during the seal pupping season and the female seal moult. Twenty-five species of seabird are known to breed on the island and at least another half dozen visit it: they include penguins of four species (King, Gentoo, Rockhopper and Macaroni), Wandering and Sooty Albatrosses and numerous Procellariidae species.

ZONING The whole island has been given Strict Nature Reserve status.

DISTURBANCES OR DEFICIENCIES Sheep and fowls were brought in when the Meteorological Station was set up but this practice has now been stopped. Cats and mice were introduced unintentionally and research aimed at their extermination is underway.

SCIENTIFIC RESEARCH Weather observations since 1948, also programmes in the fields of botany, ornithology, mammalogy and geophysics.

SPECIAL SCIENTIFIC FACILITIES Fully equipped biological laboratory, and facilities for ionospheric, geomagnetic and meteorological observations.
PRINCIPAL REFERENCE MATERIAL

Marion and Prince Edward Islands - Report of the South African
Biological and Geological Expedition 1965/1966. A.A. Balkema,
Cape Town.

STAFF  Permanent staff of scientists relieved annually. Botanists are
usually resident for summer months only.

BUDGET  The Meteorological Station and scientific staff are supported by Central
Government funds.

LOCAL PARK ADMINISTRATION  Division of Meteorology, Department of Transport,
Republic of South Africa.
NAME | Mkuzi Game Reserve (Natal)

TYPE | PP

LEGAL PROTECTION | Total

DATE ESTABLISHED | 15 February 1912

GEOGRAPHICAL LOCATION | North-east Natal, 110 km north of Mtubatuba: S 27°40'–27°45'; E 32°15'

ALTITUDE | 40–400 metres

AREA | 25,091 ha

LAND TENURE | Not specified

PHYSICAL FEATURES | An undulating region extending from the southern foothills of the Lebombo mountains on the west towards the Mozambique coastal plain in the east. The mountains are volcanic in origin and the plains are of recent sands. The Mkuzi river and its tributaries flow through the area. The mainly sandy soils are interspersed with occasional patches of clay. The climate is hot in summer and dry in winter with an average annual rainfall of around 500 mm.

VEGETATION | Tropical drought-deciduous lowland woodland largely of Acacia spp. together with some sandveld and Combretum woodland, also open grasslands. A narrow fringe of gallery forest along the river contains some very large specimens of Ficus sycomorus.

NOTEWORTHY FAUNA | Larger mammals are well represented: spotted hyena Crocuta crocuta, serval Felis serval, leopard Panthera pardus, cheetah Acinonyx jubatus, zebra Equus burchelli, square-lipped rhino Ceratotherium simum simum, black rhino Diceros bicornis, warthog Phacochoerus aethiopicus, giraffe Giraffa camelopardalis, kudu Tragelaphus strepsiceros, nyala T. angasi, red duiker Cephalophus natalensis, grey duiker Sylvicapra grimmia, reedbuck Redunca arundinum, mountain reedbuck R. fulvorufa, wildebeest Connochaetes taurinus, klipspringer Oreotragus oreotragus, steenbok Raphicerus campestris, suni Nasotragus moschatus and impala Aepyceros melampus. The leopard, cheetah and black rhino are classified as 'vulnerable' in the Red Data Book, as is the Nile crocodile Crocodylus niloticus, which still occurs along the Mkuzi river.

ZONING | None

DISTURBANCES OR DEFICIENCIES | No natural permanent water exists and some poaching occurs. The area has been subjected to a wide range of disturbing influences in the past, the most marked being game eradication, spraying and habitat destruction. Herdsmen and their cattle were, however, excluded from the Reserve in the 1940s.

TOURISM | Facilities include a small hotted camp with 6 huts and a number of game-viewing hides. The number of visitors in 1973/74 was 13,224.

SCIENTIFIC RESEARCH | Current research is mainly directed to improving management

SPECIAL SCIENTIFIC FACILITIES | None
PRINCIPAL REFERENCE MATERIAL


STAFF 4 officers (including one tourist officer) and 30 game guards: total 34.

BUDGET Around R. 16,000 (U.S. $18,580), excluding salaries, fuel and transport.

LOCAL PARK ADMINISTRATION Officer in charge, Mkuzi Game Reserve, P.O. Mkuzi 3965.
NAME: Blyde River Nature Reserve (Transvaal)

TYPE: PP

LEGAL PROTECTION: Total

DATE ESTABLISHED: 1965

GEOGRAPHICAL LOCATION: 50 km north-east of Lydenberg, eastern Transvaal, near Graskop: S 25° 30'; E 30° 45'

ALTITUDE: 615-1723 metres

AREA: 24,000 ha

LAND TENURE: State lands

PHYSICAL FEATURES: A long narrow strip running north along the northern Drakensberg escarpment. The area extends from the high rainfall sourveld of the escarpment down to typical lowveld in the vicinity of Blyderivierspoort farm. Rainfall can vary from 355 mm to 1500 mm over a distance of just over 3 km. Rivers include the Blyde and Ohrigstad.

VEGETATION: A variety of different veld types are represented, including north-eastern mountain sourveld, lowveld sour bushveld, arid lowveld and mixed bushveld. Noteworthy flora includes the components of indigenous rain forests on the mountain slopes, especially three species of yellowwood Podocarpus spp., a fine stand of matumi trees Adina galpinii and the rare Prunus africana.

NOTEWORTHY FAUNA: All the five South African species of primate occur: the two bushbabies Galago crassicaudatus and senegalensis, chacma baboon Papio ursinus, the blue monkey Cercopithecus mitis and vervet monkey C. aethiops. Large herbivores include kudu Tragelaphus strepsiceros, bushbuck Tragelaphus scriptus, red duiker Cephalophus natalensis, grey duiker Sylvicapra grimmia, Vaal rhebok Pellea capreolus, oribi Cephalophus natalensis and impala Aepyceros melampus.

ZONING: None

DISTURBANCES OR DEFICIENCIES: The Blyde river dam has recently been erected at the confluence of the Blyde and Ohrigstad rivers. Gold mining was important in the last century, but is now only of historical interest.

TOURISM: A rest camp in the mountains can be reached by tarred road from Ohrigstad. 60 km of nature trails and six panoramic viewpoints are sited along the north-south escarpment road.

SCIENTIFIC RESEARCH: Investigations by staff and individual research workers

SPECIAL SCIENTIFIC FACILITIES: None

PRINCIPAL REFERENCE MATERIAL: None listed

STAFF: 3 officers (Officer in charge and 2 nature conservation officers) and 25 labourers: total 28.

BUDGET: Covered by the overall budget of the Transvaal Nature Conservation Branch.

LOCAL PARK ADMINISTRATION: None

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SOUTH AFRICA

NAME  Hluhluwe Game Reserve (Natal)

TYPE  PP

BIOTIC PROVINCE  4.6.4

LEGAL PROTECTION  Total

DATE ESTABLISHED  27 April 1897

GEOGRAPHICAL LOCATION  North-eastern Natal, 51 km north-west of Mtubatuba: S 28°00'; E 32°00'

ALTITUDE  100-550 metres

AREA  23,067 ha

LAND TENURE  Not specified

PHYSICAL FEATURES  Broken country with complex geology and soils, bisected by two perennial rivers, one being the Hluhluwe, which flows eastwards into the St. Lucia Lake. The climate is temperate with around 800 mm annual rainfall.

VEGETATION  1.1.3.1. Lowland semi-deciduous forest extends over about 3000 hectares in all, with species of Acacia and Cape chestnut Calodendron along the rivers, and also on the higher ground at the northern end of the reserve. The remaining 20,000 hectares are low level tropical drought-deciduous woodlands (2.2.1) or thornveld.

NOTEWORTHY FAUNA  Larger mammals include spotted hyaena Crocuta crocuta, lion Panthera leo, leopard P. pardus and cheetah Acinonyx jubatus, both classed as 'vulnerable' in the Red Data Book; the zebra Equus burchelli, the southern, nominate race of square-lipped rhino Ceratotherium simum, now no longer included in the Red Data Book, although its cousin the black rhino Diceros bicornis which also occurs, is rated as 'vulnerable'; wart hog Phacochoerus aethiopicus, hippo Hippopotamus amphibius, giraffe Giraffa camelopardalis, bushbuck Tragelaphus scriptus, kudu T. strepsiceros, nyala T. angasi, buffalo Syncerus caffer, red duiker Cephalophus natalensis, grey duiker Sylvicapra grimmia, wader K. ellipsiprymnus, wildebeest Connochaetes taurinus and impala Aepyceros melampus. About 100 cheetah and 200 black rhino form significant populations of these vulnerable species. Birdlife is plentiful and includes the marabou stork Leptoptilos crumeniferus, vultures and the ground hornbill Bucorvus leadbeateri.

ZONING  None

DISTURBANCES OR DEFICIENCIES  Some poaching and uncontrolled fires. In 1971, it was reported that plans had been drawn up for a barrage to be built on the Hluhluwe river but no information has been received about the outcome of this proposal.

TOURISM  Hutted camp with 70 beds. Maps and other literature on sale. The number of visitors in 1973/74 was 41,305.

SCIENTIFIC RESEARCH  Current research is management-oriented. Population biology and range management are specific problems under study.

SPECIAL SCIENTIFIC FACILITIES  Herbarium and laboratory
PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  10 officers, including 3 research, 2 tourist and 2 game capture specialists; 40 game guards.

BUDGET  R. 27,000 (excluding salaries), roughly equivalent to U.S. $ 29,800.

LOCAL PARK ADMINISTRATION  Officer in charge, Hluhluwe Game Reserve, P.O. Box 25, Mtubatuba, 3935.
NAME Loskop Dam Nature Reserve (Transvaal)

TYPE PP

BIOTIC PROVINCE 4.8.4

LEGAL PROTECTION Total

DATE ESTABLISHED 1940, enlarged in 1954

GEOGRAPHICAL LOCATION 35 km due north of Middleburg, 160 km NE of Johannesburg: S 25°22' - 25°31'; E 29°13' - 29°24'

ALTITUDE 994 - 1359 metres

AREA 12,762 ha

LAND TENURE State land enlarged by purchase of additional adjoining private property.

PHYSICAL FEATURES Hills and mountains surrounding an irrigation dam and its adjacent alluvial plain. The upper waters of the Olifants river flow all the year round into the dam and there are also a number of small seasonal springs and streams. Soils are immature, predominantly of sandstone and felsite with some dolerite. The average daily temperature is 30°C and it seldom reaches freezing point in winter; mean annual rainfall is between 500 mm and 625 mm.

VEGETATION A mixture of bushveld associations, mostly of a rather open character except for the areas of closed mixed grassland. The floodplain is dominated by open deciduous woodland, mainly of Acacia spp. and Euphorbia tiriucalli. Deciduous thorn scrub is well represented by mixed Acacia caffra and Combretum eplium communities. Other dominant species of the deciduous scrub elements are Diplorhynchus condylocarpon, Burkea africana and Mundulea sericea. The equally open evergreen scrub is mainly composed of Faurea saligna and Protea caffra. Among the more unusual species are Rauwolfia caffra, Notobuxus macowani, Jardinia heterophylla, water shield Brasenia schreberi and various cycads Encephalartos spp.

NOTEWORTHY FAUNA A number of large mammals occur naturally, others have been reintroduced. Species now to be seen include the Cape pangolin Manis temmincki, two carnivores rated by the Red Data Book as 'vulnerable' - the brown hyena Hyaena brunnea and leopard Panthera pardus, square-lipped rhino Ceratotherium simum simum, giraffe Giraffa camelopardalis, kudu Tragelaphus strepsiceros, nyala T. angasi, eland Taurotragus oryx, waterbuck Kobus ellipsiprymnus, the reedbucks Redunca arundinum and fulvorufa, Vaal rheeok Pelea capreolus, sable Hippotragus niger, wildebeest Connochaetes taurinus, klipspringer Oreotragus oreotragus, oribi Orebia ourebi and impala Aepyceros melampus. Reptiles include the Angola sand snake Psammophis angolensis and the Nile crocodile Crocodylus niloticus, another 'vulnerable' species.

DISTURBANCES OR DEFICIENCIES None reported

TOURISM Facilities for camping, angling and for boating trips on the lake; guided bus tours of the reserve.

SCIENTIFIC RESEARCH Game management and botanical research

SPECIAL SCIENTIFIC FACILITIES None
PRINCIPAL REFERENCE MATERIAL


STAFF
3 officers (Officer in charge and 2 conservation officers) and 30 labourers: total 33.

BUDGET
Covered by the overall budget of the Transvaal Nature Conservation Branch

LOCAL PARK ADMINISTRATION
None
NAME       St. Lucia Park (Natal)
TYPE       PP        BIOTIC PROVINCE  4.6.4
LEGAL PROTECTION No information
DATE ESTABLISHED 31 August 1939
GEOGRAPHICAL LOCATION Adjoining St. Lucia Game Reserve (No. 3.3 above):
S 28°00';  E 32°30'
ALTITUDE     Sea level to 30 metres
AREA        12,545 ha
LAND TENURE  Not specified

PHYSICAL FEATURES A section of coastal wetland and dune primarily consisting of
a 1 km strip bordering most of Lake St. Lucia, surrounded by the large St. Lucia
Reserve and together designed to conserve South Africa's major estuarine complex.
The Park is flat and the rainfall is high, about 2000 mm a year in the eastern part,
dropping to about 800 mm in the west.

VEGETATION Around 6000 ha is occupied by freshwater marsh, a further 5000 ha by
tropical drought deciduous lowland woodland and 1000 ha by swamp forest. The
marshland is dominated by reed Phragmites communis and papyrus Cyperus papyrus,
the groundwater forest by Barringtonia racemosa, Ficus hippopotami and Syzygium
cordatum and the woodland by Terminalia sericea, Acacia spp. and Trichilia emetica.
Some sections of the lake shore are lined by mangroves.

NOTEWORTHY SPECIES Mammals include the samango or diadem monkey Cercopithecus
mitis, leopard Panthera pardus, nyala Tragelaphus angasi, red duiker Cephalophus
natalensis, reedbuck Redunca arundinum and suni Nesotragus moschatus. A very rich
avifauna includes around 350 spp. (see under St. Lucia Game Reserve 3.3).
Reptiles include the gaboon viper Bitis gabonica in the groundwater forest and
Crocodylus niloticus, seven major breeding grounds of which were known in the Park
in the ten years ending 1973. The Nile crocodile and the leopard are both, of
course, classified as vulnerable species in the Red Data Book.

ZONING About 2000 ha have been zoned as wilderness, the rest as Conservation or
Recreation zones.

DISTURBANCES OR DEFICIENCIES Some fish poaching occurs. Dredging, water
regulation for agriculture, diversion of the Umfolozi River to flow direct to the
sea and extensive irrigation schemes have posed major problems, affecting both the
salinity and water levels on which much of the Park wildlife depends.

TOURISM Two small hutted camps, two campsites, one large and one small. The
number of visitors in 1974/75 was 16,385 to the Conservation area and around
120,000 to the Recreation area.

SCIENTIFIC RESEARCH Management oriented studies of fish and prawn ecology,
hippopotamus biology and crocodile rehabilitation.

SPECIAL SCIENTIFIC FACILITIES Small laboratory
PRINCIPAL REFERENCE MATERIAL


STAFF 13 officers (5 management, 2 research, 6 tourist) and 25 game guards: total 38.

BUDGET Excluding staff salaries and transport, R. 25,000 have been made available annually for the Conservation zone and R. 100,000 for the Recreation zone, making a total of R. 125,000 (U.S. $145,000).

LOCAL PARK ADMINISTRATION Officer in charge, Charters Creek, P/Bag 7205, Mtubatuba 3935.
Ndumu Game Reserve (Natal)

Protected as a provincial reserve under provincial statute: no disturbance permitted except for management purposes.

17 April 1924

Extreme north-east corner of Natal on Mozambique border: S 26°55'-27°00'; E 32°00'-32°30'

25-150 metres

10,117 ha

State ownership with control vested in the provincial government

Very flat, except for a few small hills, comprising part of the floodplains of the meandering Usutu and Pongola rivers, and in effect a southern extension of the Mozambique plain. There are numerous shallow pans permanently filled with water. Soils are predominantly sandy. Hot in summer and warm in winter, with around 1000 mm rainfall per annum.

Over 7000 ha are occupied by tropical drought-deciduous forest dominated by Acacia gilletiae, A. nigrescens, Spirostachys africana, A. tortilis, Combretum spp. and Albizia spp. Freshwater swamps with reed Phragmites, Sorghum verticillatum and Setaria chevalieri occupy about 2000 ha of the flood plain. Dominant species of the 500 ha or so of riverine forest are Ficus sycomorus, Syzygium guineense, Rauwolfia caffra and Trichilia emetica. Finally, there are about 500 ha of dry forest of which Cleistanthus schlechteri and Newtonia hildebrandtii are typical components.

Mammals include the serval Felis serval, leopard Panthera pardus, square lipped rhino Ceratotherium simum, black rhino Diceros bicornis, bushpig Potamochoerus porcus, hippo Hippopotamus amphibius, bushbuck Tragelaphus scriptus, nyala T. angasi, red duiker Cephalophus natalensis, grey duiker Sylvicapra grimmia, reedbuck Redunca arundinum, suni Nesotragus moschatus and impala Aepyceros melampus; of these the Leopard and black rhino rate as vulnerable species in the Red Data Book. Some 380 species of birds have been recorded, notably black stork Ciconia nigra, open-bill stork Anastomus lamelligerus, saddle-bill stork Ephippiorhynchus senegalensis, yellow-billed stork Ibis ibis, crested guineafowl Guitera edouardi, Cape eagle owl Bubo capensis, fishing owl Scopoleia peli, broadbill Smithorinis capensis and Rudd's apalis Apalis ruddi. The crocodile Crocodylus niloticus, also now regarded as a vulnerable species, is still present.

Veld management policies and population control are necessary. Controlled hunting is permitted; fire is used in management. Profound effects of recent settlement is diminishing.

Small hutted camp of 7 bungalows. The total number of visitors in 1973/74 was 2196.

Mainly directed towards management problems. The transitional character of the flora and fauna from subtropical to tropical species which are not found much further south, is however of particular interest to scientists.
SPECIAL SCIENTIFIC FACILITIES

None

PRINCIPAL REFERENCE MATERIAL


POOLEY, A.C. 1965. A preliminary check-list of the reptiles found within the Mkusi and Ndumu Game Reserves. The Lammergeyer 3(2): 41-55.

STAFF

4 officers (1 for tourism, 3 for management) and 25 game guards: total 29.

BUDGET

R. 8000 (excluding salaries, transport, postage, fuel etc.) (U.S. $ 9290).

LOCAL PARK ADMINISTRATION

Officer in charge, Ndumu Game Reserve, P.O. Ndumu 3972, Natal.
NAME Royal Natal National Park (Natal)
TYPE NP

BIOTIC PROVINCE 4.6.4/4.8.4
LEGAL PROTECTION Total
DATE ESTABLISHED 19 September 1916

GEOGRAPHICAL LOCATION Part of the Drakensberg escarpment in the extreme western corner of Natal and 88 km west of Ladysmith: S 28°30'; E 29°00'
ALTITUDE 1300-3299 metres (summit of Mont-aux-Sources)
AREA 8,856 ha

LAND TENURE Not specified

PHYSICAL FEATURES Part of the Drakensberg escarpment, dominated by the Amphitheatre, a sheer drop of about 1000 metres. The Park also includes part of the Drakensberg foothills and one of the sources of the Tugela River. The climate is warm in summer and cold enough in winter for frost and occasional snow.

VEGETATION Approximately 8,500 hectares are mid-grass prairie (5.2.2), the remaining 350 ha alpine pastures (5.3.2). Isolated patches of Podocarpus forest also survive.

NOTEWORTHY FAUNA Larger mammals include mountain reedbuck Redunca fulvorufula, Vaal rhebuck Peles capreolus, white tailed (or black) wildebeest Connochaetes gnou, blesbok Damaliscus dorcas and klipspringer Oreotragus oreotragus. Over 180 bird species have been recorded, including the black eagle Aquila verreauxii.

ZONING None

DISTURBANCES OR DEFICIENCIES Tourist facilities are sited in the heart of the Park, thus increasing disturbance which would have been much less had they been on the eastern periphery.

TOURISM Modern hotel and Park headquarters at Mont-aux-Sources; there is also a huddled camp with 40 beds. The number of visitors in 1973/74 was 43,893.

SCIENTIFIC RESEARCH Management-oriented research

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL None listed

STAFF Twenty-four, consisting of 4 Officers (2 management and 2 tourism) and 20 Game guards.

BUDGET R. 11,500 (not including salaries), equivalent to about U.S. $ 12,750.

LOCAL PARK ADMINISTRATION Officer in Charge, Royal Natal National Park, P.O. Mont-aux-Sources, 3353.
SOUTH AFRICA

NAME Addo Elephant National Park

TYPE NP

BIOTIC PROVINCE 4.6.4

LEGAL PROTECTION Total

DATE ESTABLISHED 17 June 1931

GEOGRAPHICAL LOCATION About 50 km NNE of Port Elizabeth, Eastern Cape Province: S 33°31'; E 25°45'

ALTITUDE 75-341 metres

AREA 6,852 ha

LAND TENURE National government ownership

PHYSICAL FEATURES A series of low undulating hills with a higher ridge on the east. Geologically composed of sandstones and mudstones of the Sundays River stage of the Uitenhage series of the upper Cretaceous. Soils are light red clay loams. Water is supplied by pipeline from Caesar’s dam in the south-west corner of the park and by three boreholes. Average annual precipitation is 442 mm.

VEGETATION 90 per cent of the area is covered by dense scrub dominated by Portulacaria afra, thickly matted and from 1-4 m high. Other common species are Schotia afra, Euclea undulata, Capparis sepiaria var. citrifolia, Azima tetracantha, Sarcostemma viminalis and Rhoicissus digitata. Other plant associations are coastal bush of Sideroxylon inerme, Schotia afra and Pterocelastrum tricuspidatum; Karroo bushveld with low shrubs such as Pentzia globosa, Lampranthus productus and Ruschia spp.; and a mixed shrub, grassland and Bontveld consisting of scattered clumps of Maytenus heterophylla, Rhus incisa and Grewia occidentalis in grassland of Themeda triandra, Panicum deustum and Digitaria eriantha.

NOTEWORTHY FAUNA Larger mammals include the black-backed jackal Canis mesomelas, elephant Loxodonta africana (one of the most southerly populations in Africa), black rhino Diceros bicornis (a 'vulnerable' Red Data Book species), bushpig Potamochoerus porcus, greater kudu Tragelaphus strepsiceros, bushbuck T. scriptus, eland Taurotragus oryx, buffalo Syncerus caffer, grey duiker Sylvicapra grimmia, red hartebeest Alcelaphus buselaphus caama and Cape grysbok Raphicerus melanotis. A total of 126 bird species has been recorded.

ZONING Strict Nature Reserve status with tourist development confined to one site.

DISTURBANCES OR DEFICIENCIES Limited poaching occurs irregularly but does not pose a threat.

TOURISM Restaurant and accommodation for up to 18 overnight visitors but most visitation confined to day trips. An elephant waterhole in front of the restaurant is floodlit. Viewing and patrol roads have been constructed.

SCIENTIFIC RESEARCH Projects undertaken by universities, museums and other institutions; the research officer for southern parks is based here.

SPECIAL SCIENTIFIC FACILITIES Well equipped laboratory with reference herbarium.
PRINCIPAL REFERENCE MATERIAL

ANON. The Addo elephants. National Parks Board of Trustees, Pretoria.

STAFF  4 officers (nature conservation, tourism and technical services) and a supporting staff of 24, totalling 28.

BUDGET  About R. 150,000 (U.S. $ 174,200)

LOCAL PARK ADMINISTRATION  The Nature Conservator, Private Bag 6027, Port Elizabeth 6000.
NAME  Cape of Good Hope Nature Reserve (Cape Province)

TYPE  FP

BIOTIC PROVINCE  4.5.1

LEGAL PROTECTION  Total

DATE ESTABLISHED  1939

GEOGRAPHICAL LOCATION  Southern tip of the Cape peninsula: S 34°15'; E 15°25'

ALTITUDE  Sea level to 360 metres

AREA  6700 ha

LAND TENURE  Not specified

PHYSICAL FEATURES  The Reserve is roughly triangular, its apex the 250 m sea-cliffs of Cape Point which are unique in South Africa. The high ridge on the east culminates in three peaks and has cliffs along its seaward side; to the north the hills rise to 220 m and the central plateau slopes from about 180 m in the east to 60 m in the west. The shore tends to be rocky, interspersed with a number of sandy beaches, but there are stretches of dunes in all stages of stabilization and along one 2 km sector a brackish lagoon runs parallel to the coast. There is a fairly large lake in the north, fed by a spring, but permanent fresh water is otherwise scarce. Soils are skeletal. The Atlantic and Indian ocean water temperature varies by 6°C or more.

VEGETATION  Falls into four main groups: (a) Coastal 'fynbos' consisting of an open coast-shelf Kapok-bush Erioccephalus type (260 ha), a scrubby dune type of Metalasia muricata, Leucadendron sabulosum, Thamnochortus erectus and Ifloga pentalacta (800 ha), the Colomnema type (97 ha) and the marshy Helichrysum-Scirpus type (22 ha); (b) Inland fynbos comprising an upland mixed type of open dwarf scrub dominated by Aspalathus, Metalasia, Elegia, Salaxis, Leucospermum and Passerina (2544 ha), a tall type mostly of Protea lepidocarpodendron (285 ha), a Protea arborea pseudo-savanna type (23 ha), a plateau type of Restionaceae and Leucodendron decorum (1260 ha), another Restionaceous tussock-marsh type (1275 ha), a Bergenia-Osmorhiza seepage steppe type (113 ha) and a Paecala pseudo-savanna type (7 ha); (c) Tall sclerophyllous scrub of Sideroxylon (165 ha) and a Maurocenis-Linociera association; and (d) Thickets of introduced Acacia and Pinus. The Flora includes 29 species of interest of which 19 may find their last refuge in the reserve and 10 are endemic, namely five species of Erica, Combera maritima, the orchid Disa salteri, Elegia fenestrata, Cladiolus prismatocophus and the heath-like Staavia doddii.

NOTeworthy Fauna  A number of large herbivores, notably zebra Equus burchelli and eland Taurotragus oryx, have been introduced. Other antelopes include red hartebeest Alcelaphus buselaphus caama, bontebok Damalisus dorcas dorcas, steenbok Raphicerus campestris and gryshok R. melanotis.

DISTURBANCES OR DEFICIENCIES  Introduced herbivores may well be causing damage to the unique flora and in general a more consistent scientific management policy is essential.

TOURISM  Recreational facilities are being developed and may also be increasing the pressure on some of the more vulnerable habitats.

SCIENTIFIC RESEARCH  None noted
SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL


STAFF  No information

BUDGET  No information

LOCAL PARK ADMINISTRATION  No information
SOUTH AFRICA

NAME Mountain Zebra National Park

TYPE NP

BIOTIC PROVINCE 4.8.4/4.5.1

LEGAL PROTECTION Total

DATE ESTABLISHED 14 June 1937

GEOGRAPHICAL LOCATION Due north of Port Elizabeth, about 15 km south of Cradock:
S 32°15’; E 25°36’

ALTITUDE 1200-1957 metres

AREA 6,536 ha

LAND TENURE State ownership (purchased from previous owners).

PHYSICAL FEATURES An amphitheatre on the northern slopes of the Bankberg, bisected by the Wilgerboom River and including an adjoining plateau. Geologically composed of sandstone, siltstone and mudstone of the Lower stage of the Beaufort series, Karoo system, with some post-Karoo dolerite intrusions. A few snowfalls occur each winter. Average annual precipitation is 364 mm.

VEGETATION Mainly dry grassland plentifully scattered with dwarf shrubs and forbs. Dense stands of trees and taller shrubs occur along watercourses and in sheltered areas, composed mainly of Acacia karroo, Celtis africana, Cussonia paniculata, Rhus spp. and Maytenus heterophylla. Aloes of note include Aloe broomii, A. ferox and A. striata.

NOTEWORTHY FAUNA Besides the Cape mountain zebra Equus z. zebra, classified as 'vulnerable' in the Red Data Book, for which the Park was created, it protects a population of the formerly endangered black wildebeest Connochaetes gnou; other large mammals are baboon Papio ursinus, vervet monkey Cercopithecus aethiops, bat-eared fox Otocyon megalotis, aardwolf Proteles cristatus, eland Taurotragus oryx, grey duiker Sylvicapra grimmia, mountain reedbuck Redunca fulvorufa, Vaal rnhker Felea capreolus, gemsbok Oryx gazella, blesbok Damaliscus dorcas phillipsi, red hartebeest Alcelaphus buselaphus caama, klipspringer Oreotragus oreotragus, steenbok Raphicerus campestris and springbok Antidorcas marsupialis. A total of 153 bird species have been recorded: among the most notable is a breeding population of the black eagle Aquila verreauxii and the ground woodpecker Geocolaptes olivaceus, which is relatively common.

ZONING Strict Nature Reserve status has been given to the whole area.

DISTURBANCES OR DEFICIENCIES Cultivated lands in the valley bottoms are now reverting to natural condition following establishment of the Park.

TOURISM Mainly day visitors but accommodation available for up to 20. One of the homesteads (about 100 years old), on one of the farms incorporated in the Park by purchase in 1964, now serves as a museum of cultural history.

SCIENTIFIC RESEARCH One of the research officers for southern parks is stationed here. Research workers from outside institutions, such as universities and museums, also undertake work in the Park.

SPECIAL SCIENTIFIC FACILITIES Limited at present: a laboratory is being planned. A good reference herbarium exists.
PRINCIPAL REFERENCE MATERIAL

STAFF 3 officers (nature conservation, tourism and technical services) and 24 supporting staff: total 27.

BUDGET About R. 75,000 (U.S. $ 87,100).

LOCAL PARK ADMINISTRATION The Nature Conservator, P.O. Box 205, Cradock 5880.
SOUTH AFRICA

NAME Hans Merensky Nature Reserve (Transvaal)

TYPE PP

BIOTIC PROVINCE 4.65

LEGAL PROTECTION Total, but some controlled hunting is permitted.

DATE ESTABLISHED 1954

GEOGRAPHICAL LOCATION Northern Transvaal, about 120 km south-east of Louis Trichardt: S 23°39'; E 30°40'

ALTITUDE 434-542 metres

AREA 5,185 ha

LAND TENURE Provincial government ownership by purchase

PHYSICAL FEATURES Mainly flat table-land, composed of gneissic granites, with a few dolerite hills formed by a dyke along the eastern boundary; the soils are mildly acid and generally of a sandy or loamy texture, while those derived from the Black Hills in the east are doleritic. There are some low-lying patches of highly saline soils and one thermal spring.

VEGETATION Low-veld bush communities in which a dominant element is the grass Pogonarthria squarrosa. This is associated with another grass Microchloa caffra, Cyperus demudatus or Acacia nigrescens. Areas without Pogonarthria are dominated by a variety of trees and shrubs such as Rhus guenzii, Zizyphus mucronata and Hibiscus micranthus. There are also patches of mopane bush Colophospermum mopane and 'rooibos' Combretum spp.

NOTEWORTHY FAUNA The typical low-veld mammals protected by the Reserve are spotted hyaena Crocuta crocuta, brown hyaena Hyaena brunnea (rated a 'vulnerable' species by the Red Data Book), zebra Equus burchellii, giraffe Giraffa camelopardalis, greater kudu Tragelaphus strepsiceros, waterbuck Kobus ellipsiprymnus, reedbuck Reduncus arundinum, sable Hippotragus niger, tsessebe Damaliscus lunatus, brindled gnu or blue wildebeest Connochaetes taurinus and impala Aepyceros melampus.

ZONING None

DISTURBANCES OR DEFICIENCIES Encroachment by mopane bush is a problem. Past mismanagement has caused erosion and deterioration of some of the habitats. Although the hunting allowed is strictly controlled it may cause some disturbance.

TOURISM The main camping place is at the thermal spring. Sightseeing tours to the Tsonga kraal and other features of the Reserve are provided.

SCIENTIFIC RESEARCH Botanical and game management research programmes.

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL


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STAFF  4 Nature Conservation Officers (2 concerned with law-enforcement).

BUDGET  No information

LOCAL PARK ADMINISTRATION  None.
NAME: Golden Gate Highlands National Park

TYPE: NP

LEGAL PROTECTION: Total

DATE ESTABLISHED: 13 September 1963

GEOGRAPHICAL LOCATION: Between Bethlehem and the northernmost point of the Lesotho border, Orange Free State: S 28°31'; E 28°37'

ALTITUDE: 1798-2731 metres

AREA: 4,792 ha

LAND TENURE: State ownership

PHYSICAL FEATURES: An upland area well known for its impressive mountain scenery. Altitude ranges from the level of the Klein-Caledon River at 1798 m up to the highest point, Generaalskop, 2731 m, a rise of about 1000 m over a distance of about 8 km. The climate is generally cool or cold with mean temperatures ranging from 6.1°C to 21.7°C. Snowfalls are frequent in winter and annual precipitation is around 716 mm, with peaks between November and March.

VEGETATION: A distinctive high-altitude flora: virtually the whole area is grassland, an abundance of bulbous plants (geophytes) indicating the importance of fire as an environmental factor. Some 65 species of gramineae have been identified, among them Agrostis, Andropogon, Danthonia, Erhogrostis and Helicotrichon spp., Paspalum dilatatum and Rhyynchelystum setifolium. Woody plants include Protea roupelliae, kiepersol Cussonia paniculata, Rhus, Diospyros spp. and Asparagus spp. Bulbous plants include Asparagus spp., and the pine-apple flower Eucomis bicolor, Gladiolus spp., Hypoxis spp., red-hot poker Kniphofia triangularis and Zantedeschia oculata. Succulents include Aloe ecklonis, Crassula spp. and Euphorbia spp. Plants with temperate affinities include Stoebe vulgaris, Erica spp. and Cliffortia sp. Over 200 flowering plants occur as well as 14 Pteridophytes.

NOTEWORTHY FAUNA: A number of herbivores were re-introduced following the establishment of the park, such as Burchell's zebra Equus burchelli, eland Taurotragus oryx, blesbok Damalisus dorcas phillipsei, red hartebeest Alcelaphus buselaphus caama, black wildebeest Connochaetes gnou and springbok Antidorcas marsupialis.

ZONING: Strict Nature Reserve status has been applied to the whole park.

DISTURBANCES OR DEFICIENCIES: Illegal removal of plants.

TOURISM: Tourist camps at Brandwag and Glen Reenen; access by road but tourists encouraged to walk and hike along mountain trails.

SCIENTIFIC RESEARCH: Mainly basic survey of the major botanical and zoological taxa.

SPECIAL SCIENTIFIC FACILITIES: None at present.
PRINCIPAL REFERENCE MATERIAL


STAFF 19 officers (2 nature conservation, 17 tourism and technical services) and a supporting staff of 93: total 112.

BUDGET About R. 375,000 (U.S. $ 435,500)

LOCAL PARK ADMINISTRATION Officer-in-Charge, Nature Conservation Dept., Golden Gate Highlands National Park, P.O. Golden Gate via Bethlehem 9708.
NAME Prince Edward Island

TYPE NR

BIOTIC PROVINCE 7.1.2

LEGAL PROTECTION Total

DATE ESTABLISHED 4 January 1948

GEOGRAPHICAL LOCATION 2000 km SW of Port Elizabeth at western extremity of the Prince Edward-Crozet ridge: S 46°38'; E 37°59'30"

ALTITUDE Sea level to 722 metres

AREA 4,400 ha

LAND TENURE Government land by annexation

PHYSICAL FEATURES Like the larger Marion Island (listed Area 3.5), which lies 22 km to the south, Prince Edward is the summit of a shield volcano formed on the western flanks of a mid-oceanic ridge and has been subjected to alternating phases of explosive and effusive eruptions. Two stages of intense volcanic activity were separated by a period of glaciation. The effects of minor sea level changes have probably been masked by isostatic movements. At present the highest cliff on the south-west, facing Marion, rises 457 m sheer from the sea. Cold temperate oceanic climate with high winds.

VEGETATION A total of 35 vascular plants have been recorded from Prince Edward and Marion Island and a considerable number of bryophytes. There are no trees or tall shrubs and lowland plant communities consist of a mosaic of herbfields and mires, largely confined to the more sheltered eastern end of the island.

NOTEWORTHY FAUNA The fur seal Arctocephalus tropicalis and the elephant seal Mirounga leonina have become re-established following earlier fear of extermination due to fur hunters. Killer whales Orcinus Orca are regularly seen offshore at the time of seal pupping and of the female seal moult. Compared with Marion Island, the avifauna of Prince Edward has been little studied due to the difficulty of making a landing or finding shelter, but no doubt most of the 30 or so seabird species recorded as breeding on or visiting Marion also do so on Prince Edward.

ZONING Strict Nature Reserve status applies to the whole of this totally uninhabited island.

DISTURBANCES OR DEFICIENCIES None reported and probably none have ever occurred except for occasional raids by sealers.

SCIENTIFIC RESEARCH Undertaken as part of programmes based on Marion Island

SPECIAL SCIENTIFIC FACILITIES None but see under Marion Island (No. 3.5)

PRINCIPAL REFERENCE MATERIAL

STAFF  None, but the Marion Island staff (q.v.) hold a watching brief and make very occasional visits

BUDGET  None, but supervision is covered by the Central Government allocation for the upkeep of Marion Scientific and Meteorological Station

LOCAL PARK ADMINISTRATION  Division of Meteorology, Department of Transport, Republic of South Africa.
NAME Loteni Nature Reserve (Natal)

TYPE PP

BIOTIC PROVINCE 4.6.4

LEGAL PROTECTION Total

DATE ESTABLISHED 2 April 1953

GEOGRAPHICAL LOCATION 90 km west of Pietermaritzburg, in a valley leading up to Giant's Castle peak: S 29°55' E 29°15'

ALTITUDE 1300-2000 metres

AREA 3,984 ha

LAND TENURE Not specified

PHYSICAL FEATURES Steep slopes of Drakensberg foothills with underlying sandstone, a very rugged landscape and several waterfalls. The climate is characterized by warm summers and cold winters with occasional snow but frequent frosts. Rainfall is about 800 mm annually.

VEGETATION The great part of the area (3500 ha) is mid-grass prairie (5.2.2), but Protea savanna, with P. roupelliae and P. multibracteata forming a scrub (3.2.3.1/3.2.3.3), covers the remaining 500 hectares.

NOTEWORTHY FAUNA Mammals include the serval Felis serval, eland Taurotragus oryx, reedbuck Redunca arundinum, mountain reedbuck R. fulvorufa, Vaal rhebuck Pelea capreolus, klipspringer Oreotragus oreotragus and oribi Ourebia ourebi. The most notable bird is the lammergeyer Gypaetus barbatus of the southern race meridionalis, which was classified as 'rare' in the first edition of the Red Data Book.

ZONING None

DISTURBANCES OR DEFICIENCIES Drainage and other soil disturbance are the most significant present impacts. Careless or uncontrolled grass fires are also a problem.

TOURISM There is a small hatted camp and riding-horses are available for hire. Visitors in 1973/74 totalled 3994.

SCIENTIFIC RESEARCH Range management studies, partly based on a specially maintained herd of domesticated eland.

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL None listed

STAFF Two Officers and 15 Game guards.

BUDGET R. 5000 (excluding salaries) or about U.S. $ 5520

LOCAL PARK ADMINISTRATION Officer in Charge, Loteni Nature Reserve, P.O. Box 14, Himeville, 4585.
NAME  Tsitsikama Forest and Coastal National Park

TYPE  NP-M

BIOTIC PROVINCE  4.5.1

LEGAL PROTECTION  Total protection of all fauna and flora except for restricted rock angling; spearfishing prohibited.

DATE ESTABLISHED  4 December 1964

GEOGRAPHICAL LOCATION  On Indian Ocean coast, southern Cape Province, 150 km west of Port Elizabeth and 85 km east of Knysna: S 33°58'; E 23°34'-24°15'

ALTITUDE  From 35 metres below sea level up to 120 metres a.s.l.

AREA  3,318 ha (forest section 478 ha, coastal section 2,840 ha, about half of which is water)

LAND TENURE  State ownership

PHYSICAL FEATURES  The forest, close to the township of Stormsrivier in the centre of the area, is located on a plateau the southern edge of which drops 120 m abruptly to the rockbound, almost beachless shoreline. Various rivers have cut gorges through the plateau which consists largely of Table Mountain sandstone of Paleozoic age. Other rocks include shales and tillites of the same series. The coastal strip extends over 64 km from the mouth of the Groot River in the east to Nature's Valley in the west, near which there is a placid lagoon and 1.6 km of sandy beach. Annual rainfall is around 1000 mm.

VEGETATION  The forest represents the largest southern outlier of the tropical forest belt, surrounded and partly invaded by typical Cape macchia. The dominant forest species are giant yellowwoods Podocarpus falcatus, and P. latifolius, Ocotea bullata, saffron-wood Cassine crocea, Cunonia capensis, Nuxia floribunda, Rapanea melanophloeos and Olea capensis. Macchia elements include Protea, Leucadendron, Leucospermum and Erica spp. Many Iridaceae occur including bugle-lily Watsonia and Gladiolus spp. The marine flora includes both warm and cold water species.

NOTEWORTHY SPECIES  Many marine mammals are visitors to the bays and coves, for example hump-backed dolphin Sousa sp., striped or blue-white dolphin Stenella coeruleoalba, common dolphin Delphinus delphis, bottlenose dolphin Tursiops truncatus, southern right whale Eubalaena australis and occasional Cape fur seal Arctocephalus pusillus. Most abundant of the terrestrial mammals are bush pig Potamochoerus porcus, bushbuck Tragelaphus scriptus, blue duiker Cephalophus monticola and Cape grysbok Raphicerus melanotis. 210 bird species include crowned eagle Stephanoaetus coronatus, fish eagle Cunecoma vocifer, brown-necked parrot Poicephalus robustus, Knysna lourie Tauraco corythaix, wood owl Glaucous wooddori, Knysna scrub warbler Bradypterus sylvicola and Victorin's scrub warbler R. victorini, both of them species of very restricted distribution, and Cape sugarbird Promerops afer. Snakes are common, the most dangerous being the boomslang Dispholidus typus. Freshwater fish life is very poor but over 400 species of marine fish occur of which almost 50% are endemic due to the location of the park between two major current systems.

ZONING  Strict nature reserve status applies to the forest and shoreline

DISTURBANCES OR DEFICIENCIES  Spread of exotic vegetation, although active steps have been taken to check it.
TOURISM One resthouse with accommodation for 80 and extensive camping facilities. Hiking trail along coast and underwater trail, also canoe trips. Open air museum with a full range of interpretive material. There were 40,000 visitors in 1971.

SCIENTIFIC RESEARCH Permanent research officer conducting various surveys and population studies. Projects also undertaken by outside institutions. These range from study of intertidal areas to dolphin monitoring.

SPECIAL SCIENTIFIC FACILITIES Laboratory, small research vessel and reference herbarium.

PRINCIPAL REFERENCE MATERIAL

STAFF 13 officers (nature conservation, tourism and technical services) and a supporting staff of 60: total 73.

BUDGET About R. 262,000 (U.S. $ 304,260)

LOCAL PARK ADMINISTRATION The Nature Conservator, P.O. Stormsrivier 6308, R.S.A.
NAME Umtamvuna Nature Reserve (Natal)

TYPE PP BIOTIC PROVINCE 4.6.4

LEGAL PROTECTION Total

DATE ESTABLISHED 25 June 1971

GEOGRAPHICAL LOCATION Extreme south-eastern corner of Natal, on the coast near Port Edward: S 31°10'; E 30°10'

ALTITUDE Sea level to 300 metres

AREA 3137 ha

LAND TENURE Not specified

PHYSICAL FEATURES One side of a steep gorge on the course of the Umtamvuna River, near to where it enters the sea. Also included within the boundaries is a stretch of open grassy plain with sandy soil. Climatically the Reserve is very hot in summer and mild in winter.

VEGETATION The grassy plains extend over about half the Reserve (1500 ha) and are dominated by species of medium height (5.2.2.). The remaining 1500 hectares support a lowland seasonal forest (1.1.2.1), which is an excellent example of sub-tropical to temperate coastal forest. The cycad Encephalartos natalensis can be found on the cliffs.

NOTEWORTHY FAUNA Among the few surviving large mammals are bushbuck Tragelaphus scriptus and blue duiker Cephalophus monticola. Many species of birds have been recorded, but no details are given.

ZONING None

DISTURBANCES OR DEFICIENCIES Some poaching occurs. Half of the area falls within the proposed Kwa Zulu homeland.

TOURISM A Nature Trail exists and the area has a few casual visitors.

SCIENTIFIC RESEARCH A botanical survey has been undertaken.

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL None listed

STAFF Officer and 10 Game Guards.

BUDGET R. 5000 (excluding salaries), equivalent to about U.S. $ 5520.

LOCAL PARK ADMINISTRATION Officer in Charge, Umtamvuna, P.O. Port Edward 4295.
SOUTH AFRICA

NAME Rustenburg Nature Reserve (Transvaal)

TYPE PP

BIOTIC PROVINCE 4.8.4

LEGAL PROTECTION Total

DATE ESTABLISHED 1962

GEOGRAPHICAL LOCATION Western end of the Magaliesberg range, 125 km due west of Pretoria: S 25°40'; E 27°15'

ALTITUDE 1220-1680 metres

AREA 2,898 ha

LAND TENURE Presented to the Transvaal provincial administration by the town council of Rustenburg in 1966.

PHYSICAL FEATURES A high plateau of the Magaliesberg mountains south-west of Rustenburg, much dissected and cut by the deep gorge of the Rietvlei river, the north-west boundary. The plateau is surrounded by steep cliffs on all sides except the north where steep slopes lead down to the bushveld. Features of scenic interest include attractively weathered quartzite and views over the bushveld. Soils are shallow podsols or lithosols, often gravelly. Average annual rainfall is around 750 mm.

VEGETATION The plant communities are varied, mostly tree or scrub savanna but also extensive grasslands. The main scrub species is Protea caffra (dominating some 200 ha). Small areas of this protea in association with Acacia caffra and of Croton subgratissimum form the only approach to tree cover. Tall grasslands of Trachypogon spicatus and Loudetia simplex account for 300 ha and a somewhat smaller area is dominated by Coleochloa setifera and Themeda triandra. Scattered trees and shrubs in the grasslands include Faurea saligna, Combretum xeyheri, Burkea africana and Bequaertiodendron megaliomontanum. Over 600 species have been identified including 80 Gramineae. The monotypic Frithia pulchra and Aloe peglerae are among the rarer species of limited distribution to be found in the Reserve.

NOTEWORTHY FAUNA Larger mammals are represented by brown hyaena Hyaena brunnea, aardwolf Proteles cristatus, leopard Panthera pardus, aardvark Orycteropus afer, reedbuck Redunca arundinum, mountain reedbuck R. fulvorufa, sable Hippotragus niger, white-tailed gnu Connochaetes gnou, klipspringer Oreotragus oreotragus and oribi Ourebia ourebi. The hyaena and leopard are classified as 'vulnerable' in the Red Data Book. The gnu or black wildebeest, formerly endangered, is now represented by substantial populations in this and other reserves and on the private farms where it is given protection.

ZONING None

DISTURBANCES OR DEFICIENCIES The only one noted arises from the construction of access roads but no details are given.

TOURISM Camping facilities are available.

SCIENTIFIC RESEARCH Projects on game management; taxonomic surveys of small mammals, reptiles and the flora.

SPECIAL SCIENTIFIC FACILITIES None

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PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  Officer in charge and 15 labourers: total 16.

BUDGET  Covered by the overall budget of the Transvaal Nature Conservation Branch.

LOCAL PARK ADMINISTRATION  None
SOUTH AFRICA

NAME Bontebok National Park

TYPE NP

BIOTIC PROVINCE 4.5.1

LEGAL PROTECTION Total

DATE ESTABLISHED Originally sited at Bredasdorp in 1931, but moved to the vicinity of Swellendam during 1960 and subsequently enlarged.

GEOGRAPHICAL LOCATION About 210 km due east of Cape Town, Cape Province: S 34°2'; E 20°25'-20°30'

ALTITUDE 90-200 metres

AREA 2,786 ha

LAND TENURE State ownership (formerly the commonage of the town of Swellendam).

PHYSICAL FEATURES A series of gently undulating gravel terraces descending from a rocky plateau through sand and boulders to an alluvial plain. The flats in the south-east are surrounded by low hills and the Breede river, which forms the south-western boundary, provides the only water supply. 90% of the surface is gravel and alluvium but the cliffs along the river belong to the Witteberg series of the Cape system. Soils are immature brown earths and podsol, shallow lithosols and deep alluvial sand.

VEGETATION Some 13 plant associations have been distinguished, largely composed of low shrubs 30-70 cm high. The brown earth hill soils support about 620 ha of evergreen sclerophyllous scrub dominated by Leucadendron spp., Protea repens, Erica diaphana and Cliffortia ruscifolia. Microphyllous scrub ('renosterbos') of Elytropappus rhinocerotis occupies 420 ha of the flats and lower terrace slopes. Open Acacia karroo scrub has spread over about 40 ha of recent alluvium and scattered plants of Aloe ferox occur on 5 ha along the river. The river banks also support some tall trees of such species as Podocarpus elongatum, Chilianthus arboreus, Sideroxylon inerme, Pterocelastrus tricuspidatus and Rapanea melanophloeos.

NOTEWORTHY FAUNA Mammals include the aardwolf Proteles cristatus, eland Taurotragus oryx, Vaal rhebok Pelea capreolus, bontebok Damaliscus dorcas dorcas, for the rehabilitation of which the reserve and its predecessor at Bredasdorp were created, red hartebeest Alcelaphus buselaphus caama, Cape grysbok Raphicerus melanotis and springbok Antidorcas marsupialis. All the antelope species were introduced. A total of 144 recorded bird species include the very localized francolin Francolinus capensis, sugarbird Promerops cafer and orange-breasted sunbird Nectarinia violacea.

ZONING Strict Nature Reserve status applies to the whole area.

DISTURBANCES OR DEFICIENCIES A rifle range was situated in what became the park in 1960, but the area cleared for that purpose is slowly reverting to its natural vegetation. Predator control is undertaken to protect the bontebok.

TOURISM Although there is a camp site, the majority of visitors are day trippers.

SCIENTIFIC RESEARCH Studies of the behaviour and ecology of the bontebok.
SPECIAL SCIENTIFIC FACILITIES

Laboratory and reference herbarium

PRINCIPAL REFERENCE MATERIAL


STAFF

2 officers (nature conservation and tourism and technical services) and a supporting staff of 9: total 11.

BUDGET

R. 35,000 (U.S. $ 40,650)

LOCAL PARK ADMINISTRATION

The Nature Conservator, P.O. Box 149, Swellendam 6740.
SOUTH AFRICA

NAME False Bay Park (Natal)

TYPE PP

BIOTIC PROVINCE 4.6.4

LEGAL PROTECTION Total

DATE ESTABLISHED 1 June 1951

GEOGRAPHICAL LOCATION Lake St. Lucia, north-east Natal, 11 km east of Hluhluwe railway station: S 28°00'; E 32°15'-32°22'

ALTITUDE Sea level to 30 metres

AREA 2247 ha

LAND TENURE Not specified

PHYSICAL FEATURES A narrow strip of shore along the western side of Lake St. Lucia, gently sloping up from the lake to a flat or slightly undulating countryside. Soils are sandy, the climate hot in summer and warm in winter, with an annual rainfall of around 500 mm.

VEGETATION Thicket to open woodland of a tropical drought-deciduous type (2.2.1). Among the more notable plant species are the euphorbaceous Cleistanthus schlechteri, Newtonia wildebrandtii (Leguminosae) and the spiny Balanites maughamii.

NOTEWORTHY FAUNA Mammals include the pangolin Manis temmincki, serval Felis serval, warthog Phacochoerus aethiopicus, nyala Tragelaphus angasi (this being close to its type locality), red diker Cephalophus natalensis, waterbuck Kobus ellipsiprymnus, reedbuck Redunca arundinum, wildebeest Connochaetes taurinus, suni Nesotragus moschatus and impala Aepyceros melampus. Birds include the white pelican Pelecanus onocrotalus, goliath heron Ardea goliath and African spoonbill Platalea alba. The Nile crocodile Crocodylus niloticus, now rated an endangered species in the Red Data Book, is still to be seen; there is a recent nesting area about 8 km away on the other side of False Bay, but the species is heavily persecuted.

ZONING None

DISTURBANCES OR DEFICIENCIES Hunting and fishing permitted within the reserve. Farmland with intensive agriculture surrounds the area, which is too small to support large numbers of herbivores and also means that large carnivores have been eliminated.

TOURISM Open campsites, used primarily by fishermen. In 1973/74 visitors totalled 15,420.

SCIENTIFIC RESEARCH Management oriented

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL None listed

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STAFF  Two Officers and 15 Game Guards.

BUDGET  R. 6000 (excluding salaries), equivalent to about U.S. $ 6620.

LOCAL PARK ADMINISTRATION  Officer in Charge, False Bay Park, P.O. Hluhluwe, 3960.
SOUTH AFRICA

NAME Kamberg Nature Reserve (Natal)

TYPE PP

BIOTIC PROVINCE 4.6.4.

LEGAL PROTECTION Total

DATE ESTABLISHED 1 June 1951

GEOGRAPHICAL LOCATION Drakensberg foothills, 40 km WSW of Rosetta: S 29°15'-29°25'; E 29°40'-29°45'

ALTITUDE 1200-1700 metres

AREA 2232 ha

LAND TENURE Not specified

PHYSICAL FEATURES Bordering the Mooi River, which flows down from Giant's Castle peak north-eastwards towards its junction with the Tugela River, through a fairly extensive alluvial plain. The countryside is flat to undulating. The climate is cold in winter with heavy frost, warm in the summer; annual rainfall is around 750 mm.

VEGETATION Highland sour-veld, managed by controlled burning (5.2.2), occupies 2000 ha of the Reserve. A small area of around 300 ha has broad leaf cold deciduous woodland (2.2.5). The flora includes Protea multibracteata.

NOTEWORTHY FAUNA Mammals include grey duiker Sylvicapra grimmia, reedbuck Redunca arundinum, mountain reedbuck R. fulvorufula, Vaal rhebuck Pellea capreolus, blesbok Damaliscus dorcas (reintroduced), wildebeest Connochaetes taurinus (reintroduced), klipspringer Oreotragus oreotragus and oribi Oreotragus ourebi. The streams are stocked with trout.

ZONING None

DISTURBANCES OR DEFICIENCIES Current impacts having adverse consequences in the Reserve come from grazing, drainage and burning. A trading station is located within the boundaries, being situated on the secondary road which traverses the Reserve.

TOURISM There is a small hutted camp with facilities for trout fishing. The number of visitors in 1973/74 was 1137.

SCIENTIFIC RESEARCH None

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL None listed

STAFF 2 Officers (1 management and 1 tourist)

BUDGET R. 4500 (not covering salaries) equivalent to about U.S. $ 5000.

LOCAL PARK ADMINISTRATION Officer in Charge, Kamberg Nature Reserve, P.O. Rosetta, 3301.
NAME  Happy Rest Nature Reserve (Transvaal)

TYPE  PP  BIOTIC PROVINCE  4.6.4

LEGAL PROTECTION  Total

DATE ESTABLISHED  6 June 1973

GEOGRAPHICAL LOCATION  A short distance to the north-east of Louis Trichardt, northern Transvaal: S 23°03'; E 29°42'

ALTITUDE  900-1500 metres

AREA  1865 ha

LAND TENURE  State lands

PHYSICAL FEATURES  South-facing rocky escarpment of the Soutpansberg mountain range. Annual rainfall is over 1000 mm and frequent mists maintain the moist character of the area.

VEGETATION  Sour bushveld with patches of temperate forest typical of southern slopes of the Soutpansberg. Certain rare cycads belonging to the Zamiaceae, notably Encephalartos spp., are found in the Reserve and constitute a major reason for its existence.

NOTEWORTHY FAUNA  Mammals recorded include bushpig Potamochoerus porcus, bushbuck Tragelaphus scriptus, red duiker Cephalophus natalensis and klipspringer Oreotragus oreotragus.

ZONING  Zoned for flora protection

DISTURBANCES OR DEFICIENCIES  None noted

TOURISM  None

SCIENTIFIC RESEARCH  No details but the Manager of the Reserve reports monthly to the Director of Nature Conservation.

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  One supervisor/manager

BUDGET  No information

LOCAL PARK ADMINISTRATION  None
NAME: Langjan Nature Reserve (Transvaal)

TYPE: PP

LEGAL PROTECTION: Total

DATE ESTABLISHED: 1960

GEOGRAPHICAL LOCATION: South of the Limpopo River, about 80 km west of Messina, northern Transvaal: S 22°45'; E 29°15'

ALTITUDE: 770 metres

AREA: 1676 ha

LAND TENURE: Provincial administration ownership by purchase.

PHYSICAL FEATURES: An outcrop of Kalahari sandstone. Soils are mainly unconsolidated superficial deposits of conglomerates and limestones with a sandy belt on the east.

VEGETATION: Arid sweet bushveld, in which typical trees are Acacia and Commiphora spp., baobab Adansonia digitata, Bosia albitorunca and Maytenus senegalensis and typical grass genera Digitaria, Eragrostis, Schinidtia, Stipagrostis, Sporobolus, Urochloa, Panicum and Aristida.

NOTEWORTHY FAUNA: Mammals include Cape hedgehog Erinaceus frontalis, bushbaby Galago sp., vervet monkey Cercopithecus aethiops, black-backed jackal Canis mesomelas, bat-eared fox Otocyon megalotis, civet Viverra civetta, aardwolf Proteles cristatus, African wild cat Felis libyca, warthog Phacochoerus aethiopicus, giraffe Giraffa camelopardalis, kudu Tragelaphus strepsiceros, waterbuck Kobus ellipsiprymnus, gemsbok Oryx gazella (of special interest, being indigenous, and one of the principal reasons for the creation of the Reserve), red hartebeest Alcelaphus buselaphus caama and impala Aepyceros melampus. The ostrich Struthio camelus also occurs but no other bird species are listed.

ZONING: Strict nature reserve status applies to the whole area

DISTURBANCES OR DEFICIENCIES: None

TOURISM: None; occasional visitors are shown round the area.

SCIENTIFIC RESEARCH: Projects on management and taxonomy by visiting scientists.

SPECIAL SCIENTIFIC FACILITIES: Protection and breeding of rare species such as gemsbok and red hartebeest, for reintroductions elsewhere, is an aim of the Reserve for which special facilities have been developed.

PRINCIPAL REFERENCE MATERIAL: None listed: departmental reports may be available on application to the Director of Nature Conservation.

STAFF: Two Nature Conservation Officers, one mainly concerned with law enforcement.

BUDGET: No information

LOCAL PARK ADMINISTRATION: None

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SOUTH AFRICA

NAME Goukama Nature Reserve (Cape Province)

TYPE PP

Biotic Province 4.5.1

Legal Protection Total

Date Established 1960

Geographical Location On the coast, 25 km SE of George, western Cape Province: S 34°00'; E 22°54'

Altitude Sea level to 200 metres

Area 1640 ha

Land Tenure No information

Physical Features A small coastal strip of wooded sand dunes behind a broken shoreline of cliff, boulders and sandy beaches. The relief is most pronounced resulting in a very scenic coastline. Inland the Reserve is bordered by rolling veld. The Goukama river estuary is included within the boundaries, as is one lake, the Groenvlei, which is slightly brackish despite being cut off more or less permanently from the sea, unlike the three other lakes in the vicinity. It accounts for most of the 250 hectares of permanent water which are included in the Reserve. Soils are mainly composed of coastal sand, light and alkaline with a thin humus layer.

Vegetation The three principal woodland types are: tall sclerophyllous forest dominated by Sideroxylon (250 ha), mixed stunted sclerophyllous forest of species less than 4 m high (200 ha), and Acacia cyclops and A. cyanophila plantations (300 ha), forming part of a sand dune reclamation scheme using exotics. Coastal scrub and fynbos associations occupy about 600 ha, the principal genera being Phylica, Myrica, Ammophila, Murlalia, Cyperus, Restio and Passerina, with more occasional Erica and Anthospermum. Dwarf thickets of Oedera, Cliffordia and Murlalia combined with Imperata grassland are typical of the successional stages after fire. Limestone rocks on the shoreline support a mixture of Drosantherum, Gazania and Silene. Reeds and sedges such as Phragmites, Typha and Cladium border water bodies in which pondweeds and naiads Potamogeton and Najas are among the characteristic aquatic genera.

Noteworthy Fauna The only large mammals are blue and grey duikers Cephalophus monticola and Sylvicapra grimmia and grysbok Raphicerus melanotis. A noteworthy species in a rich avifauna is the indigenous bank cormorant Phalacrocorax neglectus; the mute swan Cygnus olor has been introduced onto the river and vleis and there is now a feral breeding population. The American sunfish or bluegill Lepomis m. macrochirus and the large-mouthed black bass Micropterus salmoides have been successfully introduced into the Groenvlei. Oyster beds occur off the coast.

Zoning None

Disturbances or Deficiencies Control is difficult since the Reserve boundary lies at the high water mark. Parts of the area are under threat from road development. Large species such as buffalo and eland have long since been shot out.

WDNP IUCN © 1977 (1)F Code: SOU(1),5,20
TOURISM  This is a well visited area lying on the famous 'Garden Route' and close to the 'Wilderness', which is regarded as one of the most beautiful seaside resorts of the whole country.

SCIENTIFIC RESEARCH  None noted but see under References below.

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL

STAFF  Guard and 8 labourers (in 1971).

BUDGET  No information

LOCAL PARK ADMINISTRATION  No information
SOUTH WEST AFRICA

AREA  824,293 sq. km

POPULATION  746,328 (1970 census)

PARKS AND RESERVES LEGISLATION  Parks and reserves are declared under the terms of the Nature Conservation Ordinance of 1967, which makes provision for National Parks, Game Reserves, Private Game Reserves and Private Nature Reserves. The object is to protect the flora and fauna of representative and typical habitats of South West Africa.

PARKS AND RESERVES ADMINISTRATION  Reserves are under the jurisdiction of the Division of Nature Conservation and Tourism

ADDRESS  Division of Nature Conservation and Tourism, Administration of South West Africa, Private Bag 13186, Windhoek

TOTAL AREA UNDER PROTECTION  4,462,439 ha (excluding 101,962 ha of other Game Reserves being developed to National Park standard and 132 private game reserves totaling 1,021,902 ha).

PROTECTED AREAS

1.1 Etosha National Park  2,227,000 ha
1.2 Namib Desert National Park  1,409,500 ha
1.3 Skeleton Coast National Park  800,000 ha
3.1 Naukluft Mountain Zebra National Park  21,986 ha
5.1 Daan Viljoen Game Reserve  3,953 ha
NAME: Etosha National Park

TYPE: NP

LEGAL PROTECTION: Defined under section 37 of the Nature Conservation Ordinance 31 of 1967, art. 37, para. 1, 2 and 3: total protection.

DATE ESTABLISHED: Game reserve established in 1907, declared as National Park 1938, confirmed under Ordinance of 1967.

GEOGRAPHICAL LOCATION: About 400 km NNW of Windhoek and 120 km south of the Angolan border: S 18°30'-19°28'; E 14°20'-17°10'

ALTITUDE: 1000-1500 metres, mean 1200 metres

AREA: 2,227,000 ha


PHYSICAL FEATURES: An area of inland drainage on the great African plateau, the western boundary formed by the watershed between Atlantic drainage and that into the saline Etosha pan at the eastern end of the Park. A system of interlaced channels (omurambas), sometimes embracing small water-holding pans, drains towards the pan, which covers approximately 4,800 sq. km and in wet seasons receives water from as far as southern Angola. Geologically the area is composed of calcareous sand, gravel and limestone with dolomite outcropping in the west. Soils are shallow and alkaline. The temperature range is from below freezing point at night in winter to a summer maximum of 43° C. The patchy convectional rainfall totals about 300 mm, mostly falling between January and March and September to December.

VEGETATION: Arid savanna vegetation tending towards a tree savanna type in the east and thorn-shrub type in the west. Species present include acacias such as A. tortilis, A. reficiens and A. nebrowni, mopane Colophospermum mopane and various species of Combretum. All these species can vary in form from shrub to tree and are to be found throughout the Park. The dominant grasses are Anthephora, Enneapogon and Aristida spp.

NOTEWORTHY FAUNA: The wetlands of the Pan support enough waterfowl to be classified as of international importance. Most of the larger mammals of the southern savanna plains of Africa are found in the Park: leopard Panthera pardus, cheetah Acinonyx jubatus and other cats, abundant elephant Loxodonta africana, distinctive races of Burchell's zebra Equus burchellii antiquorum ("chapmani") and mountain zebra E. zebra hartmannae, black rhino Diceros bicornis, giraffe Giraffa camelopardalis, kudu Tragelaphus strepsiceros, eland Taurotragus oryx, roan antelope Hippotragus equinus, gemsbok Oryx gazella, red hartebeest Alcelaphus buselaphus caama, wildebeest Connochaetes taurinus, steenbok Raphicerus campestris, black-faced impala Aepyceros melampus petersi and a few Damara dik-dik Madoqua kirki. (The Red Data Book classifies the leopard, cheetah, Hartmann's zebra and black rhino as vulnerable species and the black-faced race of impala, with its distribution limited to this region and numbers declining, as seriously endangered.) The avifauna is of great interest, ostrich Struthio camelus, greater flamingo Phoenicopterus ruber roseus, which here has its largest known breeding area, and red-crested korhaan Lophotis ruficrista, being among the noteworthy species.

ZONING: No tourism allowed over approximately four-fifths of Park area.
DISTURBANCES OR DEFICIENCIES  Completion of game proof fencing of the boundaries may cause problems of overstocking etc., which will call for careful management.

TOURISM  Facilities include 3 rest camps (one more planned), each having full facilities and all grades of accommodation. The Park has 800 km of gravelled tourist roads.

SCIENTIFIC RESEARCH  There are 2 permanent resident staff (ecologist and veterinarian) and 8 visiting research scientists with projects based in the Park. The solution of managerial problems tend to be a main objective, but priorities are fixed by the Director in consultation with the research workers.

SPECIAL SCIENTIFIC FACILITIES  These exist to supply needs of the staff and were enlarged and improved at a cost of U.S. $375,000 in 1972.

PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  219 units were employed in 1972

BUDGET  U.S. $1,014,000 annually

LOCAL PARK ADMINISTRATION  No information
SOUTH WEST AFRICA

NAME  Namib Desert Park
TYPE  NP  BIOTIC PROVINCE  4.11.2

LEGAL PROTECTION  Proclaimed under Nature Conservation Ordinance No. 31 of 1967, Art. 38. Game reserve status in course of upgrading to that of National Park.

DATE ESTABLISHED  First established in 1904, as 'Game Reserve No. 3.'

GEOGRAPHICAL LOCATION  Area around Swakopmund and Walvis Bay between the Swakop and Kuiseb rivers: $22^\circ40'-23^\circ50'; E 14^\circ25'-15^\circ30'$

ALTITUDE  Sea level to 1500 metres, mean 800-1000 metres

AREA  1,409,500 ha

LAND TENURE  Ownership vested in Government under jurisdiction of Division of Nature Conservation and Tourism

PHYSICAL FEATURES  The only true desert in southern Africa, an area of intensely weathered schists, marbles, quartzites and granites, some parts having gypsum crusts, calcrete and desert pavement; shallow soils with evaporitic horizons are present but a buried fossil red-brown soil indicates former conditions. Rivers, though they have carved out quite deep canyons, are intermittent and sand-filled, sub-surface flow continuing in some sections and forming waterholes where impeded by impervious barriers. Sandwich Harbour, an internationally important wetland, is a lagoon complex with virtually complete salinity gradients. The average daily temperature range is 16-18.5°C with almost no frost; rainfall averages 23 mm but fog precipitation, which occurs on an average of 60 days annually, accounts for a further 31 mm.

VEGETATION  True desert vegetation, the algae and lichens making use of moisture present in dew and succulent plants predominating on inselbergs and pegmatite dykes. Species of lichen include Parmelia hottentotta, P. namaensis and Caloplaca elegantissima. Succulent genera include Hoodia, Lithops, Sarcocaulon, Euphorbia and Aloe spp. and among the scarcer species, Aloe namibensis and some Mesembryanthemums. Sandy washes support such halophytes as Zygophyllum stapfii, Z. simplex and Aizoony dinteri, the riverbeds towards the coast being colonized by Tamarix, Lycium and Salsola and inland by a denser growth of Acacia giraffe and A. albida with some Orange River ebony Euclea pseudobenna and Salvadora persica. Narra Acanthosicyos horrida is a remarkable plant of the Kuiseb valley. The most unusual single species, however, is the unique fog-dependent gymnosperm Welwitschia mirabilis Hook, first discovered in 1863 in this very region and still the only known species of its family.

NOTEWORTHY FAUNA  Mammals include 3 species of elephant shrew, the desert golden mole Eremitalpa granti, 3 species of gerbil, black-backed jackal Canis mesomelas, bat-eared fox Otocyon megalotis, hyena Crocuta crocuta, leopard Panthera pardus, cheetah Acinonyx jubatus, mountain zebra Equus zebra hartmannae (these last three species all rated 'vulnerable' in the Red Data Book), gemsbok Oryx gazella and springbok Antidorcas marsupialis. Birds include ostrich Struthio camelus, some 20,000 Cape cormorant Phalacrocorax capensis frequenting Sandwich Harbour together with hundreds of herons, egrets, gulls and terns, a high breeding concentration of lappet-faced vulture Torgos tracheliotus and of red-necked falcon Falco chicquera, a smaller population of martial eagle Polemaetus bellicosus, large colonies of the endemic Bradfield's swift Apus bradfieldi, another endemic, Gray's lark Ammosanus.

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grayi, on the gravel plains, local races of Karoo lark Certhilauda albecens and of the dry country chats Cercomela tractic and C. schlegelii, as well as the extremely localised Herero chat Namibornis herero, first described in 1931 and the nest of which was not discovered until 1969. Apart from the resident species several unusual species of palaearctic shore-birds winter in Sandwich Bay. Reptiles include Palmatogecko rangii, Aporosaura anchietae and the side winder Bitis peringuei. The invertebrate fauna is also of great interest.

ZONING None

DISTURBANCES OR DEFICIENCIES Three small gypsum mining concessions over 400 sq. km of the park, dating back to before the existing legislation; illegal nomadic farming in the Kuiseb floodplain (negotiations for removal under way); and strictly limited sport-fishing on coast. 265 km of game-proof fence have been constructed along the inland boundary. The construction of over 500 km of tourist roads and of three boreholes operated by wind-driven pumps are other aspects of tourist roads and of three boreholes operated by wind-driven pumps are other aspects of human interference.

TOURISM No facilities, but day visits are allowed and a rest camp was being planned in 1972, and this and other camping sites may now be available.

SCIENTIFIC RESEARCH Resident research officers are mainly engaged in studies of physiological and behavioural adaptations to extreme desert conditions.

SPECIAL SCIENTIFIC FACILITIES Research station at Gobabeb built in 1958 and enlarged in 1972, at a cost of U.S. $250,000. Facilities available to visiting scientists.

PRINCIPAL REFERENCE MATERIAL None listed

STAFF 15 units

BUDGET U.S. $53,800

LOCAL PARK ADMINISTRATION No information
NAME Skeleton Coast National Park

TYPE NP

BIOTIC PROVINCE 4.11.2

LEGAL PROTECTION Proclaimed under the Nature Conservation Ordinance No. 31 of 1967, Art. 38.

DATE ESTABLISHED Protected since 1916, Game Reserve declared in 1966, and Park proclaimed in 1967.

GEOGRAHPICAL LOCATION A stretch of the northern coast, beginning about 190 km north of Swakopmund: S 19°25'-21°15'; E 12°50'-13°55'

ALTITUDE Sea level to 500 metres, mean 200 metres

AREA 800,000 ha (a further 800,000 ha would be added if the proposal to include another 320 km of coastline is implemented by appropriate legislation).

LAND TENURE Ownership vested in Government under jurisdiction of Division of Nature Conservation and Tourism.

PHYSICAL FEATURES A region with a relatively regular shoreline of sandy beaches and isolated rocky stretches backed in the north by high dunes ranging from the immediate proximity of the beach 40 km inland. This is the only area south of the Sahara with true barchan dunes. Large tracts are covered with white sands having sparse vegetation. Further inland gravel plains occur as in the Namib Desert Park. Several intermittent rivers traverse the area to the coast, most having their mouths blocked by dunes, resulting in the formation of freshwater pools, some of them perennial. Climatically the park falls within the fog belt which means that the temperature range is small and rainfall low, precipitation from fog contributing a high proportion of the water balance. Offshore cold and warmer water masses overlap to create marine conditions only paralleled off the west coasts of South America and Australia.

VEGETATION Broadly similar to the Namib Desert Park, mostly composed of Zygophyllum stapfii with some Z. simplex, Aizoon dinteri and stands of Salsola. Endemic plants include Barleria solitaria, Indigofera cunenensis, Merremia multisecta, Pectalidium gissili and Stipagrostis (= Aristida) ranulosa.

NOTEWORTHY FAUNA Species present on the beaches include black-backed jackal Canis mesomelas, brown hyaena Hyaena brunnea (classified as 'vulnerable' in the Red Data Book) and occasional seals. The rivermouth freshwater pools are used by migrating shore-birds. Particular interest attaches to the overlap of cold temperate marine fauna and warm tropical marine fauna due to the conjunction of cold and warm currents offshore. The overlap is more clearcut than in the two other regions previously mentioned where the same phenomenon occurs, so that conditions are ideal for zoogeographical studies.

ZONING Tourists are restricted to a 5,120 ha zone

DISTURBANCES OR DEFICIENCIES A portion of the area has been allocated as a mining concession. The only other human impact arises from a gravel road along the coast and limited visitor facilities at Torra Bay. Sport-fishing is allowed along 32 km of coast during the tourist season subject to certain restrictions on the collection of bait.
TOURISM  Season limited to December and January at which time camping is permitted at Torra Bay where fresh water, sanitary facilities and a small shop are provided by the Division.

SCIENTIFIC RESEARCH  Dunes and dune communities have received attention but inaccessibility has until now hindered study. The Park is periodically visited by scientists from Gobabeb. Detailed study of the intertidal zone has started.

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  8 units

BUDGET  U.S. $ 8,000 annually

LOCAL PARK ADMINISTRATION  No information
NAME: Naukluft Mountain Zebra National Park

TYPE: NP

BIOTIC PROVINCE: 4.11.2/4.11.3


DATE ESTABLISHED: 1964, proclaimed as a park in 1967

GEOGRAPHICAL LOCATION: About 170 km inland and 200 km SSW of Windhoek: S 24°12'-24°17'; E 16°55'-16°10'

ALTITUDE: 1000-2000 metres, mean 1800 metres

AREA: 21,986 ha (with an additional 144,800 ha approved for addition when funds become available)

LAND TENURE: Ownership vested in Government under the jurisdiction of the Division of Nature Conservation and Tourism.

PHYSICAL FEATURES: Situated astride the western escarpment overlooking the Namib Desert plains 1000 m below and forming part of a large triangular plateau higher than the main plateau and separated from it by almost unbroken cliffs 500 m high. Geologically part of the Nama system and composed of successive horizons of quartzite, limestone, dolomite and shale which have been folded by pressure and gravity to produce a south-easterly inclination. Shallow soils except on less pronounced slopes. Hot summers with a mean maximum of 35°C, cool winters with occasional frosts; summer storm precipitation of 200 mm.

VEGETATION: Complex and varied vegetation due to the wide differences in aspect and edaphic conditions. The plateau surface peneplain is a mosaic of smaller communities dominated by low scattered scrub interspersed with bare ground or clumps of perennial grass. The southern slopes of the mountain massif are mostly covered by grass and short shrub of such species as Commiphora, Euphorbia, Boscia albitrunca, Maerua shinzii, Aloe dichotoma and Moringa ovalifolia. Riparian vegetation contains a large variety of taller trees including Ficus and Acacia spp. Among the rarer species are Aloe albidinana and A. karrasbergensis, Lithops, Huernia, Hoodia, Stapelia and Cyphostemma (= Cissus) spp. and the endemic resurrection plant Myrothamnus flabellifolia.

NOTEWORTHY FAUNA: Mammal species include baboon Papio ursinus, dassie Procavia capensis, leopard Panthera pardus, mountain zebra Equus zebra hartmannae, kudu Tragelaphus strepsiceros and klipspringer Oreotragus oreotragus. The leopard and the race of mountain zebra, which the park is partly designed to protect, both rate as vulnerable species in the Red Date Book. Among the numerous birds the black eagle Aquila verreauxi, largely a predator on the dassie, is especially prized.

ZONING: None

DISTURBANCES OR DEFICIENCIES: None reported

TOURISM: Restricted access and only small approved parties of mountaineers or youth groups under proper supervision are permitted entry. Small rustic "stop-over" places are under consideration, but no other facilities.
SCIENTIFIC RESEARCH  Botanical and zoological aspects of ecology, with most attention being given to mountain zebra and klipspringer ecology.

SPECIAL SCIENTIFIC FACILITIES  Laboratory and living quarters for visiting scientists.

PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  13 units

BUDGET  U.S. $16,000 annually

LOCAL PARK ADMINISTRATION  No information
NAME Daan Viljoen Game Reserve

TYPE NP

BIOTIC PROVINCE 4.11.2

LEGAL PROTECTION Proclaimed under Section 38 of the Nature Conservation Ordinance No. 31 of 1967; no human exploitation or occupation.

DATE ESTABLISHED 1962

GEOGRAPHICAL LOCATION Khomas highlands, about 30 km west of Windhoek: S 22°29'–22°31'; E 16°59'–17°1'

ALTITUDE 1800–2000 metres, mean 1900 metres

AREA 3,953 ha

LAND TENURE Ownership vested in Government under jurisdiction of the Division of Nature Conservation and Tourism

PHYSICAL FEATURES Eastern flank of the Khomas highlands, an area of extremely broken and hilly country deeply dissected by the Augeigas River and its tributaries, which form part of the upper reaches of the Swakop R. These drainage lines are very well marked forming a series of parallel ravines with northerly alignment, each with lesser side ravines running east and west. Geologically composed of weathered mica schists of the Damara system of Precambrian age. Summer temperatures are up to 39°C, winter temperatures down to near freezing, with marked diurnal fluctuation; about 375 mm convective rainfall during the summer months.

VEGETATION Montane savanna of an open type on the hills, the most prominent trees being Acacia hereroensis averaging 4 m in height. Other species favouring the ridges, are Ozoroa crassinervis and Combretum apiculatum. Elsewhere most tree growth is restricted to drainage channels and is dominated by several Acacia species. The perennial grasses are mainly Anthephora, Enneapogon and Stipagrostis (= Aristida) species. Rare and endemic species include Lithops sp. and the green-flowered aloe Aloe verdiflora.

NOTEWORTHY FAUNA Larger mammals of the reserve, some of which have been re-introduced, include baboon Papio ursinus, dassie Procavia capensis, mountain zebra Equus zebra zebra, (classified as vulnerable in the Red Data Book), kudu Tragelaphus strepsiceros, eland Taurotragus oryx, gemsbok Oryx gazella, hartebeest Alcelaphus buselaphus caama, wildebeest Connochaetes taurinus, klipspringer Oreo- tragus oreotragus, steenbok Raphicerus campestris, and springbok Antidorcas marsupialis. The area has a very rich avifauna which includes breeding populations of the black eagle Aquila verreauxi and the African hawk eagle Hieraetetus spilogaster. Rare endemic species include Monteiro's hornbill Tockus monteiri, the Damara rock-jumper Achaetops pycnopygius, short-toed rock thrush Monticola brevipes and white-tailed shrike Lanioturdus torquatus.

ZONING Tourists excluded from the 3,000 ha of the reserve to which there is no road access. Development and management are confined to the remaining 953 ha.

DISTURBANCES OR DEFICIENCIES Only human impacts are the rest camp, 15 km of road, 60 km of firebreak and three dams.
TOURISM The rest camp facilities include accommodation, (58 beds), restaurant, shop and swimming pool, as well as camping and caravan sites.

SCIENTIFIC RESEARCH The reserve is well-suited to research on animal behaviour and ideally situated for physiological studies. No indications are, however, given as to past or current work.

SPECIAL SCIENTIFIC FACILITIES None mentioned

PRINCIPAL REFERENCE MATERIAL Not listed

STAFF 31 units

BUDGET U.S. $ 25,500 annually

LOCAL PARK ADMINISTRATION No information
SWEDEN

AREA  449,964 sq. km (of which 411,479 sq. km is land)

POPULATION  8,236,461 (1 January 1977)

PARKS AND RESERVES LEGISLATION  The Nature Conservancy Act of 1964 permits the setting aside of National Parks, Nature Reserves and Animal Sanctuaries. National Parks are established by the Government on Crown lands. Nature Reserves and Animal Sanctuaries are designated by the County Administration. The regulations for such areas govern land use, industrial or rural activities, fishing, hunting and access, among others. Generally there are no entrance fees for protected areas and sites.

PARKS AND RESERVES ADMINISTRATION  Formerly, responsibility for the management of National Parks and other protected areas established on state-owned land lay with the Swedish Forest Service. The appropriate County Forestry Board under the National Board of Forestry had responsibility for management of the majority of remaining safeguarded areas. In 1976, the Environment Protection Board became the central body for matters concerning the establishment and management of such areas.

ADDRESS  Swedish Forest Service, S- 171 93 Solna; The National Board of Forestry, Vallgaten 6, S- 551 83 Jönköping; The Environment Protection Board, S- 171 20 Solna.

TOTAL AREA UNDER PROTECTION  759,534 ha (see footnote of next section)

PROTECTED AREAS

2.1 Padjelanta National Park  201,000 ha
2.2 Sarek National Park  194,000 ha
3.1 Mudde National Park  49,200 ha
4.1 Peljekaise National Park  14,600 ha
4.2 Abisko National Park  7,500 ha
4.3 Stora Mosse-Klvsjön Nature Reserve  6,700 ha
4.4 Dundret Nature Reserve  5,500 ha
5.1 Gotska Sandön National Park  3,640 ha
5.2 Serri Nature Reserve  3,600 ha
5.3 Sandsjöbacka Nature Reserve  2,900 ha
5.4 Sonfjället National Park  2,700 ha
5.5 Vadveijåkkå National Park  2,450 ha
5.6 Kallavaran Nature Reserve  2,235 ha
5.7 Klingavälshån Nature Reserve  2,175 ha
5.8 Licknavarpsjöorden Nature Reserve  1,650 ha
5.9 Misterhult Nature Reserve  1,500 ha
5.10 Töfvingdalen National Park  1,365 ha
6.1 Ottenby Nature Reserve  995 ha
6.2 Lulefjärne Nature Reserve  750 ha
6.3 Klåverön Nature Reserve  625 ha
6.4 Hermanö Nature Reserve  610 ha
6.5 Lurb Nature Reserve  600 ha
6.6 Rödkaulen-Sör-Aspen Nature Reserve  579 ha
6.7 Ramsvikslandomet Nature Reserve  560 ha
7.1 Bullerbarna Nature Reserve 450 ha
7.2 Stora Karlsö Nature Reserve 240 ha
7.3 Haparanda Sandskär Nature Reserve 180 ha
7.4 Lilla Karlsö Nature Reserve 164 ha
7.5 Blå Jungfrun National Park 66 ha

N.b. A further 6 National Parks totally 136,000 ha and approximately 800 Nature Reserves totalling 115,000 ha are excluded from this list although included in the Total Area Under Protection.
NAME  Padjelanta National Park  
TYPE NP  BIOTIC PROVINCE  2.1.1  

LEGAL PROTECTION Protected as National Park with exploitation prohibited but fishing and hunting by Lapps permitted.

DATE ESTABLISHED 9 May 1962

GEOGRAPHICAL LOCATION Swedish Lapland, extreme north-west near Norwegian border: N 67°13'-67°45'; E 16°16'-17°14'

ALTITUDE  531-1853 metres

AREA  201,000 ha

LAND TENURE Owned by National Government

PHYSICAL FEATURES An open mountain plateau with large lakes and occasional high mountains rising above the general level, the land forms being the result of glaciation. Weather conditions are often unstable because this is a transitional zone between maritime and continental climates. Mean temperatures vary from -11°C in January to 11°C in July, changing with altitude.

VEGETATION Alpine meadows and shrub heaths are characteristic of the vegetation of the area. Three zones of arctic-alpine vegetation are recognized, the lowest zone includes many different kinds of willow Salix spp. together with heaths of crowberry Espetrum hermaphroditum and reindeer moss Cladonia spp. Other species present include dwarf birch Betula nana, trailing azalea Loiseleuria procumbens, cowberry Vaccinium vitis-idaea, bog whortleberry V. uliginosum and bearberry Arctostaphylos alpina, as well as grasses. The middle alpine belt has shrub heaths and grass heaths with Cassiope hypnoides as dominant. The highest zone has only mosses and lichens. Calcareous slopes have heaths of mountain avens Dryas octopetala and an alpine flora of special interest.

NOTEWORTHY FAUNA Mammals include the Norway lemming Lemmus lemmus, very rarely the wolf Canis lupus, arctic fox Alopex lagopus, red fox Vulpes vulpes, brown bear Ursus arctos, wolverine Gulo gulo, lynx Felis lynx, and elks Alces alces. Birds include the black-throated diver Gavia arctica, lesser white-fronted goose Anser erythropus, scaup Aythya marila, rough-legged buzzard Buteo lagopus, gyr falcon Falco rusticolus (uncommon), merlin Falco columbarius aesalon, willow grouse Lagopus lagopus, ptarmigan L. mutus, golden plover Pluvialis apricaria and long-tailed skua Stercorarius longicaudus.

ZONING Only zoning is that for 1 km on each side of the main paths passing through the park sport-fishing is permitted, but any fish caught and kept are for personal consumption and may not be taken out of the park.

DISTURBANCES OR DEFICIENCIES None reported

TOURISM Annually approximately 5000 visitors of which 20% are foreigners. Limited accommodation in lodges and cabins; most visitors prefer to camp. No road access but bridges have been built where main paths cross larger rivers.

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Code: SWE.2.1
SCIENTIFIC RESEARCH  Various studies include a current investigation of population dynamics of arctic fox, started in 1971 with financial support from World Wildlife Fund.

SPECIAL SCIENTIFIC FACILITIES  None


STAFF  District forest officers and forest rangers of the Pärllälven forest district. Some cabins are staffed by overseers during the period June-August.

BUDGET  Approximately U.S. $50,000 annually

LOCAL PARK ADMINISTRATION  Swedish Forest Service, Pärllälven forest district, Forest Officer, Storgata 62, S-960 40, Jokkmokk.
SWEDEN

NAME: Sarek National Park

TYPE: NP

BIOTIC PROVINCE: 2.2.1

LEGAL PROTECTION: Protected as National Park with exploitation prohibited. Fishing and hunting by Lapps is allowed.

DATE ESTABLISHED: 24 May 1909

GEOGRAPHICAL LOCATION: The south-easternmost of a trio of Parks adjoining the Norwegian border about 125 km south of Narvik: N 67°02'–67°33'; E 17°05'–18°17'

ALTITUDE: 442–2089 metres (summit of Sarektjakka)

AREA: 194,000 ha

LAND TENURE: State ownership

PHYSICAL FEATURES: A mountainous area with several high plateaus dissected by deep valleys. The area includes about 90 summits over 1800 m and nearly 100 glaciers. The sediment transported by the Rapa River forms a magnificent delta at Lake Laidaure at the south-east corner of the Park. Renowned for its unstable and locally variable weather conditions, characteristic of high altitude tundra. Annual mean precipitation usually exceeds 2000 mm.

VEGETATION: Two main vegetation zones are represented: the sub-alpine and alpine zones. The sub-alpine is dominated by birch Betula spp. and willows Salix spp., other conspicuous species being the globe flower Trollius europaeus, alpine bearberry Arctostaphylos alpina, blue sowthistle Cicerbita alpina, and Aconitum septentrionale. The typical vegetation of the alpine zone consists of low-growing dwarf shrubs and grasses and such species as least willow Salix herbacea, blue mountain heath Phyllodoce cserulea, three-leaved rush Juncus trifidus, and mountain avens Dryas octopetala.

NOTEWORTHY FAUNA: Mammals include arctic fox Alopex lagopus, red fox Vulpes vulpes, brown bear Ursus arctos, wolverine Gulo gulo, lynx Felis lynx and elk Alces alces. Among the birds recorded are golden eagle Aquila chrysaetos, merlin Falco columbarius, gyrfalcon F. rusticolus, purple sandpiper Calidris maritima and long-tailed skua or jaeger Stercorarius longicaudus.

ZONING: None, but restricted admittance to certain parts is under consideration.

DISTURBANCES OR DEFICIENCIES: The Park includes dams built for hydro-electric installations. Increased tourism in valley areas is adversely affecting the habitat.

TOURISM: About 2000–3000 visitors annually. No overnight accommodation is available.

SCIENTIFIC RESEARCH: Completed research projects/inventories cover zoology, botany, geology and hydrology.

SPECIAL SCIENTIFIC FACILITIES: Limited accommodation available for scientists.
PRINCIPAL REFERENCE MATERIAL


STAFF
District Forest Officer, forest ranger and part-time wardens.

BUDGET
Approx. 200,000 Sw. Cr. (U.S. $ 46,620).

LOCAL PARK ADMINISTRATION
Swedish Forest Service, Pärnlövss forest district, District Forest Officer, S-960 40 Jokkmokk.
NAME Muddus National Park

TYPE NP

Biotic Province 2.2.1

LEGAL PROTECTION Protected as National Park with exploitation prohibited. Fishing and hunting by Lapps allowed.

DATE ESTABLISHED 24 March 1942

GEOGRAPHICAL LOCATION About 50 km NNE of the regional centre of Jokkmokk which is situated just north of the Arctic Circle in north central Sweden: N 66°45'-67°04'; E 19°56'-20°25'

ALTITUDE 160-661 metres

AREA 49,200 ha

LAND TENURE State ownership

PHYSICAL FEATURES A plateau area traversed from north to south by a broad shallow river valley which becomes more deeply incised towards its junction with the Stora Lule älv, with gorges and waterfalls. The whole area has been glaciated and glacial features are common. Mean temperatures range from about -12°C in January to 14°C in July.

VEGETATION The central and western areas are dominated by spruce Picea abies, while Scots pine Pinus sylvestris is commoner in the south and east. Much of the coniferous forest is interspersed with birch Betula spp. Boggy areas are widespread and among their typical species are dwarf birch Betula nana and cloudberry Rubus chamaemorus.

NOTeworthy Fauna Mammals include the brown bear Ursus arctos, otter Lutra lutra, pine martin Martes martes and elk Alces alces. About 120 bird species have been recorded, among them the whooper swan Cygnus cygnus, otherwise very scarce in Sweden, golden eagle Aquila chrysaetos, five species of owl including the Ural and great grey owls Strix uralensis and nebulosa, and rustic bunting Emberiza rustica.

ZONING Part of the Park area as well as a large adjacent area have special bird sanctuary status, with entry prohibited during the period 15 March to 31 July.

DISTURBANCES OR DEFICIENCIES Reported to be negligible, despite the fact that rights to hunt and fell timber are retained by the Lapp inhabitants of the region. There are also obvious signs of the impact of forest fires of the past.

TOURISM Hiking routes exist through the Park with cabins for overnight shelter but no catering facilities. A tower hide for bird watching has been erected in the Bird Sanctuary zone.

SCIENTIFIC RESEARCH Faunal surveys are undertaken on a regular basis every spring. Forest research and various private studies have also been carried out from time to time.

SPECIAL SCIENTIFIC FACILITIES None
PRINCIPAL REFERENCE MATERIAL

STAFF
District Forest Officer, Forest Ranger and part-time wardens.

BUDGET
Approx. 125,000 Sw. Cr. (U.S. $ 29,138).

LOCAL PARK ADMINISTRATION
District Forest Officer, Swedish Forest Service, Pårkälvens Forest District, S-960 40 Jokkmokk.
NAME  Peljekaise National Park

TYPE  NP

BIOTIC PROVINCE  2.2.1

LEGAL PROTECTION  Protected as National Park with exploitation prohibited. Fishing and hunting by Lapps allowed.

DATE ESTABLISHED  24 May 1909, enlarged 7 June 1913.

GEOGRAPHICAL LOCATION  About 40 km NW of Arjeplog in the south-western corner of Norrbotten: N 66°17'-66°27'; E 16°30'-17°04'

ALITUDE  470-1133 metres

AREA  14,600 ha

LAND TENURE  State ownership

PHYSICAL FEATURES  A mountainous area of birch forests, lakes, marshes and alpine moorland. About a third of the area is more or less devoid of forest vegetation. Annual mean precipitation is about 500 mm and mean July temperature is 12°C.

VEGETATION  High latitude and montane birch Betula species dominate about two-thirds of the Park but its character varies from luxuriant to poor depending on aspect and soils. The reserve is aimed particularly at protecting the mountain birch habitat in its natural state. Among the herbaceous and flowering species are globe flower Trollius europaeus, blue sow-thistle Cicerbita alpina, melancholy thistle Cirsium heterophyllum, wild angelica Angelica archangelica, meadowsweet Filipendula ulmaria, wood cranesbill Geranium silvaticum and Aconitum septentrionale.

NOTEWORTHY FAUNA  The mammals typical of wooded mountain areas in Scandinavia include mountain hare Lepus timidus, red fox Vulpes vulpes, stoat Mustela erminea, fairly frequently observed wolverine Gulo gulo and elk Alces alces.

ZONING  None

DISTURBANCES OR DEFICIENCIES  A proposal for the regulation of the water level in a lake bordering the reserve for hydro-electric purposes would if implemented result in the loss of about 600 ha of the Park, submerged by the waters of the dam.

TOURISM  Hiking routes have been established, with halting-places and Lapp cots, one of which is equipped as an overnight shelter.

SCIENTIFIC RESEARCH  None

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  District Forest Officer and one part-time forest ranger.

BUDGET  Approx 50,000 Sw. Cr. (U.S. $ 11,655)

LOCAL PARK ADMINISTRATION  District Forest Officer, Swedish Forest Service, Arjeplog Forest District, S-930 90 Arjeplog.
SWEDEN

NAME Stora Mosse-Kävsjön Nature Reserve

TYPE MR

BIOTIC PROVINCE 2.4.1

LEGAL PROTECTION Protected as a Nature Reserve. Exploitation prohibited and hunting, fishing and public access restricted.

DATE ESTABLISHED 13 October 1971

GEOGRAPHICAL LOCATION Southern Sweden just to the north-west of Värnamo and about 70 km south of Jonkoping: N 57°12'-57°21'; E 13°50'-14°03'

ALTITUDE 169-171 metres

AREA 6,700 ha (not including about 850 ha of water)

LAND TENURE Ownership partly State and partly private.

PHYSICAL FEATURES The largest raised bog in Sweden and the largest expanse of mire south of Lapland. The mosaic of raised bog, fen and open water has resulted in favourable conditions for breeding and migrating birds, especially waterfowl.

VEGETATION Mainly Scots pine Pinus sylvestris forest alternating with open areas covered by dwarf shrubs. Some elements of the flora are of particular botanical interest. These include a number of Orchidaceae, such as bog orchid Orchis palustris, marsh orchid Dactylorhiza incarnata, fragrant orchid Gymnadenia conopsea and the marsh helleborine Epipactis palustris.

NOTEWORTHY FAUNA Breeding birds include the black-throated diver or arctic loon Gavia arctica, whooper swan Cygnus cygnus, wigeon Anas penelope, crane Grus grus, jack snipe Lymnocryptes minimus and three-toed woodpecker Picoides tridactylus. Migrants include geese and ducks such as greylag Anser anser, bean goose A. fabalis and pintail Anas acuta.

ZONING Access to the central part of the area (550 ha) is prohibited during the period 1 March to 30 September.

DISTURBANCES OR DEFICIENCIES None reported

TOURISM A number of trails and a bird observation tower are available for visitors.

SCIENTIFIC RESEARCH Hydrological, botanical, limnological and ornithological investigations have been undertaken as part of a project to reestablish some swamp and peatland which have been invaded by vegetation and grazing livestock.

SPECIAL SCIENTIFIC FACILITIES None

PRINCIPAL REFERENCE MATERIAL None listed

STAFF District Forest Officer and part-time ranger.

BUDGET About 150,000 Sw. Cr. (U.S. $ 34,965)

LOCAL PARK ADMINISTRATION District Forest Officer, Swedish Forest Service, Kämpangatan 3-5, S-331 00 Värnamo.
NAME Blå Jungfrun National Park

TYPE NP

Biotic Province 2.4.1

Legal Protection Total

Date Established 1926

Geographical Location An islet in the Kalmarsund, 20 km from the south-eastern mainland and 9 km from the island of Öland: N 57°15'; E 16°48'

Altitude Sea level to 86.5 metres

Area 66 ha

Land Tenure Government owned

Physical Features A small red granite island in the northern part of Kalmar Sound. The granite has a characteristic domed shape and much of this is exposed due to the effects of inland ice during the glacial period. The northern half is rocky and cleft by ravines, the centre of the island steeply sloping and the southern section notable for numerous large boulders. Many caves remain (some having been destroyed by past quarrying); they include the well-known Kyrkan (Church) and Jungfrukammaren caves. Windy conditions prevail throughout the year.

Vegetation Pines Pinus sylvestris, firs Abies sp. and birch Betula pubescens grow in crevices and a dense oakwood of Quercus petraea and Q. robur merging into scrub occupies the southern slope. Mosses and lichens are of special interest. Other tree species include ash Fraxinus excelsior, lime Tilia cordata, aspen Populus tremula and Norway maple Acer platanoides. Shrubs include Juniperus communis, bilberry and cowberry Vaccinium myrtillus and V. vitis-idaea and spruce Picea abies. Common herbs and grasses include Anemone hepatica, A. nemorosa, coral root Cardamine bulbifera, speedwells Veronica officinalis and V. chamaedrys, Solomon's seal Polygonatum odoratum and orpine Sedum telephium.

Noteworthy Fauna Mammals are represented by the hare Lepus timidus. Birds include cormorant Phalacrocorax carbo, velvet scoters Melanitta fusca, eider Somateria mollissima, sea eagle Haliaeetus albicilla, peregrine falcon Falco peregrinus (nesting), black guillemot Cepphus grylle, wood pigeon Columba palumbus, rock pipits Anthus spinolletta, redstart Phoenicurus phoenicurus, great tit and blue tit Parus major and P. caeruleus.

Zoning None

Disturbances or Deficiencies The granite was quarried during the period 1904-1914 and some of the giant caves in Kammarbergen were destroyed.

Tourism No accommodation; access by boat from Oskarshamn or from Byxelkrok at the north tip of Öland.

Scientific Research First described by Linnaeus in 1745. Flora studied intensively by J. Erikson from 1904-1915, followed more recently by Du Rietz and Curry-Lindahl.

Special Scientific Facilities None
PRINCIPAL REFERENCE MATERIAL


STAFF Part-time forest guard from the Kalmar Range and a full-time scientist during the summer as guide etc.

BUDGET U.S. $ 6,000

LOCAL PARK ADMINISTRATION Swedish Forest Service, Box 2093, 103 13 Stockholm 2, National Nature Conservancy Office, S - 171 20, Solna.
SWITZERLAND

AREA  41,310 sq. km

POPULATION  6,385,000 (1973 estimate)

PARKS AND RESERVES LEGISLATION  La loi Fédérale sur la protection de la nature et du paysage of 1 July 1966, gives the Federal government power to protect natural sites, historical sites and national monuments, and to create reserves. Under this law, the 'Commission fédérale pour la protection de la nature et du paysage' is responsible for advising the Department of the Interior on these matters. Land ownership usually remains with the cantons and communes, often with leases to the Federal government. The Federal law permits cooperation with cantonal and local authorities in park management and the recognition of national conservation associations as agents for the same purpose.

PARKS AND RESERVES ADMINISTRATION  Protected areas are administered either by the Federal National Park Commission, or by a cantonal government, or by the Ligue Suisse pour la protection de la nature. The last-named is a private foundation, recognized by the Federal government, and acts as its agent.

ADDRESS  Ligue Suisse pour la protection de la nature, Wortenbergstrasse 22, Basel.

TOTAL AREA UNDER PROTECTION  17,194 ha (listed areas only)

PROTECTED AREAS

4.1  Swiss National Park  16,887 ha
7.1  Aletsch Forest  256 ha
7.2  Virgin Forest of Derborence  51 ha
SWITZERLAND

NAME Swiss National Park
TYPE NP
BIOTIC PROVINCE 2.8.3

LEGAL PROTECTION Total; administered by the Federal National Park Commission
DATE ESTABLISHED 1914

GEOGRAPHICAL LOCATION Extreme east of Switzerland, adjoining the Italian frontier on both east and south and about 25 km SW of Davos: N 46°35'-46°46'; E 10°14'
ALTITUDE 1580-3174 metres
AREA 16,887 ha

LAND TENURE Long-term lease from Communes of Valchava, S-chanf, Zernez and Schuls to the Federal Government.

PHYSICAL FEATURES Lying to the west and south of the lower Engadine Valley formed by River Inn, the Park is part of the Grisons Alps and includes the high mountain valleys of Ova dal Fuorn, Spol and Minger. The underlying rocks are Triassic with a superstructure of Norian Dolomite. The climate is of the dry continental type, rainfall varying from 770 to 1000 mm at the Bernina Hospice, and temperatures from a minimum of -16.0°C to a maximum of 18.9°C.

VEGETATION Typical of sub-alpine and alpine zones of Central Alps. Mountain pine Pinus mugo dominates the sub-alpine zone; but there are more limited areas of climax forest composed of Norway spruce Picea abies, European larch Larix decidua, Arolla pine Pinus cembra and Scots pine Pinus sylvestris. In alpine zones the number of species is relatively low due to the dry, rocky terrain. In general conditions for plant life are most favourable in the upper alpine zone in crystalline rock and carbonated schists.

NOTEWORTHY FAUNA Apart from the re-introduction of the European ibex Capra ibex, which disappeared from the region in the 17th century, there was until recently no management of the substantial populations of chamois Rupicapra rupicapra, roe deer Capreolus capreolus and red deer Cervus elaphus. Alpine marmot Marmota marmota and varying hare Lepus timidus are conspicuous. Large carnivores, including the bear Ursus arctos, wolf Canis lupus and lynx Felis lynx have disappeared, and only the fox Vulpes vulpes and various small mustelids remain. Over 50 species of birds have been proved to nest in the Park including several pairs of golden eagle Aquila chrysaetos, five species of owl and a few wallcreepers Tichodroma muraria.

ZONING None, but visitors are restricted to authorised paths.

DISTURBANCES OR DEFICIENCIES None; the public road from Zernez to the Fuorn Pass and Mustair Valley which bisects the Park, is carefully controlled.

TOURISM No entry fee; visitors may only leave the road on official footpaths. A hostel "Il Fuorn" is situated within an unprotected enclave in the centre of the Park; a number of other hostels and chalets are on the periphery, where there are official parking areas. Visitors totalled about 200,000 in 1970. The Park headquarters and an Information Centre were established at Zernez in 1968.
SCIENTIFIC RESEARCH  Directed by a "Commission for Scientific Studies in the National Park". More than 50 publications have been issued.

SPECIAL SCIENTIFIC FACILITIES  Research centre at "Il Fuorn".

PRINCIPAL REFERENCE MATERIAL. "Through the Swiss National Park", the English edition of a scientific guide published by the Commission for Scientific Studies in the National Park in 1966, gives a detailed account of the climate, geology, flora and fauna of the Park, and includes a review of the biogeography and a description of geological and botanical excursions.

STAFF  6 full-time, 2 part-time, wardens.

BUDGET  Equivalent of about US $ 73,500 in 1971, provided partly by the Federal government and partly by the Ligue Suisse pour la protection de la nature.

LOCAL PARK ADMINISTRATION  Oberaufseher des Schweizerischer Nationalpark, 7530 Zernez, Graubünden.
TANZANIA

AREA  942,290 sq. km, including 53,480 sq. km of water in the mainland sector.

POPULATION  14,371,000 (1973 estimate)

PARKS AND RESERVES LEGISLATION  No up to date information available; but derived from a combination and modifications of a Fauna Conservation Ordinance and a National Parks Ordinance, the latter first enacted in 1951, the year in which the first National Park was formally established.

PARKS AND RESERVES ADMINISTRATION  No up to date information but understood to be the responsibility of a National Parks Division within the Ministry of Natural Resources and Tourism, which on matters of conservation policy and practice works closely with three other Divisions of the same Ministry concerned with Forests, Fisheries and Game.

ADDRESS  Tanzania National Park, P.O. Box 3134, Arusha

TOTAL AREA UNDER PROTECTION  9,653,345 ha (listed areas only); revised figures recently (April 1977) received from the Parks authorities indicate a nett overall increase of 321,055 hectares.

<table>
<thead>
<tr>
<th>PROTECTED AREAS</th>
<th>U.N. LIST</th>
<th>REvised</th>
</tr>
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<tbody>
<tr>
<td>1.1 Selous Game Reserve</td>
<td>5,439,000 ha</td>
<td>1,476,300 ha</td>
</tr>
<tr>
<td>1.2 Serengeti National Park</td>
<td>1,295,000 ha</td>
<td>1,295,000 ha</td>
</tr>
<tr>
<td>1.3 Ruaha National Park</td>
<td>1,150,000 ha</td>
<td>1,295,000 ha</td>
</tr>
<tr>
<td>1.4 Ngorongoro Conservation Unit</td>
<td>828,800 ha</td>
<td>828,800 ha</td>
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<tr>
<td>2.1 Mikumi National Park</td>
<td>323,000 ha</td>
<td>323,000 ha</td>
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<tr>
<td>2.2 Tarangire National Park</td>
<td>261,440 ha</td>
<td>260,000 ha</td>
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<tr>
<td>2.3 Katavi National Park</td>
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<tr>
<td>3.1 Kilimanjaro National Park</td>
<td>75,575 ha</td>
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<tr>
<td>3.2 Arusha National Park</td>
<td>31,880 ha</td>
<td>13,700 ha</td>
</tr>
<tr>
<td>4.1 Gombe Stream National Park</td>
<td>14,800 ha</td>
<td>5,200 ha</td>
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<tr>
<td>4.2 Lake Manyara National Park</td>
<td>8,550 ha</td>
<td>32,500 ha</td>
</tr>
</tbody>
</table>
NAME: Serengeti National Park

TYPE: NP

BIOTIC PROVINCE: 4.6.2

LEGAL PROTECTION: Total

DATE ESTABLISHED: 1941, having been a protected area since 1940. Extensive boundary modifications 1959.

GEOGRAPHICAL LOCATION: West of Great Rift Valley, WNW of and 130 km from Arusha at its nearest point, with a corridor westwards to within 8 km of Lake Victoria and a northern sector extending to the Kenya border. S 1°15'-3°20'; E 34°-35°15' W.

ALTITUDE: 920-1850 metres

AREA: 1,295,000 ha (U.N. List), but a revised figure of 1,476,300 ha is now quoted (1977); it is not yet known if this is a re-assessment or an extension of the Park boundaries.

LAND TENURE: Government ownership

PHYSICAL FEATURES: High plateau interspersed with 'inselbergs' and mountain ranges of moderate altitude of mainly volcanic origin in the north and along the western corridor. Two rivers flowing west usually contain water and there are a number of lakes, marshes and waterholes. Rainfall largely restricted to period November-May, with peaks in December and March/April.

VEGETATION: Open grasslands are a major feature of the area, the dominant species being a finger or couch grass Digitaria macroblephara and Sporobolus marginatus, an indicator of saline soils, while in wetter places sedges such as Kyllinga spp. (Cyperaceae) take over. There is also an extensive block of acacia woodland savanna in the centre, a more hilly and densely wooded zone through most of the northern arm of the Park and some gallery forest.

NOTEWORTHY FAUNA: The Park is best known for the now almost unrivalled size of the great herds of 'plains game', especially wildebeest Connochaetes taurinus, zebra Equus burchelli and Thomson's gazelle Gazella thomsoni, together with numerous prides of lion Panthera leo and spotted hyena Crocuta crocuta preying on them. Other characteristic mammals of the Park are hunting dog Lycaon pictus, leopard Panthera pardus, cheetah Acinonyx jubatus, elephant Loxodonta africana, black rhino Diceros bicornis, giraffe Giraffa camelopardalis, buffalo Syncerus caffer, topl Damaliscus korrigum, hartebeest Alcelaphus buselaphus and Grant's gazelle Gazella granti. The wild dog, leopard and rhino are rated as 'vulnerable' species, the cheetah as an 'endangered' species in the Red Data Book. Well over 200 species of birds have been recorded, including several which have a comparatively restricted distribution, such as the grey-breasted spurfowl Pternistis ruficollis, Fischer's lovebird Agapornis fischeri and the rufous-tailed weaver Histurgops ruficauda.

ZONING: None yet in force, but three zones are proposed, classified as strict nature reserve, tourist or recreational zones and defence zones.

DISTURBANCES OR DEFICIENCIES: Poaching still occurs in the south of the Park and the western and northern corridors, but is being contained by the Park authorities. Tree destruction by elephants in the north is a problem, and resort to culling of some bull elephants has been necessary.

WDNP TUCN © 1977 (1)F Code: TAN.1.2
TOURISM There is a well-appointed Lodge at Seronera and three campsites nearby. Access is normally by road from the Ngorongoro Conservation Area, but there is also an airstrip.

SCIENTIFIC RESEARCH Research, which has been undertaken in the Park for nearly twenty years, has ranged over a great variety of topics including human and animal ecology, natural resources assessment, soils, vegetation, herbivores, predators, parasites and management problems.

SPECIAL SCIENTIFIC FACILITIES The Serengeti Research Institute at Banagi a few kilometres from the Park headquarters at Seronera, has well equipped laboratories and accommodation for visiting scientists.

PRINCIPAL REFERENCE MATERIAL Many papers have been published by Institute research workers and others in scientific journals. Several popular books are also available including:

KRUUK, H. 1969. Interaction between populations of spotted hyaenas (Crocuta crocuta) and their prey species. In Animal populations in relation to their food resources, A. Watson (ed.) Oxford.

STAFF One Chief Park Warden, three Park Wardens and two Senior Park Assistants, with a staff of about two hundred distributed in the Field Force, Building, Road Construction, Transport, Administrative and Accounts sections, etc.

BUDGET Tanzanian Shs. 2,752,100 (approx. equivalent to U.S. $ 334,000), excluding grants received from external sources.

LOCAL PARK ADMINISTRATION No information.
TANZANIA

NAME Ruaha National Park

TYPE NP

BIOTIC PROVINCE 4.6.2/4.6.5

LEGAL PROTECTION Total

DATE ESTABLISHED 1964, originally part of the Rungwa Game Reserve

GEOGRAPHICAL LOCATION West of Iringa in the Southern Highlands, 112 km by road:
S 7°-8°; E 34°-35°40'

ALTITUDE 750 (Great Ruaha river valley)-1900 metres (summit of Ikingu mountain)

AREA 1,150,000 ha (U.N. List), but a revised figure of 1,295,000 ha is now quoted (1977); it is not yet clear whether this is a reassessment or due to boundary changes.

LAND TENURE Government ownership

PHYSICAL FEATURES Beyond the Ruaha river and its swamps the terrain comprises a well wooded undulating plateau at a ruling level of 1000 m, rising to the peak of Datambulwa (1700 m) in the south and Ikingu mountain in the west. Rainfall varies from an average of 520 mm at Msembe, the Park headquarters in the valley, to over 800 mm above the escarpment in the miombo woodland zone, largely confined to the period December-April.

VEGETATION The typical vegetation of the valleys comprises tall stands of Acacia albida, Ficus spp. and Tamarindus indica, clumps of palms, and patches of open 'black cotton soil' grassland. Beyond and to the north undulating country is dominated by baobab Adansonia digitata scattered through the Combretum and Commiphora scrubby woodland, with occasional flat-topped Acacia tortilis; this in turn is bounded by an escarpment, above which Brachystegia and other typical miombo species extend over most of the rest of the Park, though there are areas of grassland, thornbush and rocky hills with patches of forest.

NOTEWORTHY SPECIES Mammals include lion Panthera leo, leopard Panthera pardus and cheetah Acinonyx jubatus (respectively classified as 'vulnerable' and 'endangered' by the Red Data Book) and a great variety of ungulates such as elephant Loxodonta africana, zebra Equus burchelli, black rhino Diceros bicornis (another 'vulnerable' species), greater and lesser kudu Tragelaphus strepsiceros and imberbis (for which the Park is especially noted), bushbuck Tragelaphus scriptus, buffalo Syncerus caffer, Bohor reedbuck Redunca redunca, sable antelope Hippotragus niger and Lichtenstein's hartebeest Alcelaphus lichtensteini. The birdlife is of great interest: the migrant falcon Falco eleonorae has been observed here, but in few other places in East Africa, on its way to Madagascar, and Pel's fishing owl Scopelia peli occurs along densely wooded reaches of the Ruaha river. The crocodile Crocodylus niloticus, now rated as an 'endangered' species, is also still found in the rivers.

ZONING A de facto zoning system exists in so far as the only area accessible to visitors is by the network of tracks leading from the headquarters at Msembe along the Ruaha, Mdonya and Mwagusi Sand River valleys. The rest of the Park is in effect strict nature reserve.

DISTURBANCES OR DEFICIENCIES The main problems are some poaching and illegal fishing, and the incidence of bushfires.

WDNP IUCN © 1977 (1)F Code: TAN.1.3
TOURISM  A hutted camp at Mkwawa, near the ferry by which the access route from Iringa crosses the Ruaha River, and some authorised camping sites provide accommodation. There are two airstrips but only the one about 4 km from Msambwa is at present being maintained.

SCIENTIFIC RESEARCH  Mainly concerned with elephants

SPECIAL SCIENTIFIC FACILITIES  None


STAFF  One Senior Park Warden, two Park Wardens and a work force of fifty-four.


LOCAL PARK ADMINISTRATION  No information
TANZANIA

NAME Mikumi National Park
TYPE NP BIOTIC PROVINCE 4.6.2/4.6.5
LEGAL PROTECTION Total
DATE ESTABLISHED 1964

GEOGRAPHICAL LOCATION Eastern Tanzania, north of the main road between Morogoro and Iringa and 280 km by road from Dar es Salaam; S 7°5'–7°50'; E 37°3'–37°60'

ALTITUDE 550 metres

AREA 323,000 ha (in the U.N. List for 1976 shown as 116,500 only but there has been a major recent extension of the Park to the south to link up with the Selous Game Reserve just to the north of the Uhuru Railway from Dar es Salaam to Zambia).

LAND TENURE Government ownership

PHYSICAL FEATURES The principal feature is the extensive Mkata River floodplain, with its hardpan ridges, black cotton soil pans or mbuga and marshy areas. To the east and west this is bordered by hilly country covered with miombo. Rainfall is variable: at Park headquarters, just off the main road, and at the Chagore waterhole 25 km to the north it averages 500 and 625 mm, respectively, while in the hills it exceeds 1000 mm. There are two distinct rainy seasons, the short rains in November/December, the long rains from March to May.

VEGETATION Brachystegia spp. as usual dominate the miombo woodlands; there are scattered thorn trees on the floodplain and mbuga and along the three watercourses, the Mgoda, Kikobogo and Mkata, there is tall gallery forest and dense riverine thicket. Among the species involved are ebony Dalbergia melanoxylon, Sterculia appendiculata, Sclerocarya caffra, and Borassus flabellifer and Hyphaene ventricosa palms.

NOTEWORTHY FAUNA Mammals include lion and leopard Panthera leo and pardus (the latter a 'vulnerable' species in the Red Data Book classification), elephant Loxodonta africana, giraffe Giraffa camelopardalis, zebra Equus burchelli, hippo Hippopotamus amphibius, eland Taurotragus oryx, buffalo Syncerus caffer, waterbuck Kobus ellipsiprymnus, Bohor reedbuck Redunca redunca, sable antelope Hippotragus niger, Lichtenstein's hartebeest Alcelaphus lichtensteini, wildebeest Connochaetes taurinus, and impala Aepyceros melampus. The bird life is transitional between north and south and consequently extremely varied, including such typically southern species as Dickinson's kestrel Falco dickinsoni and Boehm’s bee-eater Aerops boehmi as well as northern species such as the superb starling Spreo superbus and the straw-tailed whydah Vidua fischeri.

ZONING Not yet applied, but the Park in effect contains three distinct categories of land, those which have been developed for tourism, the so-called defence zones which periodically need special protection, and the areas protected by being extremely inaccessible.

DISTURBANCES OR DEFICIENCIES A certain amount of poaching of game and fish, illegal grazing of domestic livestock and burning have always been the main problems of this Park and still to some extent remain so. A more recent problem has been the accidents involving animals crossing the main road through the Park, due to the much greater speed of modern road transport.
TOURISM Due to its accessibility from the Tanzanian capital, Dar es Salaam, this is a popular park with visitors. Well equipped rest camp accommodation is available at Mikumi and there is an airstrip close by. The southern extension of the Park has not yet (1976) been opened to visitors: it is hoped eventually to establish a second camp for visitors travelling from the capital by rail.

SCIENTIFIC RESEARCH Studies of the yellow baboon *Papio cynocephalus* and of the African elephant have been undertaken in the Park.

SPECIAL SCIENTIFIC FACILITIES There is a small research station at park headquarters with simple laboratory facilities.

PRINCIPAL REFERENCE MATERIAL None listed. A fairly complete list of mammals and birds is to be found in -


STAFF One Senior Park Warden and two Park Wardens. The supporting staff totals some sixty persons.

BUDGET Tanzanian Shs. 872,800 (approx. U.S. $ 105,980).

LOCAL PARK ADMINISTRATION No information
TANZANIA

NAME Tarangire National Park

TYPE NP

LEGAL PROTECTION Total

DATE ESTABLISHED 1970

GEOGRAPHICAL LOCATION East of the Arusha-Dodoma road, 114 km from Arusha and about 20 km south-east of Lake Manyara: S 3°50', E 36°

ALTITUDE 1100-c.1500 metres

AREA 261,440 ha

LAND TENURE Government ownership

PHYSICAL FEATURES Arid undulating country with some rocky outcrops and high ground in the south-east and deeply incised by the Tarangire river which bisects the Park from south to north and dries back to a series of deep pools at the height of the dry season July-October. There is also a water course along the western boundary and swamps form during the rains which continue sporadically from November to May, with a peak in March and a total precipitation averaging only about 600 mm. The mean afternoon temperature of 27°C falls to 15°C at night but a minimum of about 4°C has been recorded at night in July and a maximum of 40°C on a January afternoon. Humidity in October falls as low as 35 per cent, indicating very dry conditions indeed.

VEGETATION Some nine distinct plant associations have been identified, of which the Acacia tortilis parkland is the most attractive both for the fauna and for visitors. Other zones comprise riverine grassland, Acacia-Commiphora woodland, Combretum-Dalbergia woodland, sparse gallery forest or woodland along drainage lines, whistling-thorn Acacia drepanolobium, black cotton soil pans with a thin grass cover, and the rather specialised vegetation, including Euphorbia spp. and succulents, of the deeper gullies and rocky ridges. Baobab trees Adansonia digitata occur commonly in association with several of these communities.

NOTEWORTHY FAUNA Tsetse-flies are numerous in much of the Park and this combined with the dense thorny vegetation may be the reason why perhaps the most numerous mammal species is the impala Aepyceros melampus. However, most other East African 'plains' species are to be found, including lion Panthera leo, leopard P. pardus, cheetah Acinonyx jubatus (the last two, with the black rhinoceros Diceros bicornis, which also occurs, being rated as 'vulnerable' by the Red Data Book), elephant Loxodonta africana, zebra Equus burchellii, lesser kudu Tragelaphus imberbis, eland Taurotragus oryx, buffalo Syncerus caffer and the Beisa oryx Oryx gazella beisa. The particular interest of the avifauna is that, like the more arid vegetation, it constitutes an extension of north-east African conditions, so that species such as the rosy-patched shrike Rhodophanes cruentus and golden-breasted starling Cosmopsarus regius are here near the south-western extremity of their range.

ZONING There are three de facto categories of zone - strict nature reserve, 'recreational' (areas open to visitors) and 'defence' zones.
DISTURBANCES OR DEFICIENCIES  Bushfires, often started by honey-hunters or by poachers, together with the poaching itself in certain sectors of the Park, are the principal problems. Another more natural one is the damage done by elephants to baobab trees, since this curious 'corpulent' tree has several important functions in the ecosystem.

TOURISM  Still to some extent under development and the Park is mainly visited by day tourists from Arusha (only about a two-hour drive), although there is a lodge and camping places. There is also an airstrip 1 km from the lodge.

SCIENTIFIC RESEARCH  The Park is one of the centres for data collection by Park service personnel, dating back to the first work on development of accurate animal censuses. At present it is mainly concerned with the elephant, rhino and baboon populations.

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL  None listed but of interest in connection with this Park is -


STAFF  One Senior Park Warden, two Park Wardens, a Building Foreman and a work force of forty-five.

BUDGET  Tanzanian Shs. 512,000 (about U.S. $ 62,170) not including grants received from external sources.

LOCAL PARK ADMINISTRATION  No information
NAME: Katavi National Park

TYPE: NP

BIOTIC PROVINCE: 4.6.5

LEGAL PROTECTION: Total

DATE ESTABLISHED: 1974

GEOGRAPHICAL LOCATION: Western Tanzania, 40 km along the road from Mpanda to Sumbawanga and the Zambian border: S 6°40'-7°05'; E 30°50'-31°30'

ALTITUDE: 900 metres

AREA: 225,300 ha

LAND TENURE: Government ownership

PHYSICAL FEATURES: A high altitude floodplain, dominated by Lake Katavi in the northern sector and Lake Chada in the south-east which are linked ultimately into Lake Rukwa. The terrain is flat in the grasslands and black cotton pans or mbuga, undulating and quite hilly in the north of the Park, where the soils are sandy.

The main rains fall between March and May but the amount is not quoted.

VEGETATION: The Park is situated in the great miombo woodlands, in which dominant species are Brachystegia spp. and Isoberlinia sp. This is varied by areas of short-grass floodplain and scattered stands of Acacia spp., particularly in the vicinity of Lake Chada, which is fringed with palms.

NOTEWORTHY FAUNA: Perhaps the most numerous species is still Hippopotamus amphibius, swarming in the swamps, as do crocodiles Crocodylus niloticus (now rated an 'endangered' species in its range as a whole) and large numbers of pelicans and other waterfowl great and small: over 400 species of birds have been recorded in the general area of the Park. The mammals of the drier areas include lion and leopard Panthera leo and pardus, the latter a 'vulnerable' species, elephant Loxodonta africana, zebra Equus burchelli, eland Taurotragus oryx, buffalo Syncerus caffer, puku Kobus vardoni, sable and roan antelopes Hippotragus niger and equinus, and tsessebe Damaliscus lunatus (at the northern margin of its range).

ZONING: None as yet

DISTURBANCES OR DEFICIENCIES: Illegal hunting and fishing, and the destruction of tree cover or other vegetation, aggravated by wildfires during the dry season, are the main problems here as elsewhere. Shortage of development funds is also particularly serious for a park that is in a somewhat remote and inaccessible area.

TOURISM: A small rest camp has been established for shelter but it has no equipment or other facilities, so that visitors must be fully self-contained in respect of food, bedding, etc.

SCIENTIFIC RESEARCH: None

SPECIAL SCIENTIFIC FACILITIES: None
PRINCIPAL REFERENCE MATERIAL  None listed

STAFF  One Senior Park Assistant and twelve Park Rangers

BUDGET  Tanzanian Shs. 140,660 (approx. U.S. $17,000), not including grants from external sources such as were made available for the original buildings and other development expenditure in the Park.

LOCAL PARK ADMINISTRATION  No information
TANZANIA

NAME Kilimanjaro National Park

TYPE NP

BIOTIC PROVINCE 4.8.3

LEGAL PROTECTION Total

DATE ESTABLISHED 1973

GEOGRAPHICAL LOCATION Upper levels of Mount Kilimanjaro and including corridors in the forest belt: S 2°30'–3°10'; E 37°20'–37°40'

ALTITUDE 1830 metres (Marangu Gate) – 5895 metres (summit of Kibo)

AREA 75,575 ha

LAND TENURE Government ownership

PHYSICAL FEATURES Volcanic massif comprising three extinct or quiescent volcanic peaks on an ESE axis, Shira, the oldest, on the west (4000 m), the still very rugged peak of Mawenzi, next oldest, on the east (5149 m) and the most recent and still showing minor fumarole activity, Kibo (5895 m) in the centre, still with an extensive but slowly shrinking ice cap and snow fields. Precipitation, in two marked seasons - the short rains of November/December and the long rains of March to May -, averages about 2300 mm in the forest belt at 1830 m, falls off rapidly to 1300 mm at Mandara hut at the upper edge of the forest at 2740 m, 525 mm at Horombo hut in the moorland at 3718 m and less than 200 mm at Kibo hut at 4630 m.

VEGETATION Six corridors through the forest belt, Geraragua and Shira on the west, Marangu and Mashati on the east, and Njara and Rongai on the north, are included in the Park which thus contains a good sample of the montane rainforest vegetation in its dynamic natural state. The components of the forest are complex and vary greatly with aspect, but in broad terms the wetter southern slopes are dominated by Podocarpus spp. and camphorwood Ocotea usambarensis, together with Myrica salicifolia and Agauria sp. and an understory of ferns, including a few tree ferns Cyathea spp., and the long-spiked Lobelia giberroa, the drier northern slopes by cedar Juniperus procera and olives Olea spp. Above the forest the lower and upper moorland zones differ considerably in their flora, but giant Senecios, particularly Senecio cottonii, tree heaths Erica arboarea, everlasting Helichrysum spp., Philippia trimera and Lobelia deckenii are among the many remarkable species.

NOTEWORTHY FAUNA Among the mammals the blue monkey Cercopithecus mitis, black and white colobus Colobus polykomos abyssinicus, the leopard Panthera pardus, elephant Loxodonta africana, black rhino Diceros bicornis, bushbuck Tragelaphus scriptus, eland Taurotragus oryx and buffalo Syncerus caffer are perhaps the most typical species, but one of the most interesting, very hard to see and restricted to this and a few neighbouring mountains, is Abbot's duiker Cephalophus spadix. The birds of the moorlands are few in species but also of great interest - for example, an occasional lammergeyer Gypaetus barbatus, mainly on the Shira ridge, the mountain chat Pinarochroa sordida, the duetting grass warbler Cisticola hunteri, the scarlet-tufted malachite sunbird Nectarinia johnstoni. The forest, too, has several notable species, including two starlings of very restricted distribution, Abbot's starling Pholis femoralis and Kenrick's starling Stilbospars kenricki.

ZONING None, but regulations restrict access to the Park and peaks to the Marangu route and much of the area has 'strict nature reserve' or 'defence' status.
DISTURBANCES OR DEFICIENCIES  Illegal hunting, honey gathering (with the concomitant risk of fires getting out of control), disturbance of vegetation by illegal felling, gathering and firing of grass, and incursions by domestic livestock, still cause problems.

TOURISM  Largely restricted to the organized four to five night climb to Kibo via the authorised Marangu route, stopping at the Mandara, Horombo and Kibo huts. Food and bedding are provided, and the porters to carry them, and the starting point at Marangu (where Park headquarters are situated) has hotel accommodation, also hostel accommodation for a further 65 persons, and is only 48 km from Moshi or 90 km from Kilimanjaro International Airport.

SCIENTIFIC RESEARCH  None currently in progress but the mountain has attracted much scientific work down the years.

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL  None listed, but a comprehensive account of Kilimanjaro from every aspect is to be found in TANZANIA NOTES AND RECORDS, 1965. Special Kilimanjaro number, No. 64 of March 1965, obtainable from the Hon. Secretary/Treasurer, The Tanzania Society, P.O. Box 511, Dar es Salaam.

STAFF  One Senior Park Warden, one Park Warden, Building Inspector and a work force of fifty-four.

BUDGET  Tanzanian Shs. 598,000 (approx. U.S. $ 72,610), not including grants from external sources.

LOCAL PARK ADMINISTRATION  No information
TANZANIA

NAME Arusha National Park
TYPE NP
BIOTIC PROVINCE 4.8.3

LEGAL PROTECTION Total

DATE ESTABLISHED 1960 (originally under the name of Ngurdoto Crater NP; renamed 1967).

GEOGRAPHICAL LOCATION South-east flank of Mount Meru and 32 km by road eastwards from Arusha: S 3°15'; E 36°35'

ALTITUDE 1525-4565 metres (summit of Mt. Meru)

AREA 31,880 ha (U.N. List), enlarged from 12,940 ha in 1973. Recently (1977) the figure has been quoted by the Parks authorities as 13,700 ha, but it is not yet clear whether the variations are due to typographical errors or boundary modifications.

LAND TENURE Government ownership

PHYSICAL FEATURES Volcanic terrain comprising the peak and the shattered main crater of Mount Meru, the Ngurdoto Crater, which was the nucleus of the original Park with a swampy lake in the crater floor, and the group of seven Momela lakes at the northern end of the Park, formed by subsidiary craters and the blocking of drainage lines by their eruptions.

VEGETATION Except in and around the numerous craters and the higher elevations of Mt. Meru, the Park is more or less densely forested or covered with thicket. Dominant tree species include the olive Olea hochstetteri, the soft wood Huxia congesta, Podocarpus gracilius and the pencil cedar Juniperus procera. Among the species of small trees and shrubs the Masai tea-tree Cassia didymobotrya, Vernonia subuligera with its large panicles of mauve flowers and also purple-flowered Thunbergia alata are conspicuous. In some places scattered stands of Hagenia abyssinica, elsewhere a dense belt of bamboo, separate the mountain rainforest from the higher shrubland and moorland, where Erica, Helichrysum, Senecio and Hypericum dominate the landscape. In open areas at lower levels the most widespread grasses are the star grass Cynodon dactylon and bamboo grass Pennisetum clandestinum.

NOTEWORTHY FAUNA Mammals include black and white colobus Colobus polykomos abyssinicus, elephant Loxodonta africana, black rhino Diceros bicornis (classified as 'vulnerable' by the Red Data Book), Hippopotamus amphibius, Giraffa camelopardalis, eland Taurotragus oryx and buffalo Syncerus caffer, and offer remarkable views from the Ngurdoto Crater rim as they feed undisturbed below. The water birds of the Momela lakes include both the greater and lesser flamingoes Phoenicopterus ruber and Phoenicoparrus minor, the sacred ibis Threskiornis aethiopicus, Maccoa duck Oxyura maccoa and Egyptian goose Alopochen aegyptiacus. The marina trogon Apaloderma marina and broadbill Smithornis capensis are among the many interesting birds recorded in the forest.

ZONING None: most of the Park has been developed for short-term visitors

DISTURBANCES OR DEFICIENCIES Trespass by cattle into the Park and the illegal cutting of trees or other vegetation for building poles or fuel are the major problems.
TOURISM  Readily accessible by road from Arusha, and equipped with special viewpoints, motorable circuits, accommodation at Momela Game Lodge and other tourist facilities. Ample hotel accommodation at Arusha and Kilimanjaro International Airport less than an hour away.

SCIENTIFIC RESEARCH  A considerable amount of botanical and zoological research has been carried out by senior park staff and all members of staff cooperate in animal data collection. Rhino, giraffe, elephant among the mammals, the flamingo among the birds have received particular attention. A very comprehensive survey of vegetational changes was completed by a former Warden, D. Vesey-Fitzgerald, shortly before his death.

SPECIAL SCIENTIFIC FACILITIES  None

PRINCIPAL REFERENCE MATERIAL  None listed, but it is hoped that eventually funds to publish the vegetational survey of the Park will be available.

STAFF  One Park Warden, one Senior Park Assistant and a work force of thirty-five.

BUDGET  Tanzanian Shs. 394,300 (approx. U.S. $47,880), not including grants from external sources.

LOCAL PARK ADMINISTRATION  No information
TANZANIA

NAME Gombe National Park (formerly Gombe Stream NP)

TYPE NP

Biotic Province 4.6.5

Legal Protection Total

Date Established 1968 (replacing a Game Reserve established in 1943)

Geographical Location Eastern shore of Lake Tanganyika, southern boundary about 10 km north of Kigoma: S 4°40'; E 29°35'

Altitude 750-1500 metres

Area 14,800 ha (U.N. List): recent reports (1977), however, quote the figure as 9600 or even as little as 5200 ha, but it is not yet clear whether a substantial reduction in the size of the Park has in fact taken place.

Land Tenure Government ownership

Physical Features Part of the fairly steep escarpment dominating Lake Tanganyika on the east. A number of watercourses carve their way down to the lake forming some quite wide valleys in places.

Vegetation Lower slopes are clothed in miombo woodland, mainly composed of Brachystegia spp. Thicker gallery forest borders the various watercourses including the Gombe stream itself and similar forest extends along the crest of the scarp at the cloud level; the oil palm Elaeis guineensis is one of its important constituents.

NoteWorthy Fauna Interest centres on the chimpanzee Pan troglodytes population; other mammals include baboon Papio sp., blue or diadem monkey Cercopithecus mitis, red colobus Colobus badius, leopard Panthera pardus, bushbuck Tragelaphus scriptus, buffalo Syncerus caffer and waterbuck Kobus defassa. The bird life is interesting with no less than five species of barbet, the palm-nut vulture Gypohierax angolensis and the very localised Forbes's plover Charadrius forbesi among the more unusual species. In addition to the leopard, the chimpanzee is now classified by the Red Data Book as a vulnerable species.

Zoning None, but the whole Park has now been set aside for scientific research only.

Disturbances or Deficiencies Some illegal fishing still continues and wildfires, liable to be started by fishermen smoke-drying their catch, are a problem, as is the cutting of vegetation for fuel or construction of racks, etc. The villages of Mwamgongo and Kazinga are close to the Park border on the north and south respectively and a public road runs along the top of the escarpment.

Tourism Not at present permitted, a decision reinforced by the attack on the Research Centre by raiders from Zaire in May 1975.

Scientific Research Some of the most intensive and long-continuing research ever undertaken on chimpanzees and other primates.

Special Scientific Facilities The Research Centre has been established at the locality known as Kasekela and provides laboratory, accommodation and other facilities.
PRINCIPAL REFERENCE MATERIAL  None listed but the chimpanzee studies are summarised in - GOODALL, J. 1971. In the Shadow of Man. Collins, London.

STAFF  One Senior Park Assistant and six Park Rangers.

BUDGET  Tanzanian Shs. 41,860 (approx. U.S. $ 5080)

LOCAL PARK ADMINISTRATION  No information
TANZANIA

NAME Lake Manyara National Park

TYPE NP

BIOTIC PROVINCE 4.6.2

LEGAL PROTECTION Total

DATE ESTABLISHED 1960

GEOGRAPHICAL LOCATION South of the Arusha to Ngorongoro road 112 km from Arusha just before the road climbs up the western wall of the Great Rift Valley: S 3°20'40'; E 35°45'

ALTITUDE 945-1800 metres

AREA 8550 ha (U.N. List); now (1977) quoted as 32,500 ha inclusive of a lake area of 22,900, the latter officially included in the Park quite recently together with an extension of the land area intended to ensure free movement of elephants from the Park along the lake shore and thence to the Marang Forest Reserve above the escarpment.

LAND TENURE Government ownership

PHYSICAL FEATURES Floor of Rift Valley, largely occupied by the salt lake which gives the Park its name; a patch of forest and the two small rivers flowing into the lake and also a section of the towering wall of the Rift are other features included within the boundaries. Hot volcanic springs between the Rift Wall and the lake towards the southern end of the Park, which also has non-porous ancient crystalline rock in place of the very porous recent volcanic rock near the entrance to the Park at its northern end. The Park is situated in the zone of two rainy seasons, the short rains November-December and the long rains March-May, their onset sometimes marked by a spectacular display of 'dust devils' when large expanses of the soda-laden lake surface are still dry.

VEGETATION The groundwater forest in the vicinity of the Park entrance has many fine trees, including figs Ficus sycomorus, tamarinds Tamarindus indica and sausage trees Kigelia aethiopica. A little further east formerly extensive stands of Acacia campylacantha, spirocarpa and senegal were to be found, while towards the lake doum palms Hyphaene crinata and thickets of raffia palms dominate the dense reeds and sedges surrounding the area where the rivers enter the lake.

NOTEWORTHY FAUNA The Park is especially noted for its tree-climbing lions Panthera leo, black rhino Diceros bicornis (classified by the Red Data Book as a 'vulnerable' species) and its bird life. Other mammals include elephant Loxodonta africana, zebra Equus burchelli, Hippopotamus amphibius, giraffe Giraffa camelopardalis, buffalo Syncerus caffer and impala Aepyceros melampus. Among the birds, the many thousands and occasionally millions of lesser flamingos Phoenicoparrus minor with smaller numbers of greater flamingos Phoenicopterus ruber are the most spectacular species, but waterfowl of all sorts are notable both for the number of species concerned and sometimes exceptional numbers of individual species. A species of very restricted range which is common in the Park is the chestnut-banded sand plover Charadrius venustus. Some 44 species of diurnal birds of prey have been recorded.

ZONING No formal zoning, but defence zones for the protection of particular species are occasionally set aside, while the steep slopes of the Rift Wall are inaccessible and in effect a tourist-free zone.

WDNP IUCN © 1977 (1)F Code: TAN.4.2
DISTURBANCES OR DEFICIENCIES  De-barking and hence killing of acacia trees by elephants has brought about considerable changes by opening up what at one time was closed canopy woodland. However, as a result, more species of 'plains game' tend to enter the Park and plant species diversity has also been increased.

TOURISM  Lying on the route to the Ngorongoro Crater and the Serengeti National Park, this Park has always been well patronized by visitors. Accommodation is available just outside the Park boundary on the crest of the escarpment. There is an airstrip not far from the Park entrance and a simple system of a main central track and three or four circuit tracks down the length of the Park for game viewing, though some difficulty has been experienced keeping all these passable during and just after the rains due to the silt load washed down from the scarp.

SCIENTIFIC RESEARCH  Directed chiefly to the vegetational changes.

SPECIAL SCIENTIFIC FACILITIES  A small research station on the Ndala river about 20 km south of the Park gate.

PRINCIPAL REFERENCE MATERIAL  None listed; for a general account of the area of the present park, particularly the geology and birdlife, see Watermeyer & Elliott, 1943, 'Lake Manyara': Tanganyika (now Tanzania) Notes and Records No. 15.

STAFF  One Senior Park Warden, two Park Wardens and one Senior Park Assistant collaborate with an Administrator and a total staff of 53 persons in the maintenance and running of the Park.

BUDGET  Tanzanian Shs. 773,600 (U.S. $ 93,940), excluding grants received from external sources and also in this case excluding staff salaries.

LOCAL PARK ADMINISTRATION  No information
**THAILAND**

**AREA** 513,458 sq. km

**POPULATION** 42,000,000 (1975 estimate)

**PARKS AND RESERVES LEGISLATION** The first law for wildlife protection was passed in 1921 and concerned wild elephants. The Wild Animal Preservation and Protection Act B.E. 2503, enacted in 1960, came into effect from 1 January 1961, with the establishment of a Section for Wildlife Management in the Sylvicultural Division of the Royal Forest Department, which is part of the Ministry of Agriculture.

**PARKS AND RESERVES ADMINISTRATION** The Wildlife Management Section was raised to Divisional status in 1975. The Division now administers 12 Wildlife Sanctuaries, 4 non-hunting areas, 4 nature education and wildlife propagation centres and one wildlife research centre. There is also a National Park Division, responsible for that category of reserve and also under the Ministry of Agriculture.

**ADDRESS** Division of Wildlife Conservation, Royal Forest Department, Ministry of Agriculture and Co-operatives, Paholyothin Road, Bangkhen, Bangkok 9.

**TOTAL AREA UNDER PROTECTION** 1,829,788 ha (U.N. Listed reserves only)

**PROTECTED AREAS**

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