COUNCIL OF EUROPE
CONSEIL DE L'EUROPE

Strasbourg, 28 December 1987
PEZP87.35

PE-ZP (87) 35

STEERING COMMITTEE FOR THE CONSERVATION AND MANAGEMENT
OF THE ENVIRONMENT AND NATURAL HABITATS (CDPE)

Committee of experts - protected areas

ON THE SPOT APPRAISAL
AT THE TEIDE NATIONAL PARK (Spain)

Secretariat memorandum
prepared by
the Directorate of Environment
and Local Authorities

15.607
09.3

I. BACKGROUND

At their 1987 meeting, the Committee of experts on protected areas recognised the European interest of the Teide National Park (Spain) and decided, in accordance with Resolution (73) 4, that an on-the-spot appraisal should be carried out.

II. APPRAISAL

1. Terms of reference

The terms of reference are set down in Resolution (73) 4, item 1.5.

2. Carrying out the appraisal

The appraisal was carried out by Mr Cyrille de Klemm, the expert appointed by the Secretary General, accompanied by Mr E.F. Galiano, of the Environment Conservation and Management Division. It took place in the presence of Mr Francisco Rodriguez, Head of the Spanish National Parks Service, Mr Miguel Castroviejo, Director of the Park and Mr José Luis de la Rosa, Deputy Director. We also had the opportunity to meet Mr Wolfredo Willpret, President of the Board of the park, Mr Jorge Bonnet, Director of the National Parks Coordination Centre and MM Angel Bañares and Pedro Rodriguez, responsible for the programme of genetic research at the park, as well as most of the park's staff. Both Mr de Klemm and I should like to express our thanks to all these gentlemen and also to the park guards, MM Juan Carlos Oviedo and Roberto Gonzalez Garcia, and the pilot of the helicopter, for their hospitality and general helpfulness. The means provided for the visit were indeed extraordinary and our only regret is that we took up so much of the time of the park's staff, during the days of our visit, when more than 40 people were involved in different tasks aimed at facilitating our work.

Previous to our appraisal of the park - on 16 and 17 September 1987 - the Spanish authorities arranged for us to make day visits to two other national parks : Carajonay, on the island of Gomera, and Caldera de Taburiente, on the island of La Palma. We must not forget to thank the staff of these two parks and in particular Mr Isidoro Sanchez, Director of Carajonay and regional parliamentarian, who was the first Director of Teide National Park.

On the morning of the first day of our appraisal, we visited the National Parks Coordination Centre. Later we flew by helicopter over the north-west of Tenerife and the park itself. We could appreciate from a privileged viewpoint the volcanic peaks of Teide, Pico Viejo and Chinyero, as well as the cliffs of La Fortaleza and the white marine formation of Montaña Blanca. On the same day, we walked along the area close to Mirador de Roques de Garcia, drove along the main road crossing the park through the volcanic circus of Los Cañadas and were then shown the visitor's centre at the entrance to the park. The following day we went to the summit of Teide, visited the area of La Fortaleza (of extraordinary botanical importance), walked along one of the botanical paths and visited the Emilio Fernandez Centre for Nature activities.

3. The region

The Canary archipelago is formed by a series of volcanic islands that emerged from the sea some 40 million years ago. Together with the islands Azores, Madeira and Cabo Verde, they form the core of a biogeographic region of great originality : the Macaronesia. All these Atlantic islands are located north of the tropics, in the southern-most part of the temperate zone. The Canaries are very close to the Saharian coast of Africa and their climate would be considerably drier were it not for the rain brought by the trade winds, which falls in the islands where the mountains are sufficiently high. Thus the rainfall is mainly on the northern side of some islands, and there the vegetation is luxuriant and tropical, while the southern side of the same islands is dry and desert-like.

Isolation, contrasting topography and climate, and a most interesting geographical position have contributed to the existence of a wide variety of habitats which have evolved independent of both the European and African continents. Thus the number of endemic species is a cause for amazement, as they form about a third of the total flora (1700 species of which 635 are endemics).*

Of all the islands, it is Tenerife which displays the richest diversity of biotopes ; furthermore it possesses a high altitude zone (up to 3700 metres) which contains the "supracanarian" vegetation stratum. It is in this area that the Teide national park is situated.

4. The Park

4.1 Physical characteristics

4.1.1 General geographical and geological features

The park comprises a territory of approximately 13,500 hectares at the summit of the Teide, which is the generic name for the great volcanic formation that produced the island of Tenerife (and also a more specific name for the highest and most recent volcano). Actually the park is mostly located in a great depression formed by the erosion of an ancient volcanic cone known as Los Cañadsa. Parts of the ancient walls of this crater are still present, with steep inward slopes and massive rocky formations (such as La Fortaleza - the fortress). Within this great volcanic circus at about 2000 - 2200 m altitude stands the cone which originated from the most recent eruption (500,000 years ago) and formed the volcanic peaks of Pico Viejo and Teide. The latter is the highest in Spain (3717 m).

As a detailed geological history of the park is included in the Diploma application presented by Spain (SN-ZP (87) 27), only the most significant geological and geomorphological aspects, which could be appreciated during the visit, are mentioned here.

---

* 12 Council of Europe member States (Austria, Belgium, Denmark, Federal Republic of Germany, Ireland, Liechtenstein, Luxembourg, Netherlands, Norway, Sweden, Switzerland and the United Kingdom) plus Finland have together only 94 plant endemics. France has 245, Italy 302 and Greece 611.

The park is located in an area still volcanically active. The last eruption in the park was in 1798, the last in the island (near the park) in 1909, and the last in the archipelago on 26 October 1971 in the island of La Palma , which was extended two kilometres into the sea as a result of the deposit of new material. Eruptions have occurred regularly in the area of the park over the last few centuries, and there is no reason why they should not occur in the future. The material deposited is varied (basalts, trachytes, phonolytes, pumites) and so are the volcanic structures (stratovolcanos, lava flows, domes, plugs, dykes, etc). Thanks to the volcanic tectonic fracturing and the action of meteorological agents (mainly cracking due to ice action and snow and water erosion, these materials and structures appear in different stages of meteorization. The result is a rich diversity of substrats forming a peculiar mosaic, the pattern of which is related to the age, nature and disposition of materials, the colonisation of which by vegetation depends on weathering and on the availability of water. Thus very interesting landscapes are formed, with well-developed vegetation on old material ending abruptly at a recent flow of rope-patterned lava with fractured rock where no plant life is possible.

The whole park is a splendid site for the study of active volcanism and especially successional processes in vegetation following volcanic deposit of materials.

4.1.2 Vegetation

About a third of the park has no vegetation, as it consists of recent lava, but the other two-thirds (less than 10,000 hectares) have one of the most striking flora in the whole territory of the Council of Europe member States. Not that it is very colourful, as apart from some relictual stands of Canarian pine (Pinus canariensis) and cedar (Juniperus cedrus), it consists mainly of greyish-green brush of from 2 to 3 metres high. Unfortunately our visit was not carried out during the flowering period of this brushland. The most common species are Spatocytisus supranubius and Adenocarpus viscosus, which together with smaller plants form most of the phytomass of the park. A good description of the different vegetation communities is found in document SN-ZP (87) 27 mentioned above.

There is no forest development in the park, as most of it is above the tree line, although it is surrounded by large wooded areas of Pinus canariensis (an endemic) some of which are included in the Pre-Park or buffer zone. What it does hold, however, is the high mountain vegetation of the Macaronesian region, the so-called "supracanarian floor". The number of native species in the park is not very high - only 54, but what makes the park flora so remarkable is the large number of endemics. 24 out of the 54 species have in the park their main or only refuge. 11 species are park endemics, and only one of them is not threatened. We could see Cistus osbaeckiaefolius, the world population of which is reduced to a few individuals, near La Fortaleza. The walls of the old volcano and nearby areas are of extraordinary botanical interest, as there are 6 endangered species with small populations, such as Monanthes niphophila (which did not seem to be producing fruit), Becomia extipulata, Helianthemum juliae, etc. We were shown some of these rare endemics and could also observe other species characteristic of the "supracanarian floor", such as the beautiful Echium wildpretti, with pink inflorescences up to 2 metres high, or the delicate violet of Viola cheirantifolia, mainly found in the pumite banks of the park and also in the higher zone of the Teide. Mention should also be made of Gnaphalium teydeum which has

a most peculiar habitat : the fumaroles of the Teide crater, where it forms a community with Argyranthemum teneriffae, Vulpia bromodes and some lichens, funguses and mosses. This community is able to survive at high altitudes in very cold situations thanks to the volcanic heat escaping through the fumaroles, which is a remarkable adaptation.

4.1.3 Fauna

The Teide national park does not contain a very rich vertebrate fauna as it is far too high for forests and only a handful of species can live in the poor brushland. There are two native vertebrates, a hedghog (Paraechinus aethiopicus) and a lizard (Galliota galloti galloti), which is very abundant and found even at altitudes of 3.500 m. Only 10 birds nest in the park, mainly canarian subspecies of well-known birds, such as Falco tinnuculus canariensis, Columba livia canariensis or Phylloscopus collybita canariensis.

Unfortunately two very unfortunate introductions were made in the park some time ago : the rabbit Oryctolagus cunniculus and the mouflon Ovis ammon musimon. They are now severely controlled by hunting to offset their harmful effect on the plant communities.

Perhaps the most interesting fauna of the park is the invertebrates ; a list of species is included in an appendix to the Diploma application. Out of 146 taxa mentioned (and there are more, as a thorough study has not yet been made), 3 are park endemics, 13 more endemic to the supracanarian floor (mainly represented in the park) and another 76 are canarian endemics. Some of them are closely associated with some of the plant endemics such as the Tenebrionid Hegeter lateralis, found in exclusive association in the park with the Teide violet. These invertebrates may play an important part in pollinating endemic plant species and for this reason - as well as their intrinsic interest - should be considered as one of the priorities for protection in the park and one of its first genetic resources.**

4.1.4 Landscape

This is one of the most relevant aspects of the park : the vast, desolate views of the recent lava flows, the impressive walls and rocky towers of Los Roques de Garcia, Uanca, Almendros and La Fortaleza, and the cones and craters of Teide and Pico Viejo provide a remarkable view. Alexander von Humboldt described in 1869 his impression from the crater of Teide : "My God, what a sensation in these heights! Over us the celestial dome of dark blue, at our feet old lava flows, around us that scenery of desolation ..." The view from the summit of the volcano is indeed impressive. In fact, the only "blot on the landscape" of any importance is a teleferic that connects the main road (at 2300 m) to a spot near the summit of Teide (some 3540 m).

** In particular, the cavernicole communities of invertebrates that inhabit the many caves formed by the differential erosion of lava flows.

4.2 Ownership and legal status

The park is on public land, property of the municipality of La Orotava. The Teide was declared a national park by decree in 1954, reclassified (following the 1975 Act on protected natural areas) in 1981 and had its management plan approved by Royal Decree in 1984. It is administered by the Instituto Nacional para la Conservacion de la Natureza, which is a general directorate of the central government.

4.3 Human activities other than conservation

4.3.1 Infrastructure and tourism

The park contains no permanent human habitation other than a hotel (Parador Nacional), the teleferic station, a few houses and huts known as Chabolas des Sanatorio and a shepherd's cottage. The main station of the teleferic has a bar where souvenirs are sold, while at the terminal there is another bar and a refuge which, according to the management plan, will be demolished.

A main road crosses the park, and there are also a few non-metalled roads. Most of these latter have been closed or are subject to strict regulations. It should be pointed out that in much of the park it is extremely difficult to walk, owing to the sharp blades of cracked lava which ruin the strongest shoes in a few hundred metres.

Approximately one million tourists visit the park every year, and about a third of them use the teleferic and climb to the summit of Teide. Most stay for only a few hours in the park, which is included in the touristic circuits of the island of Tenerife. In general terms, the impact of visitors is moderate - most of them stay on the roads and visit either the Parador, or more frequently the bar at the teleferic station. They leave little rubbish, and that little is removed regularly by the park staff. There is a network of freely accessible paths, 12 of them recommended by the park authorities and some used for guided tours. Some other paths require special permits. Our general impression was that visitors do not pose problems, as they usually stay on the main roads and paths. The main risk is that they may uproot or trample interesting plants, but the main areas of botanical interest are closed to visitors. On the other hand, the summit of Teide needs to be more strictly controlled, as the concentration of people there is too high. Fortunately paths have been built to discourage visitors strolling freely in an area where the Teide violet is found, although paths open to the public near the terminal station of the teleferic are close to some areas of botanical interest.

4.3.2 Hunting

Hunting is regulated by the park's management plan, and is mainly intended to control the populations of rabbit and mouflon. Mouflon hunters are given special permits and accompanied by guards. Rabbit hunters are controlled at the park exits. Little is known yet as to what effects these two herbivores have on the park flora, although the number of mouflon is thought to be about 40 and the management plan contemplates the maintenance of hunting.

4.3.3 Military activities

Cannon fire is regularly practised in a field set aside for the purpose, and sometimes shells fall in an area of botanical interest because of the endangered park endemic Stemmacantha cynaroides.

4.3.4 Other activities

Most traditional activities (grazing, removal of firewood, extraction of pumice stone) have been stopped. Only apiculture is still practised, as after some years of prohibition, the park Board saw no reason to ban a traditional activity which might help pollinisation of endemics. However, it is controlled. In a general or specific manner, all activities which might disturb ecosystems are restricted or prohibited by the management plan.

4.4 Management

4.4.1 Facilities

The park has few facilities but they seem adequate - most of them are recent, in good repair and outside the park itself. They include

- the National Parks Coordination Centre : this building is situated in La Laguna, a few kilometres from the park and is well provided with offices, workshops, library, conference rooms and a museum. It is staffed by a multidisciplinary team which does not belong to Teide park but carries out studies, plans and projects for the four national parks in the Canary Islands. About 20 people work there regularly, mainly preparing documents or exhibitions, doing administration or education work, or research. The headquarters of Teide national park is located there until a new building is finished.

- the Information Centre : at the entrance to the park and visited by some 90,000 people every year. It contains a museum, shop, exhibition room, etc.

- some mountain refuges

- a botanical path, near the information centre

- greenhouses for the plant genetics rescue programme

There are projects for a new information centre (in El Parador), a Red Cross station and a fire post, plus an information hut inside the park.

4.4.2 Staff

The Director is assisted by the following permanent staff : a Deputy Director, 2 conservation officers, 4 secretaries, 8 guards and 9 monitors for interpretation and educational purposes. 6 more guards are permanently engaged, but on temporary contracts. Two posts (Deputy Director and conservation officer) are vacant at present. Up to 120 other persons are engaged temporarily for fire prevention or special projects.

4.4.3 Budget

Apart from salaries and special investments, the annual budget is about 4 million French francs, of which fire control uses about a million. A considerable effort is being made to acquire property and set up a better infrastructure. In 1987 two estates were brought into the pre-park areas, one of 1,570 hectares and the other 1,200 ; this represents about 20% of the park's surface. The vegetation of these two estates is mainly a dense forest of Pinus canariensis, the potential vegetation of the area below 1,800 m. These acquisitions have provided the park with a better representation of the ecosystems it manages and considerably enlarged the park.

4.4.4 Management activities and management plan

The management plan includes zoning the park and pre-park areas. About 25% of the park is accessible (moderate use). There is a "Visits Plan" approved by the Board in 1986, which seems reasonable in its objectives. Hunting and other activities discussed in section 4.3 are regulated. The removal of more buildings (Chabolas y Cuadra del Sanatorio, Casa de Medico, Bar de La Rambleta) is scheduled but so far no progress has been made. There is also the need - included in the management plan - to restore some degraded areas close to both stations of the teleferic. Ideally, the teleferic should go, but its annual use by some 300,000 people and its ascension to the symbolic "roof" of Spain have created a demand that seems difficult not to satisfy in the future.

Fire prevention is satisfactory, even if the risk of fire (with a third of the park just stone) is small and some of the elements of the vegetation are pyrophytes. Pinus canariensis, for instance, can grow its needles again even after bad fires, thanks to the thermic isolation provided by its thick bark, a remarkable evolutionary adaptation to the periodical fires only to be expected in an area of active volcanism. Fire prevention is organised for the whole island of Tenerife, not just the national park, and is based on a large number of permanent look-out posts all over the island and one helicopter.

Information for the public relies mainly on the visitors' centre, at the park entrance, and on a fairly complete programme directed to the islanders. There are several guided "interpretation" paths, a small botanical path and 9 people dealing full time with this activity. However, 90% of the people visiting the park do not pass through the visitors' centre, while a third use the teleferic. It would be interesting to try using the present bar at the teleferic station for educational purposes. Most people have to queue for an hour or more before using the teleferic and with a little imagination and money, these people could be visiting an educational exhibition instead of just standing around in the open air.

Scientific research is carried out in cooperation with the University of La Laguna (the only one in the region) by special agreement. 32 projects are at present in hand.

There is a programme of genetic rescue of endangered canarian endemics - and in particular the park's endemics - which is still in its early stages. The seeds of the 18 species collected have successfully germinated, are being grown in greenhouses and will be reintroduced into the wild. This programme is being carried out in cooperation with the

National Parks Coordination Centre and a seed bank project in the University of Madeira. Yet three endangered species failed to germinate and for at least two others no seeds have been obtained. Research on this issue should be one of the priorities of the national park, together with the role of the insect fauna in pollinating the plant communities. Thus ecosystem management can be considered in general terms as satisfactory, but perhaps more information on invertebrates should be sought.

5. Conclusions

The park is at present in a satisfactory state of conservation although parts of the management plan are not yet developed. Close watch should be kept on tourism, to avoid excessive visiting, and endemic plants, which are the park's most valuable biological resource. The legal, financial, technical and human means available for management are largely sufficient. The amount of land managed is being substantially increased.

The Secretariat believes that the European Diploma (category A) requested by the Government of Spain should be awarded, and the following recommendations are proposed :

RECOMMENDATIONS

1. Ensure that more resources in men and money are made available for the enlargement of the genetic resource programme on threatened flora ;

2. Try to eliminate moufflon from the park and evaluate rabbit damage on vegetation ;

3. Stop military firing practice in sensitive botanical areas in the pre-Park ;

4. Acquire land in the pre-Park area, especially wherever present activities may pose problems for the conservation of the park ;

5. Prepare a programme for the eradication of the introduced species that may endanger native flora ;

6. Restore degraded areas near the teleferic stations and consider the posibility of removing the teleferic at some future date ;

7. Remove all buildings in the "Sanatorio" area and close the road to it ;

8. Close all public paths near sensitive botanical areas, including the one at Teide crater ;

9. Limit the total number of visitors to the Teide crater ;

10. Envisage research on endemic invertebrates found in the park.