
WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

THE CAPE FLORAL REGION (SOUTH AFRICA) ID N°: 1007 REV

Background: In 1999 the Cape Floristic Region - Phase 1: Cape Peninsula Protected Natural Environment was nominated by South Africa for World Heritage status. The 24th session of the World Heritage Bureau referred the nomination in June 2000 requesting the State Party to “ensure that the core area of the Cape Peninsula Protected Natural Environment is under one effective and consolidated management regime. The Bureau also encouraged the State Party to complete the preparatory work associated with Phase 2 of the Cape Floristic Region nomination and to submit this when the boundaries of the complementary areas within the CFR are finalised.” The Phase 2 nomination was submitted in January 2002, but returned to the State Party to be combined in a single nomination with the Cape Peninsula National Park. The present nomination responds to these recommendations.

1. DOCUMENTATION

- i) **IUCN/WCMC Data Sheet:** 14 references
- ii) **Additional Literature Consulted:** Cowling, R. M. 1990. Diversity components in a species-rich area of the Cape Floristic Region. **Journal of Vegetation Science** No. 83. pp 699-710; Cowling, R. M. and Holmes, P. M. 1992. Flora and Vegetation in **Ecology of Fynbos**. Cowling, R. M. (ed.); Cowling, R. M. & Hilton-Taylor, C. 1994. Patterns of plant diversity and endemism in southern Africa: An overview in **Strelitzia** No. 1. pp 31-52; Cowling, R. M. & P. M Holmes. 1992. Endemism and speciation in a lowland flora from the Cape Floristic Region in **Botanical Journal of the Linnean Society** No. 47. pp 367-383; Cowling, *et al.* 1996. The Cape Peninsula South Africa: physiographical, biological and historical background to an extraordinary hotspot of biodiversity in **Biodiversity and Conservation** No. 5. pp 527-550; Davis, S. D. and Heywood, V. H. 1994. **Centres of Plant Diversity: A guide and strategy for their conservation**. Oxford University Press; Goldblatt, P. and Manning, J. C. 1999. **Cape flora – A conspectus of the Cape flora of South Africa**; Groombridge, B. 1992. **Global Biodiversity – Status of the Earth's Living Resources**. Chapman and Hall; Myers, N. 1990. The Biodiversity Challenge: Expanded hot-spot analysis. **The Environmentalist**. No. 10. pp 243-255. Richardson, *et al.* 1996. Current and future threats to plant diversity on the Cape peninsula, South Africa in: **Biodiversity and Conservation**. No. 5. pp 607-648; Mittermeier R. *et al.* 1999. **Hotspots – Earth's biologically richest and most endangered terrestrial regions**. Conservation Intl. 431p.; U. of California. 2003. Mediterranean Climate Regions. (poster); Gelderblom C.M. 2003. Turning strategy into action: implementing a conservation action plan in the Cape Floristic Region. **Biological Conservation**. 112; Dallman, P. R. 1998. **Plant Life in the World's Mediterranean Climates**. Oxford University Press.
- iii) **Consultations:** 7 external reviewers; comments from ICOMOS. Relevant officials from federal and provincial nature conservation agencies.
- iii) **Field Visit:** David Sheppard, February, 2000; Jim Thorsell, September, 2003.

2. SUMMARY OF NATURAL VALUES

The Cape Floral Region (CFR) is located in the southwest corner of South Africa in the Cape Province. The nominated site of eight clusters extends from 50km south of the City of Cape Town northwards 210km to the Cederberg and 450km northeast to the Swartberg. The 553,000 ha nominated cluster of eight sites together form a representative sample of the eight

phytogeographic centres of the CFR. The eight sites and their sizes are shown in Table 1 below

Table 1: The eight clusters making up the Cape Floral Region

Cape Peninsula National Park	17,000 ha
Cederberg Wilderness Area	64,000 ha
Groot Winterhoek Wilderness Area	26,000 ha
Boland Mountain Complex	113,000 ha
De Hoop Nature Reserve	32,000 ha
Boosmansbos Wilderness Area	15,000 ha
Swartberg Complex	112,000 ha
Baviaanskloof Protected Area	174,000 ha
Total area	553,000 ha

Elevations range from 2077m in the Groot Winterhoek to sea level in the De Hoop Nature Reserve. Peaks such as Table Mountain form a scenic backdrop to the Western Cape, and much of the area is characterised by rugged mountain passes, rivers, rapids, cascades and pools. The Region has a semi-Mediterranean climate of cool wet winters and hot dry summers in the west with summers tending to be rainier in the east. Rainfall varies markedly with topography between 300-500mm in the lowlands to 1000-3300mm in the mountains where clouds and fog can persist and snow falls in winter.

The CFR has been called the world's 'hottest hot-spot' for plant diversity and endemism and has been designated as one of the IUCN World Centres of Plant Diversity. Although the smallest of the world's six principal floristic regions and in a temperate zone, it has a degree of species richness comparable with most tropical hotspots. In less than 0.5% of the area of Africa it has nearly 20% of its flora and in less than 4% of the area of southern Africa it has nearly 44% of the sub-continental flora of 20,367 species. Nearly 69% of its vascular plant species do not occur naturally anywhere else in the world. Within its 90,000 km² area there are 8,996 plant species and 988 genera, roughly half of all genera in South Africa. These include five endemic and two sub-endemic families and 1435 (70%) of all southern African threatened species. There is also a very high species-to-genus ratio of 9:1. Within the CFR, the southwest has the most diverse flora, and of these species the Cape Peninsula has almost half, with 25% of the flora of the whole CFR. This pattern of species richness is exceptional for this climatic type, not only in a single habitat but over changes of taxa with changes in habitat (*beta* diversity) and in changes of taxa in similar habitats over changes in geographic area (*gamma* diversity).

There are some 6,191 endemic species in the CFR. The Cape Peninsula has 2285 species of plants, 90 being endemic. The Cederberg has 1778, including an endemic cedar. The Boland Mountain Complex has 1600 plant species, 150 being endemic, and none of the sites has less than 1100 species. The richness is due to the wide variety of macrohabitats and microhabitat mosaics resulting from the range of elevations, soils and climatic conditions, including the co-existence of winter-rainfall species with summer-rainfall species from further east. The flora is also characterised by concentrations of relict endemics and massive still-active speciation due to its isolation in an area of very long established climatic stability which has generated the enormous diversity. The flora of each nominated area is sufficiently distinct to justify representation of the region by several sites, each of which is large enough to preserve the genetic viability of its types of diversity and to accommodate large-scale natural processes such as fire and drought. Eight phytogeographic centres of endemism have been distinguished in the Cape Floral Region, each of which is represented within the nominated site.

The distinctive flora of the CFR which comprises 80% of its floristic richness, is a sclerophyllous shrubland known as *fynbos* (fine bush), a fine-leaved vegetation adapted to both the Mediterranean type of climate and to periodic fires, and defined by the location or dominant species. Its three main components are heaths, *Proteaceae*, reedlike *Restionaceae*

and geophytes (bulb-plants), including many *Iridaceae*. Plant variety is based on soil types which vary from predominantly coarse, sandy, acidic nutrient-poor soils, to alkaline marine sands and slightly richer alluvials. There are pockets of evergreen forest in fire-protected gorges and on deeper soils; in the east are valley thickets and succulent thickets, which are less fire-dependent, and in the drier north, low succulent Karoo shrubland.

Four other characteristics of the CFR of global scientific interest are: (1) the responses of the plants to fire, (2) seed dispersal by ants and termites, (3) the high level (83%) of plant pollination by insects, mainly beetles and flies and (4) its linkages to Gondwanaland allowing reconstruction of the flora's ancient connections. Adaptation to fire include geophytes which sprout from underground and seed storage both underground and in the canopy, some species requiring fire for germination. Ants take the seeds to eat the lipid deposits; about 28% of the Region's flora, including over half of the *Proteaceae*, is dispersed by them. Most of the shrubs so dispersed are both endemic and threatened species but the latter lack a way of regenerating after fire. Pollination and nutrient-cycling by termites, and termite-mound communities are notable and the region has very high levels of bird- and mammal-pollinated plants.

3. COMPARISONS WITH OTHER AREAS

The CFR is located within the Cape Schlerophyll Biogeographical Province (Udvardy, 1975). In view of its unique floristic values, it is also recognised as a floral kingdom of its own - The Cape Floristic Kingdom. There are no natural World Heritage sites within either the Biogeographical Province or the Cape Floristic Kingdom. The CFR is among the highest biodiversity "hot spots" in the world, based on plant diversity and endemism. Table 2 shows the numbers of endemic species present in 18 "Hot Spots" (Groombridge, 1992). This clearly indicates the pre-eminent position of the Cape Region. Eleven of these 18 "Hot Spots" contain World Heritage sites.

Table 2: Numbers of endemic species present in 18 "Biodiversity Hot Spots"

Region	Higher Plants	Mammals	Reptiles	Amphibians	Swallow-tail Butterflies
Cape Region (South Africa)	6,000	15	43	23	0
Upland western Amazonia	5,000	-	-	c. 70	-
Atlantic coastal Brazil	5,000	40	92	168	7
Madagascar	4,900	86	234	142	11
Philippines	3,700	98	120	41	23
Borneo (north)	3,500	42	69	47	4
Eastern Himalaya	3,500	-	20	25	-
SW Australia	2,830	10	25	22	0
Western Ecuador	2,500	9	-	-	2
Colombian Chocó	2,500	8	137	111	0
Peninsular Malaysia	2,400	4	25	7	0
Californian floristic province	2,140	15	15	16	0
Western Ghats (India)	1,600	7	91	84	5
Central Chile	1,450	-	-	-	-
New Caledonia	1,400	2	21	0	2
Eastern Arc Mts (Tanzania)	535	20	-	49	3
SW Sri Lanka	500	4	-	-	2
SW Cote d'Ivoire	200	3	-	2	0
TOTAL	49,955	375	892	737	59

The CFR has one fifth of all the plant species of Africa, despite occupying less than 0.5% of the continent's area. The CFR has globally significant endemism levels and includes five

endemic families; by comparison the whole of southern Africa has only 12 endemic families. It has a high level of dependency, with almost 6,000 of the 8,500 plant species being endemic to the region. One of the eight clusters, the Cape Peninsula National Park, with 4,651 plant species and a level of endemism of 31.9%, has plant biodiversity unparalleled in other temperate biodiversity "hotspots" and compares favourably with other sites either on or proposed for the World Heritage List for their botanical values. In recognition of these levels of biodiversity and endemism, the CFR has been identified as a Global Centre of Plant Diversity. It is the pre-eminent area of the world's five mediterranean climate regions which in total account for 2% of the earth's land area but account for 16% of the world's plant species.

As Table 3 indicates, the CFR has by far the highest species density (plant species per sq. km.) and species rarity than any of the other mediterranean-type climate regions.

Table 3 : Plant Diversity and Rarity (Source: Dallman, 1998)

Region	Area, km ² millions	Plant species, thousands	Species Density*	Percent Rare or Endangered
World	148	250	1.7	10
Europe	5.7	14	2.5	11
Australia	7.6	22	2.9	10
USA	9.4	20	2.1	8
California	0.41	5.1	12	23
Cape Region	0.09	8.6	94	27
SW Australia	0.31	8.0	26	24

*thousands of plant species per million km²

In conclusion, the CFR is distinctive in terms of its species diversity which is amongst the highest in the world. The floral diversity compares favourably with that found in some areas of the neotropical forests. The CFR also has much higher levels of plant diversity and levels of endemism than other mediterranean-type climate regions (1.7 times that of southwest Australia, 2.2 times that of California and the Mediterranean basin and 3.3 times the diversity of Chile). Only the islands of New Zealand, Hawaii and Madagascar have higher levels of endemism.

4. INTEGRITY

4.1. Management and Planning Framework

The nominated areas are managed under a region-wide conservation framework, the Cape Action for People & the Environment (CAPE) Project, established with assistance from the GEF in 2000. CAPE coordinates the work of national, provincial and local authorities and private landowners to promote the protection of biodiversity by integrating social, financial and conservation initiatives. Acts and legal instruments affecting the area include the World Heritage Convention Act, National Environmental Management Act, Environment Conservation Act, National Water Act, Conservation of Agricultural Resources Act, Mountain Catchment Areas Act, National Heritage Resources Act, National Forests Act, National Veld and Forest Fire Act, the Sea-shore Act, the Marine Living Resources Act, Wetlands Conservation Bill, the Biodiversity White Paper and the National Coastal Management Bill. Since 1995 the well funded Working for Water Programme has dealt with alien plant infestation and has been a major source of support for Park management.

Not all of the individual protected areas in the eight clusters have completed management plans but those that do not are currently in preparation.

4.2. Boundary Issues

Cape Peninsula National Park

Apart from the Boland Mountain Complex which is surrounded by mostly rural land uses, six of the clusters have satisfactory boundaries and are bordered by other conservation lands. The situation in the Cape Peninsula National Park (CPNP), however, has potential for various boundary conflicts. Here there is considerable urban interface with Greater Cape Town and this poses significant challenges for conservation management, particularly in relation to control of access, alien species and fire. The urban edge has now been clearly defined, legislation enforced and much consolidation of ownership has taken place over the past 5 years. These efforts are continuing and there are currently proposals to develop natural corridors between sectors of the park at Noordhoek wetlands and between the high altitude zones and the coast. South African National Parks (SANP) and the City Council of Cape Town along with the many other stakeholders are making commendable progress in rationalising boundaries of the park as envisioned in the management plan and policy documents and in response to IUCN concerns expressed in the 2000 evaluation.

Kirstenbosch National Botanical Garden

It is noted that the Kirstenbosch National Botanical Garden (KNBG) is included in the nomination. KNBG covers approximately 200ha (out of the total nominated area of 550,000ha) and is focused on research and public education relating to *fynbos* vegetation. It includes significant infrastructure (restaurant, car parks, visitor centres, etc). There is no other Botanic Garden in the world which is included within a natural World Heritage site although some are included under cultural criteria. IUCN considers the KNBG an exceptional case and that it should be included within the nominated site, for the following reasons: (a) it is managed in an integrated way with the surrounding core area of the CPNP; (b) its research and public outreach programmes relate to and support the objectives of the nominated site; and (c) important biodiversity is included within its boundaries.

4.3 Integrity Issues

Human activities have had a significant impact on the biodiversity of the Cape Peninsula, since first European settlement in 1652. Urbanisation and agriculture have substantially transformed most of the original area of natural vegetation. Lowland vegetation has been most affected, although almost half of the transformation has occurred in only one of the 15 recognised vegetation types. However, other vegetation types have also been affected and, specifically, vegetation at higher altitudes has been impacted by alien species. Human population pressures on biodiversity are expected to grow and will particularly affect the Cape Peninsula portion of the nomination. The current population within the Cape Peninsula region of 3.5 million is projected to grow to 6.2 million by 2020. This growth poses the most significant challenge to the long-term integrity of the area, particularly through increasing pressures for access and urban development, and an increasing incidence of human induced fire. A number of innovative measures are being taken by the responsible management agencies to address social issues which are critical to the long-term survival of the site.

Five major threats to integrity are:

- Fire

The management of fire is a major issue within the CFR particularly in the CPNP. This issue was given particular prominence with a major fire in 2000 which burnt approximately 40% of the Cape Peninsula National Park. Fire is a natural component of the *Fynbos* Biome but the fire incidence is greatly increased within the CPNP, due to the proximity to the larger urban centre of Cape Town. Increasing fire incidence is also related to the presence of alien invasive species. SANP has initiated a controlled burning programme for the CPNP which includes: fire regimes which maintain biological diversity; maintenance of fire breaks along the urban edge; and development of fire education programmes. Fire management is a major issue in all other clusters as well and both the Western Cape Nature Conservation Board and

the Eastern Cape Directorate of Environmental Affairs have adequate measures in place to manage fires.

- Invasive Species

Alien plants pose the most severe threat for the continued existence of *Fynbos* ecosystems. Invasive species have invaded large areas of the nominated area particularly coastal habitats. All three responsible agencies are investing considerable efforts into the management of invasive species and significant external resources have been mobilised through the Working for Water Programme.

- Staff and Budget

The resources available for conservation management of the site are substantial. Resources available are increasingly complemented from other sources, including from the Global Environment Facility (GEF), conservation NGOs, tourism revenues and the private sector. Recently, the National Botanical Institute also received substantial funding from Norway and the Critical Ecosystems Partnership Fund to prevent the extinction of indigenous plants in the Cape Floral Region. Each of the protected areas in the nomination has at least one Reserve Manager and a varying number of support staff.

- Tourism and Infrastructure Development

The CFR, particularly in proximity to Cape Town, is a tourist destination for many international as well as local visitors. There is significant development around and within the CPNP reflecting its location adjacent to the city of Cape Town. Pressures for additional development are significant. Most of the other components of the nomination are not overused at this time but, with World Heritage recognition, visitation will grow in the future. These issues are being addressed in the individual management plans for each cluster.

- Climate Change

Predictive models to forecast potential effects of climate change have been prepared for the CFR and all the clusters. A warmer climate and a shifting rainfall regime will certainly have effects on the flora. Six of the eight units are large with steep altitudinal gradients and all are surrounded by other conservation lands. These will help alleviate the effects of climate change and a monitoring system is in place to detect what these effects will be.

5. ADDITIONAL COMMENTS

5.1. Serial sites

When serial sites, such as this one, are evaluated IUCN poses a standard set of 3 questions:

- **What is the justification for the serial approach?** Most of the natural habitat in the CFR has been transformed during 400 years of European settlement. An “archipelago” of relatively natural islands of original vegetation still exists. These separate islands combine to display a wide range of biodiversity that make up the CFR. The collection of all eight clusters adds up in a synergistic manner to present the biological richness and evolutionary story of the CFR.
- **Are the separate elements of the site functionally linked?** Each of the clusters in the CFR nomination has evolved in similar climatic and geological conditions. Many species overlaps occur between the different units while each also has a particular suite of species depending on variations in geology, rainfall, soil type and elevation. Indeed, the definition of the clusters emerged from a comprehensive ecological survey undertaken by the CAPE project which identified the optimal set of sites. This ensured that the areas nominated were indeed linked and provided coverage of the *Fynbos* Biome.

- **Is there an overall management framework for all the units?** This framework is provided under the umbrella of CAPE. Although three management regimes have responsibility for the different clusters, CAPE serves to assist in providing the CFR database and in coordinating activities of stakeholders. At the national level, the World Heritage Convention Act provides the national framework and provision to establish an advisory body for each of the sites.

The CFR nomination is thus appropriately considered a serial site. It is similar in concept to the Central Eastern Rainforest of Australia World Heritage site, also a serial site containing eight clusters (but only one-fifth the size).

5.2. Other comments

The current name of the nominated area: "The Cape Floral Region" does not reflect the true geographical extent of the nomination and the State Party should be requested to consider an alternate name such as "Cape Floral Region Protected Areas" to ensure conformity with other serial sites on the World Heritage List.

As in most natural areas in the region there is a considerable record of previous human settlement in the nominated sites. For this reason, ICOMOS has requested that their comments be included as follows:

"The nomination stresses that although the protected areas are not being proposed as cultural properties, all show evidence of early occupation by humans from the Early Stone Age, and are rich in rock art dating back over 5000 years. The cultural history of the nominated areas, as reflected in caves, burial sites and remains of houses, bears evidence to almost continuous occupation by people from at least 250,000 years ago up to the last 50-200 years.

The dossier draws attention to the way people have functioned as agents for ecological change and outlines the history of human interaction with nature in the region since people arrived 'about one million years ago'. Of particular significance is that fact that San hunter-gatherers, who appeared in the area in the late Stone Age, (around 20,000BP) and practiced controlled burning to encourage fresh plants for gathering, were still living in some of the nominated areas until as recently as 1978.

The Cape Peninsula National Park contains one of the best-known landmarks of South Africa. Table Mountain, looming over Cape Town has become an icon for the city, and arguably now has worldwide recognition for its association with South Africa.

The cultural qualities of the nominated sites are very strong, particularly for what they reveal about the pre-colonial history of the area, and for the specific iconic value of Table Mountain. For these reasons, it is suggested that it would be desirable if the State Party might consider in the future re-nominating these sites as cultural landscapes."

6. APPLICATION OF WORLD HERITAGE CRITERIA

The Cape Floral Region has been nominated under natural criteria (ii) and (iv).

Criterion (ii) Ecological processes

The Cape Floral Region is considered of outstanding universal value for representing ongoing ecological and biological processes associated with the evolution of the unique *Fynbos* biome. These processes are represented generally within CFR and captured in the eight nominated clusters. Of particular scientific interest are the plant reproductive strategies including the adaptive responses to fire of the flora and the patterns of seed dispersal by insects. The pollination biology and nutrient cycling are other distinctive ecological processes found in the site. The CFR forms a centre of active speciation where interesting patterns of endemism and adaptive radiation are found in the flora. IUCN considers that the nominated

site meets this criterion.

Criterion (iv) Biodiversity and Threatened Species

The Cape Floral Region is one of the richest areas for plants than for any similar sized area in the world. The number of species per genus within CFR (9:1) and per family (52) are among the highest given for various species-rich regions in the world. The species density in CFR is also amongst the highest in the world. It displays the highest levels of endemism at 31.9 % and it has been identified as one of the world's 18 biodiversity hot spots. IUCN considers that the nominated site meets this criterion.

The CFR has areas of high natural beauty and aesthetic importance, including Table Mountain, Cape Point and the coast of the De Hoop. However, these are secondary values to its floral ones.

7. RECOMMENDATION

IUCN recommends the World Heritage Committee to **inscribe** the Cape Floral Region under natural criteria (ii) and (iv). A revised formal name of the site should be requested from the State Party.

The Committee may wish to commend the State Party for the progress made in preparing the management plans for the various clusters. The Committee may also wish to commend the State Party for their innovative work under CAPE and other projects to build public support for conservation of the area. The State Party should be encouraged to carefully consider developing innovative socio-economic programmes for poverty alleviation as well as public education and outreach.