COUNCIL OF EUROPE CONSEIL DE L'EUROPE

Strasbourg, 08 March 2013 **T-PVS/DE (2013) 04**
[de04e_2013doc]

CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE AND NATURAL HABITATS

GROUP OF SPECIALISTS –EUROPEAN DIPLOMA OF PROTECTED AREAS
26 MARCH 2013, STRASBOURG
ROOM G04, AGORA

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APPLICATION
DESERTAS ISLANDS NATURE RESERVE
PORTUGAL

Document prepared by Mr Paulo Oliveira, Director,
Department of Madeira Nature Parks (Portugal)

INFORMATION FORM FOR NEW APPLICATION FOR THE EUROPEAN DIPLOMA OF PROTECTED AREAS

Logo European Diploma	**Council of Europe** **European Diploma** **Information form for Candidate Sites**

This form is also available on diskette

Site Code (to be given by the Council of Europe)								

1. SITE IDENTIFICATION

1.1. SITE NAME

Reserva Natural das Ilhas Desertas
Desertas Islands Nature Reserve

1.2. COUNTRY	Portugal							
1.3. DATE CANDIDATURE	2	0	1	2	1	1	1	9
1.4. SITE INFORMATION COMPILATION DATE	2	0	1	2	1	1	0	5
	Y	**Y**	**Y**	**Y**	**M**	**M**	**D**	**D**

1.5. ADDRESSES: Administrative Authorities

National Authority	Regional Authority	Local Authority
Name: Governo Regional da Madeira /Secretaria Regional do Ambiente e dos Recursos Naturais (Regional Government of Madeira /Regional Secretary for the Environment and Nature Resources) Address: Avenida Arriaga, 21, 5ºandar 9004-528 Funchal Portugal Tel. (+351) 291 201 830 Fax. (+351) 291 220 605 E-mail gabinete.sra@gov-madeira.pt	Name: Governo Regional da Madeira /Secretaria Regional do Ambiente e dos Recursos Naturais (Regional Government of Madeira /Regional Secretary for the Environment and Nature Resources) Address: Avenida Arriaga, 21, 5ºandar 9004-528 Funchal Portugal Tel. (+351) 291 201 830 Fax. (+351) 291 220 605 E-mail gabinete.sra@gov-madeira.pt	Name: Serviço do Parque Natural da Madeira (Madeira Nature Park Services) Address: Caminho do Meio Quinta do Bom Sucesso 9064-512 Funchal Portugal Tel.(+351)291 214 360 Fax.(+351)291 214 379 E-mail pnm.sra@gov-madeira.pt

1.6. ADDRESSES: Site Authorities

Site Manager	Site Information Centre	Council of Europe Contact
Name: Serviço do Parque Natural da Madeira Address: Caminho do Meio Quinta do Bom Sucesso 9064-512 Funchal Madeira Tel. (+351)291 214 360 Fax. (+351)291 214 379 E-mail pnm.sra@gov-madeira.pt	Name: Centro de receção – Ilhas Desertas (Desertas Islands – Reception Centre) Address: Reserva Natural das Ilhas Desertas (Desertas Islands Nature Reserve) Tel. (+351) 96 6124032	Name: Mr. Paulo Oliveira (Head of the Madeira Nature Park Services) Address: Caminho do Meio Quinta do Bom Sucesso 9064-512 Funchal Madeira Tel.(+351)291 214 360 Fax.(+351)291 214 379 E-mail pnm.sra@gov-madeira.pt

1.7 SUMMARY DESCRIPTION

Desertas Islands are a group of three islands of volcanic origin: Ilhéu Chão, Deserta Grande and Bugio. Lying next to Madeira Island, at a distance of about 22 nautical miles, these islands are made up of high rocky masses forming sea cliffs, resulting from erosion, especially marine abrasion. Due to their geographic location, isolation and difficult conditions for colonisation, they offer habitats that are representative and important for the conservation of the biodiversity of Macaronesia and the world, particularly for the endemisms and species that are threatened and vulnerable on a world-wide scale, such as the Mediterranean monk seal, the Deserta's petrel, the Deserta's Musschia and many invertebrates. This gives Desertas Islands Nature Reserve a valuable terrestrial and marine natural heritage of great ecological and scientific value, as well as an unequalled landscape.

Desertas Islands is an outstanding example representing significant on-going ecological and biological processes in the evolution and development of terrestrial, coastal and marine ecosystems and communities of plants and animals. On the other hand Desertas Islands contain important and significant natural habitats for in-situ conservation of biological diversity, containing threatened species of outstanding universal value from the point of view of science or conservation. The protection of all these values is made to be compatible with didactic, ascetic, recreational and socio-economic activities, such as fishing and tourism.

1.8. EUROPEAN INTEREST JUSTIFYING THE CANDIDATURE

As stated above, Desertas Islands contain important and significant natural habitats for in-situ conservation of biological diversity, containing threatened species of outstanding universal value from the point of view of science or conservation.

This Nature Reserve comprises representative elements of the biological heritage which are of exceptional European and Global Importance, being an area of particular importance for the conservation of biological diversity in Europe, comprising:

- Remarkable and threatened examples of plant and animal communities, as well as being inhabited by a proportionately large number of unique species;
- Highly representative samples of types of habitats and plant and animal communities constituting typical examples of the various kinds of ecosystems in Europe;
- Habitats of endemic species and species in an unfavourable state of conservation, particularly endangered species;
- Breeding grounds of animals protected under the Convention on the Conservation of European Wildlife and Natural Habitats (ETS No. 104).

The following are good examples of the importance of these islands to European and World biodiversity:

- The only world population of the Mediterranean monk seal *Monachus monachus* (Code: 1366, priority species) with a positive trend;
- One endemic seabird species Desertas's petrel *Pterodroma deserta* (Code: A386, priority species), the largest colony of Bulwer's petrel *Bulweria bulwerii* (Code: A387) in the Atlantic and a very important breeding area for three other pelagic seabirds: Cory's shearwater *Calonectris diomedea borealis* (Code: A010), Madeiran storm-petrel O*ceanodroma castro* (Code: A390) and Little shearwater *Puffinus assimilis* (Code: A388);
- One endemic reptile subspecies *Teira dugesii mauli* (Code: 6201);
- At least 44 Madeiran endemic *taxa* (species and subspecies) of terrestrial molluscs are present in these islands with some exclusive molluscs such as *Discus guerinianus calathoides* (Code: 1023);
- The Madeira archipelago is clearly a hotspot in terms of endemic species of terrestrial arthropods, with about 305 Madeiran endemic species and subspecies listed for Desertas Islands, 104 of which are unique species and subspecies such as Deserta's tarantula *Hogna ingens* and *Paradeucalion desertarum*;
- 96 bryophytes are known from Desertas Islands, of which the liverwort *Frullania sergiae* is exclusive to Deserta Grande (Desertas Islands);
- The plant cover of Desertas Islands today is mainly composed by herbaceous, saxicolous, halophytic and various replacement communities. The sea cliffs harbour some important endemics of the Madeiran coasts (e.g., *Calendula maderensis* (Code: 1810), *Helichrysum melaleucum*, *Matthiola maderensis*, *Monizia edulis* (Code: 1620), *Musschia* spp.), the rocky escarpments remnants of succulent scrub communities (Euphorbietum piscatoriae). Altogether, more than 200 indigenous and naturalized species of phanerogams are reported from the Desertas Islands, of which 30% are endemic to Madeira, and 10% restricted to Macaronesia.
- The degree of plant endemicity is often expressed in values of density per 100 Km^2. The number and density of exclusive endemics for the islands of Macaronesia, both at archipelago and island levels, shows Desertas Islands to be one of the islands with the highest density of exclusive endemics, with more than 10 taxa per 100 Km^2;
- Outstanding among the endemics are *Chamaemeles coriacea* (Code: 1537, priority species), *Monizia edulis* (Code: 1620), *Convolvulus massonii* (Code: 1665, priority species), *Musschia aurea* (Code: 1754), and 2 endemics to Deserta Grande, namely *Musschia isambertoi* and *Sinapidendron sempervivifolium*, representing four of the five existing endemic genus to Madeira archipelago flora;
- Four genera endemic to Macaronesia flora are known from Desertas Islands;

(For details on this information please refer to the text below).

At another dimension the Desertas Islands Nature Reserve conserves remarkable natural phenomena and outstanding geological formations.

The Desertas Islands are an example of well-preserved natural heritage, with a high potential for tourism, drawing economic benefits. In Madeira nature tourism is a well established still growing activity, and the protected areas are an essential part of it, bringing great benefits to these Islands. In Desertas this activity is strictly controlled, and visits on land are restricted to a small area where the reception centre, the administrative and logistical facilities are located.

The protection of the marine area of Desertas Islands has also benefitted the fishing sector by preserving the natural fish resources, being an added asset to fisheries in the archipelago. This applies especially in terms of tuna fishing and the traditional harvesting of limpets, which are especially important in the gastronomy of the archipelago.

Although there have been various attempts to colonise the Desertas Islands, they were only inhabited for short periods due to their aridity and lack of water. Though, the intervention of man has left its mark on the islands in some very interesting ways. This temporary use made of these

islands and/or the attempts at colonising them left various rock walls, a threshing floor, whale hunting watch out constructions and a cistern on Deserta Grande.

Regarding the legal framework, Desertas Islands are a Nature 2000 network site with the classification of Special Conservation Area (SAC) and Special Protection Area (SPA). It harbours 4 habitat type, 12 plant species and 40 animal species listed (part as priority species) in the EU Habitat and Bird Directives (for details refer to the text below). The biodiversity of the Desertas Islands has greatly benefitted from the successive conservation projects carried out in the area, the efforts to eradicate invasive plant and animal species being of special importance

Due to all these aspects the Desertas Islands Nature Reserve is of European Interest and meets several general and specific criteria for the award of the European Diploma of Protected Areas.

1.9. SELECTION METHODOLOGY

In line with the representative elements described in "*A. European interest*" in "*Criteria for the award of the European Diploma of Protected Areas*", those that characterise the Nature Reserve of the Desertas Islands have been identified. What is currently known about the biological and geological elements of that Reserve are the result of research and monitoring work carried out for more than 40 years, compiled in the Management Plan for the Desertas Islands Nature Reserve.

1.10. MAIN AIM OR MOTIVATION

The creation of Desertas Islands Nature Reserve was motivated by the urgent need to protect the last colony of Mediterranean monk seals *Monachus monachus* (Code: 1366, priority species) in Portugal, which in 1988 was estimated to be 6 to 8 individuals. At the same time there was a need to preserve some of the seabirds that breed in these islands, as well as their habitat, which was in decline and rapidly deteriorating, due to the action of man. These species include: Deserta's petrel *Pterodroma deserta* (Code: A386, priority species), Cory's shearwater *Calonectris diomedea borealis* (Code: A010), Madeiran storm-petrel O*ceanodroma castro* (Code: A390), Bulwer's petrel *Bulweria bulwerii* (Code: A387) and Little shearwater *Puffinus assimilis* (Code: A388).

1.11. DATES *(to be filled in by the Council of Europe)*

DATE OF FIRST EXAMINATION

Y	Y	Y	Y	M	M	D	D

DATE OF EXPERT VISIT

Y	Y	Y	Y	M	M	D	D

DATE OF SECOND EXAMINATION

Y	Y	Y	Y	M	M	D	D

DATE OF AWARD

Y	Y	Y	Y	M	M	D	D

2. SITE LOCATION

2.1. SITE CENTRE LOCATION

LONGITUDE

W	0	1	6	°	2	9	‘	3	0	“

W/E (Greenwich)

LATITUDE

N	3	2	°	3	0	‘	0	0	“	

2.2. AREA (ha)

2.3. SITE LENGTH (km)

Total Area	1	2	5	8	6	,	0	0
Core						,		
Buffer						,		
Transition						,		

			,			

2.4. ALTITUDE (m)

MINIMUM			
-	-	-	0

MAXIMUM			
-	4	8	0

MEAN			
-	2	6	9

2.5. ADMINISTRATIVE REGION

REGION NAME	% COVER
Madeira	1 0 0
	- -

Marine area not covered by the terrestrial part	- 9 0

3. NATURAL HERITAGE

3.1 GENERAL ABIOTIC DESCRIPTION (Geomorphology, geology and hydrogeology)

The Desertas Islands comprises three islands (Ilhéu Chão, Deserta Grande and Bugio) and are oceanic islands of volcanic origin about 3.5 million years old. Formerly they were one island and were part of a single volcano. After the volcanic activity ceased, erosion and climatic conditions led to the formation of their current appearance. They are constituted mainly of basalt formations, tuff and volcanic slag. The orography is a consequence of its geological constitution and the permanent action of wind and sea erosion.

The coastline extends for about 38 km and is mainly made up of high, steep rocky cliffs where there are around 75 submerged or partially submerged sea caves, which are habitats of Community interest (Code: 8330) and are extremely important to the colony of monk seals *Monachus monachus* (Code: 1366, priority species), a species classified as critically endangered by the IUCN. In addition to these caves, there are numerous beaches that provide an ideal habitat for Mediterranean monk seal resting and breeding. Some of the rocky platforms have enclaves that become tidal pools at low tide.

Along the coast, there are also shallow bays (habitats of Community interest) and some *fajãs* (flat areas of land at the shoreline, which originated from material falling from the cliffs). The largest of these *fajãs* are Doca and Fajã Grande (both at Deserta Grande), which resulted from simultaneous landslides on the east and west sides that took place in 1894. The Fajã da Doca, where the Nature Reserve the reception centre, the administrative and logistical facilities are located is formed by a succession of geological materials (basalt, pyroclast, volcanic breccia, deposits from the slopes) with layers of different thicknesses, different mechanical characteristics and with differing degrees of alteration and fracturing.

The littoral system of the Desertas Islands is made up of a rocky coast that is highly exposed to marine hydrodynamics. The sea immediately adjacent to the islands is marked by rocky extensions, small islets and emerged and submerged rocks that are nearly connected to the coast. The sea floor is of rock and

sand.

3.2. HABITATS

The conservation of the Desertas Islands is extremely important, due to the fact that they provide the habitat for innumerable species that are unique to these islands and rare on a global scale. The destruction of their habitats would certainly represent a diminishing of the world biodiversity.

Desertas Islands embrace a great diversity of natural habitats, some of which are of community interest: large shallow inlets and bays (Code: 1160), vegetated sea cliffs with endemic flora of the Macaronesian coasts (Code: 1250), low formations of Euphorbia close to cliffs (Code: 5320) and submerged or partially submerged sea caves (Code: 8330).

The plant cover of Desertas Islands today is mainly composed of herbaceous, saxicolous, halophytic and various replacement communities. The sea cliffs harbour some important endemics of the Madeiran coasts (e.g., *Calendula maderensis* (Code: 1810), *Helichrysum melaleucum*, *Matthiola maderensis*, *Monizia edulis* (Code: 1620), *Musschia* spp.), the rocky escarpments remnants of succulent scrub communities (Euphorbietum piscatoriae). The interest these communities have sparked among botanists is historical. As far back as 1868, Lowe defined two regions or zones of vegetation. The 1st Zone, designated as maritime, extends from sea level to 360 m in altitude on the three islands. This vegetation is characterised by the presence of indigenous flora of community interest, such as *Monizia edulis* (Code: 1620) and *Calendula maderensis* (Code: 1810). The 2nd Zone, designated as mountainous, extends from 300 m to 480 m in altitude on Deserta Grande and Bugio. The vegetation here is characterised by the presence of indigenous plants such as *Lotus argyrodes*, *Argyranthemum haematomma* and *Trifolium angustifolium*.

Although the plant cover of the Desertas Islands today is dominated by various replacement communities, some rare woody relicts such as *Apollonias barbujana*, *Chamaemeles coriacea* (Code: 1537, priority species), *Convolvulus massonii* (Code: 1665, priority species), *Heberdenia excels, Phyllis nobla, Semele androgyna, Sideroxylon marmulano* give evidence for the potential of forest formations, which in former times may have occurred, especially on Deserta Grande. This includes an Oleo maderensis-Maytenetum umbellatae ("Zambujal") and a former laurel forest classified as Semelo androgynae-Appolonietum barbujanae ("Laurissilva do Barbusano"). Both communities are well established on the nearby Madeira Island. Evidence for such forests is reflected also by the relatively rich bryophyte flora.

3.3. FLORA

Altogether, more than 200 indigenous and naturalized species of phanerogams are reported from the Desertas Islands, among them 30% endemic to Madeira, and 10% restricted to Macaronesia.

The degree of plant endemicity is often expressed in values of density per 100 Km^2. The number and density of exclusive endemics for the islands of Macaronesia, both at archipelago and island levels, shows Desertas Islands to be one of the islands with the highest density of exclusive endemics with more than 10 taxa per 100 Km^2.

Outstanding among the endemics are *Chamaemeles coriacea* (Code: 1537, priority species), *Monizia edulis* (Code: 1620), *Musschia aurea*, and two endemics to Deserta Grande, namely *Musschia isambertoi* and *Sinapidendron sempervivifolium*, representing four of the five existing endemic genus to Madeira archipelago flora.

Four genera endemic to Macaronesia flora are known from Desertas Islands, *Argyranthemum*, *Aichryson*, *Semele* e *Phyllis*.

No endemics are recorded for pterydophytes, although there are references to 11 ferns.

96 bryophytes are known from Desertas Islands, of which the liverwort *Frullania sergiae* is exclusive to Deserta Grande (Desertas Islands).

There are about 398 lichen taxa recorded for the Madeira archipelago, the majority collected on Madeira Island. Among these taxa reported for Madeira, seven are cited for Desertas. This fact may be partly explained by the differences in surface area of the islands, substantially higher for Madeira Island, and the consequent diversity of habitats. On the other hand, due to the easy access to the latter island the bulk of studies were performed there. With regard to fungi diversity, four species are known from Desertas Islands. These values underestimates the true representativeness of these organisms, due the lack of knowledge on fungi diversity in Desertas Islands.

39 vascular plant taxa of the archipelago of Madeira are included in the Bern Convention, of which nine occur in Desertas Islands; and 53 are included in the Habitats Directive, of which 12 occur in Desertas Islands (Table 1).

Desertas Islands marine algal flora is closely related to Canarias Islands flora, especially regarding the red algae, while the green and brown algal flora is more similar to that of the Azores Islands. The unevenness of the sea floor and the predominance of rocky substrata is propitious for the colonisation of photophilic algae. Studies point to the presence of 127 species of algae, in which red algae predominate. Recent studies have been undertaken under the M@rbis (Marine Biodiversity Information System), the main objective of which is the cataloguing of the marine biodiversity. These results will contribute to a better understanding of the marine flora of the Desertas Islands.

Table 1.
Desertas Islands Protected species under the Bern Convention (B) and Habitats Directive (H), with indication of priority species (*) and the annexes where species are included; and its conservation status.

Code	Taxon	Bern Convention and Habitats Directive	Endemismo	Conservation status
1446	*Beta patula*	H -II, IV	Madeira	Critically endangered
1537	*Chamaemeles coriacea*	B, H* -II	Madeira	Vulnerable
1579	*Maytenus umbellata*	H -II, IV	Madeira	Least concern
1620	*Monizia edulis*	B, H -II, IV	Madeira	Critically endangered
1651	*Sideroxylon marmulano (Sideroxylon mirmulans)*	B, H -IV	Madeira	Not evaluated
1665	*Convolvulus massonii*	B, H* -II, IV	Madeira	Vulnerable
1754	*Musschia aurea*	B, H -II, IV	Madeira	Least concern
1810	*Calendula maderensis*	B, H -II, IV	Madeira	Least concern
1817	*Phagnalon bennettii (Phagnalon lowei)*	B, H -II, IV	Madeira	Least concern
1853	*Semele maderensis (Semele androgyna)*	B, H -II, IV	Macaronesia	Not evaluated
1854	*Scilla madeirensis (Autonoe madeirensis)*	H -IV	Madeira	Least concern
1894	*Phalaris maderensis*	B, H -II, IV	Madeira	Vulnerable

3.4. FAUNA

Desertas Islands are no exception to the well-known general biogeographical patterns, and their vertebrate fauna is very limited in the number of taxa present. Fourteen terrestrial vertebrates are known from these islands, among which the only terrestrial reptile *Teira dugesii mauli* (Code: 6201) present is exclusive to Desertas Islands. Besides this species, the vertebrate fauna is characterised by the presence of the emblematic Mediterranean monk seal *Monachus monachus* (Code: 1366, priority species), of various species of breeding seabirds and by the absence of native mammals, with the exception of bats species *Pipistrellus maderensis* (Code: 2017) and *Plecotus austriacus* (Code: 1329), which have been sighted on Deserta Grande.

Among the marine species, the Mediterranean monk seal *Monachus monachus* (Code: 1366, priority species) takes on special world importance. This species is emblematic of the Desertas Islands and a national symbol of the conservation of biodiversity in Portugal as well as around Europe. This seal is considered to be the rarest in the world and is the only one found in Portugal. It is classified as Critically Endangered, being a priority species of the Habitats Directive, its current population being estimated at 30 to 40 individuals. The south side of Deserta Grande is the location most used by the Mediterranean monk seals, being linked to their reproductive behaviour. They do, however, use the entire area of the Desertas Islands, as well as Madeira Island, where more than 800 sightings have been recorded. The Mediterranean monk seal is protected by regional laws, where a programme for its conservation has been in place since 1988, and by various international conventions, including a current plan of action under the Bonn Convention for the recuperation of the Mediterranean monk seal in the Eastern Atlantic, which involves Portugal, Morocco, Mauritania and Spain.

There are eight species of sea turtle in the world and no less than five of them occur in Madeira waters. The most common is the loggerhead turtle *Caretta caretta* (Code: 1224, priority species). This species is protected under the Habitat Directive, the Bern and Bonn Conventions and under regional law. In spite of what one might expect, the fact of the matter is that the turtles' eggs and the newborn hatchlings are not the most vulnerable phase of the animal's life cycle. The population is most at risk from decimation of its juveniles, since the death of one juvenile means the loss of hundreds or even thousands of eggs, which would otherwise have been laid. Given the significance of Madeira archipelago, of which Desertas Islands are part, as a nursery area for these turtles, these islands make a major contribution towards the preservation of the species.

Worldwide, there are approximately 78 species of cetaceans, of which 24 species have been frequently or occasionally seen in the archipelago of Madeira up to the present time. The presence of some species is seasonal, as is the case of the common dolphin *Delphinus delphis* (Code: 1350), while others are annual, such as the bottlenose dolphin *Tursiops truncatus* (Code: 1349). With the increased efforts in the observation and study of cetaceans in the waters of Madeira, it is possible that species will be sighted which, up to the moment, have not been identified in these waters.

Occurrences of marine vertebrate protected species were considered at the spatial scale of the whole archipelago (and not at the island level) due to the high mobility of most of these species (Table 2).

Table 2.
Madeira archipelago marine vertebrate protected species under the Bern Convention (B) and Habitats Directive (H), with indication of priority species (*) and the annexes where species are included; its occurrence and conservation status.

Code	Taxon	Bern Convention and Habitats	Occurence	Conservation status

		Directive		
1223	*Dermochelys coriacea*	B, H -IV	Occasional	Critically endangered
1224	*Caretta caretta*	B, H* -II, IV	Common	Endangered
1225	*Eretmochelys imbricata*	B, H -IV	Occasional	Critically endangered
1226	*Lepidochelys kempii*	B, H -IV	Occasional	Critically endangered
1227	*Chelonia mydas*	B, H* -II, IV	Occasional	Endangered
1345	*Megaptera novaeangliae*	B, H -IV	Rare	Vulnerable
1348	*Eubalaena glacialis*	B, H -IV	Rare	Endangered
1349	*Tursiops truncatus*	B, H -II, IV	Very common	Least concern (Local)
1350	*Delphinus delphis*	B, H -IV	Very common	Least concern
1366	*Monachus monachus*	B, H* -II, IV	Common	Critically endangered
2620	*Balaenoptera edeni*	B, H -IV	Occasional	Data deficient
2027	*Orcinus orca*	B, H -IV	Occasional	Least concern
2028	*Pseudorca crassidens*	B, H -IV	Occasional	Least concern
2030	*Grampus griseus*	B, H -IV	Rare	Data deficient
2033	*Steno bredanensis*	B, H -IV	Rare	Data deficient
2034	*Stenella coeruleoalba*	B, H -IV	Common	Least concern
2035	*Ziphius cavirostris*	B, H -IV	Occasional	Data deficient
2038	*Mesoplodon bidens*	B, H -IV	Rare	Data deficient
2618	*Balaenoptera acutorostrata*	B, H -IV	Rare	Least concern
2619	*Balaenoptera borealis*	B, H -IV	Occasional	Endangered
2621	*Balaenoptera physalus*	B, H -IV	Common	Endangered
2622	*Kogia breviceps*	B, H -IV	Occasional	Least concern
2623	*Kogia simus*	B, H -IV	Rare	Data deficient
2624	*Physeter macrocephalus*	B, H -IV	Common	Vulnerable
2625	*Mesoplodon densirostris*	B, H -IV	Occasional	Data deficient
2627	*Globicephala macrorhynchus*	B, H -IV	Common	Least concern
2628	*Stenella frontalis*	B, H -IV	Very common	Least concern (Local)
5020	*Balaenoptera musculus*	B, H -IV	Rare	Endangered
5022	*Feresa attenuata*	B, H -IV	Rare	Data deficient
5034	*Mesoplodon europaeus*	B, H -IV	Rare	Data deficient

The remaining vertebrate marine fauna of Desertas Islands evidences the same richness and interest of that of the rest of the archipelago. There is a marked European and Mediterranean affinity, especially in the fishes. Taking into account the long-term protection which has been directed towards these islands, the marine communities are notable for their good conservation status. Some of the species have commercial value and continue to be sensibly used, which is a determinant factor that contributes to the balance between the preservation of these assets and the subsistence of economic activities that are

important to the local population.

The most recent checklist of the coastal fishes of Madeira lists 226 coastal fish. There is no coastal marine fish species endemic for Madeira (and even those deep-sea species known only from one or a few specimens from Madeira are of course most unlikely to be endemic). Madeira and the Canary Islands share one endemic species, *Gobius maderensis*. Madeira and the Azores also share one endemic species, *Paraconger macrops*.

The shallow water fauna of Madeira is a mixture of species from the temperate Mediterranean-Atlantic region, species with boreal origin, and a strong component of tropical species. Examples of "northern"elements in the coastal fish fauna of Madeira would be *Labrus bergylta* and *Lipophrys pholis*. Examples of tropical elements would be *Heteroconger longissimus* and *Aluterus scriptus*.

The Desertas Islands are one of the most important breeding areas for seabirds of Macaronesia and the North Atlantic, offering conditions that are unique in all the world. They are classified as an "Important Bird Area" (IBA) by BirdLife International. The seabirds that breed in the Desertas Islands are of the order *Procellariiformes* and *Charadriiformes*. In the Procelariformes (pelagic seabirds) the recently classified endemism Desertas's petrel, *Pterodroma deserta* (Code: A386, priority species) is especially prominent. The Deserta's petrel has about 160 to 180 breeding pairs in a single location, which, according to the criteria of the IUCN, earns it the status of Critically Endangered (still to be updated with the IUCN), and it is a priority species of the Habitats Directive. Attention is also called to other species of Annex I of the Birds Directive such as the Cory's shearwater *Calonectris diomedea borealis* (Code:A010), Bulwer's petrel *Bulweria bulwerii* (Code: A387), Madeiran storm-petrel *Oceanodroma castro* (Code: A390) and Little shearwater *Puffinus assimilis* (Code: A388). All these species are inherently vulnerable, for which the Desertas Islands represent one of the last refuges in the world. Deserta Grande supports the largest colony of Bulwer's petrel in the Atlantic and possibly in the world, playing a vital role in the conservation of this species. In the Charadriformes, we have the non-oceanic seabirds, which include the Atlantic yellow-legged gull *Larus michahellis atlantis* and the Common tern *Sterna hirundo* (Code: A193) (Table 3).

Terrestrial birds that breed in the Desertas Islands include two endemisms of Macaronesia, the Berthelot's pipit *Anthus bertheloti madeirensis* and the common canary *Serinus canaria canaria*; two endemic subspecies of Macaronesia, the Kestrel *Falco tinnunculus canariensis* and Common quail *Coturnix coturnix confisa* (A113); and two endemic subspecies of the archipelago of Madeira, the common buzzard *Buteo buteo harterti* and the barn owl *Tyto alba schmitzi;* (Table 3).

Other birds can also be seen here that occasionally or accidentally visit the Desertas Islands, especially in the autumn and spring.

Table 3.
Desertas Islands Protected species under the Bern Convention (B) and Birds Directive (BD) 79/409/EEC, with indication of priority species (*) and the annexes where species are included; its occurrence and conservation status.

Code	Taxon	Bern Convention and Birds Directive	Occurence	Conservation status
A010	*Calonectris diomedea borealis*	B, BD-I	Breeder	Least concern
A026	*Egretta garzetta*	B, BD-I	Occasional	Least concern
A087	*Buteo buteo harterti*	B	Breeder	Least concern
A096	*Falco tinnunculus canariensis*	B	Breeder	Least concern
A113	*Coturnix coturnix confisa*	B, BD-II	Breeder	Least concern

A193	*Sterna hirundo*	B, BD-I	Breeder	Vulnerable
A213	*Tyto alba schmitzi*	B	Breeder	Least concern
A222	*Asio flammeus*	B, BD-I	Rare	Least concern
A386*	*Pterodroma deserta*	B, BD-I	Breeder	Vulnerable
A387	*Bulweria bulwerii*	B, BD-I	Breeder	Least concern
A388	*Puffinus assimilis*	B, BD-I	Breeder	Least concern
A390	*Oceanodroma castro*	B, BD-I	Breeder	Least concern
A450	*Serinus canaria canaria*	B	Breeder	Least concern
A532	*Anthus bertheloti madeirensis*	B	Breeder	Least concern
A604	*Larus michahellis atlantis*	B	Breeder	Least concern

Nowadays, the vertebrate fauna of Desertas Islands is composed of a mixture of species with very high conservation value, and some species with disruptive characteristics for the ecosystems in general. Consequently, the conservation and protection of the native species, and the eradication and control of the introduced ones, are among the main priorities of the nature conservation policies implemented in Desertas Islands.

Invertebrates

The total estimated number of terrestrial invertebrate species and subspecies in Desertas Islands is about 331, arthropods being the majority (90%) of all recorded taxa.

Terrestrial ecosystems support large numbers of arthropod species, representing a massive amount of biomass. In many of their ecological roles, terrestrial arthropods are unique and no other animal group could substitute them. Terrestrial arthropods should increasingly become a key target of conservation efforts, particularly when dealing with island ecosystems. Arthropods are the most diverse group on the Madeira archipelago with a rich evolutionary history and many unique endemic taxa.

The Madeira archipelago is clearly a hotspot in terms of endemic species of terrestrial arthropods, with about 305 Madeiran endemic species and subspecies listed for Desertas Islands, 104 of which are unique species and subspecies such as Desertas Tarantula *Hogna ingens* and *Paradeucalion desertarum*. Recent studies undertaken in 2012 list 32 new species of spiders for Deserta Grande, four times more than the 11 species known to science up to the present. Among these new species reported for Deserta Grande, eight are new for science.

At least 44 Madeiran endemic *taxa* (species and subspecies) of terrestrial molluscs are present in Desertas Islands with some exclusive molluscs such as *Discus guerinianus calathoides* (Code: 1023).

Marine invertebrates present most of the known species and higher taxonomic levels (phyla, classes, etc) and can be found in great numbers on the characteristic rocky shores and shallow water habitats of the Madeira. In terms of diversity, abundance and size, the crustacea, molluscs and polychaetes are the most important groups. In the Madeira archipelago, including Desertas Islands, these organisms constitute an interesting coastal marine fauna displaying affinities with the Mediterranean fauna but also incorporating temperate and subtropical elements. The knowledge of the coastal marine invertebrates in the Madeira is mainly focused on more common, conspicuous or commercially important species and species new for Madeira and species new for science are still discovered every year in coastal waters of Madeira.

Recent studies were made under the M@rbis (Marine Biodiversity Information System) project, the main objective of which is the cataloguing of the marine biodiversity. These results will contribute to a better understanding of the marine fauna of the Desertas Islands.

3.5. LANDSCAPE

The landscape of the Desertas Islands is unique and without a doubt is a focus of interest for those who visit this area. The islands consist of Ilhéu Chão, Deserta Grande and Bugio, which emerge in the middle of the ocean in an imposing line up, one after the other.

These Islands comprise high rocks with steep sea cliffs, resulting from erosion, in particular wave abrasion. They are elongated in shape and set in a line; being observed from Funchal, at a distance of around 22 nautical miles.

Ilhéu Chão has a small plateau at an almost constant altitude of 80 meters and is covered by predominantly creeping vegetation. Deserta Grande is the largest of the three islands, rising to a summit (479 meters) in the central area of the island which is the highest point of the island group. It is surrounded by cliffs along its whole coastline and has several "fajãs" (flat land at the base of sea cliffs), from which outstands Fajã Grande and Doca (both at Deserta Grande). Bugio is long and narrow and shaped like an arch, curved from north to southwest. At its top there is a small plateau and it has very steep cliff sides. Its maximum altitude is approximately 388 meters.

The vegetation cover, essentially creeping and herbaceous, includes many endemics. The rocks are of singular forms and tones, reflecting on volcanic activity and the aggressive processes of erosion.

The sea is of a matchless blue, turquoise and transparent, clear and deep. Sea caves, pebble and sand beaches, escarpments, plateaus and crags create contrasts and in their complexity harbour an enormous biodiversity.

The landscape is marked by the absence of manmade constructions, with the exception of the well-integrated infrastructures that support the personnel at the service of the reserve and its visitors.

4. CULTURAL HERITAGE AND SOCIO-ECONOMIC CONTEXT

4.1 CULTURAL HERITAGE

Although there have been various attempts to colonise the Desertas Islands, they were only inhabited temporally due to their aridity and lack of water. Even though, the intervention of man has left its mark on the islands in some very interesting ways. This temporary use made of these islands and/or the attempts at colonising them left various rock walls, a threshing floor and a cistern on Deserta Grande.

During the World War II, the Desertas Islands were used for the surveillance of enemy vessels. The Captaincy of the Port of Funchal built four lookout posts and a house in the Castanheira Valley. Later, the lookout posts were used by whalers for the sighting of the cetaceans.

The Desertas Islands belonged to various private individuals over the years, and became the property of the Portuguese State by means of a public deed drawn up in the 1st Notarial Registry Office of Funchal, on 30 December 1971. Today, they are registered in the land tax office of Santa Cruz and are included in the Municipal Master Plan of the Municipality of Santa Cruz.

In 1959 and 1961, lighthouses were built on Ilhéu Chão and Bugio, respectively. In 2003, a small automatic lighthouse was placed on Bugio to replace the old lighthouse, which was demolished due to its poor state of repair.

The first house at Doca (Deserta Grande) was built in 1988 to support the work carried on by SPNM and was replaced by another in 2005 at a new location, due to the danger of rock slides. This house is used to lodge the members of the Nature Wardens Body working on the Reserve, who since 1988 have been on duty the year round, without interruption. There is also, logistic facilities to support researchers that come to carry on work in these islands and a reception centre for visitors.

Since 1997, there is a Rehabilitation Unit for the Mediterranean monk seal at Doca. This unit emerged from the need felt from 1995 for facilities for rehabilitation and other treatments of any debilitated animals.

4.2 SOCIO-ECONOMIC CONTEXT

Historically, the economic interest of the Desertas Islands was associated with livestock raising; the harvesting of Orchil, a lichen used in dyes; the cultivation of Common iceplant, a plant used in the manufacture of soap; and fishing, which was carried out in a sustained manner. More recently, however, during the 1970s, an increase in the fishing activity using gillnets and oftentimes explosives cause the fish resources to rapidly enter a state of over-exploitation. At the same time, the Cory's shearwaters and other seabirds began to be captured for human consumption and/or the preparation of lures used in fishing.

Only after the creation of the Special Protection Area of the Desertas Islands in 1990 did the capture of seabirds cease and the fishing activity began to be carried out in a sustained manner. Currently the Desertas Islands are an asset for fishing in the region, chiefly in regard to tuna fishing and the traditional harvesting of limpets, which are especially important in the gastronomy of the archipelago.

With the development of nature tourism (mainly that of bird/whale watching and diving) and the emergence of maritime-tourist companies nowadays in the summer there are daily touristic trips to Desertas Islands. Consequently, these islands have become a tourist attraction for an experience associated with nature conservation that is quite unique. There are currently six companies operating in the Desertas Islands. This activity is strictly controlled, and visits on land are restricted to a small area where a reception centre, the administrative and logistical facilities are located. Note that tourism is a positive factor that works both ways, because it promotes the gathering of funds that contribute to the proper management of the reserve.

Table 4.
Total number of visitors that visited the Desertas Islands Nature Reserve and the number of visitors carried by maritime-tourism vessels.

Year	Total Nº Visitors	Nº of Maritime-tourism Visitors
2007	2623	1834
2008	2473	1818
2009	3375	2182
2010	2841	2096
2011	2853	1956

5. EDUCATIONAL AND SCIENTIFIC INTEREST

The creation of a strong public support for the work carried out in the Desertas Islands has been promoted very intensively through a solid programme of environmental education. The activities are carried out from two distinct perspectives. On the one hand, on-site visits are promoted, and on the other, there are activities of dissemination carried out in Madeira and Porto Santo Islands, as a consequence of the constraints on transportation to and from the Desertas Islands.

On the Desertas Islands a priority investment has been made to improve the conditions in which the visitors are welcomed, whether they are tourists or target groups for specific educational campaigns (schools, journalists, etc). Debarkation is only allowed in the area of Doca (Deserta Grande, see map), where there are suitable logistic facilities. Currently there is a visitor welcome and interpretation centre where there is an exhibition on the Desertas Islands, a small informative bilingual trail

(Portuguese/English), an area for rest and leisure and a small shop selling environmental merchandising material specific to these islands. It should be pointed out that the funds raised are used in the management of the Reserve.

Visitors are met by the Nature Wardens, accompany them along the informative circuit and then to the reception centre. In the case of maritime-tourist visitors, this guided tour is made by the staff of each company; whose employees have received specific training provided by the SPNM staff. The SPNM has also signed a protocol with the Regional Delegation of the National Trade Union of Tourist Activity, Translators and Interpreters, under which these professionals receive specific information that results in a better quality of information provided at the location. From 2007 to 2011, about 14000 people visited the islands.

Television and radio programmes, events, itinerant exhibitions and lectures addressed to the public in general and target groups, as well as the regular production of illustrated material, namely booklets, pamphlets, brochures, postcards, posters and t-shirts are used to raise awareness about the importance of the Desertas Islands Nature Reserve. Since 2009 the facebook page of SPNM, nowadays with about 8500 followers, and a updated web page are two priority tools to communicate with the stakeholder´s.

In regard to the activities targeted towards schools, in the 2010/2011 school year about 732 students and 165 teachers visited the Desertas Islands on board of the SPNM and on the Portuguese Navy vessel, during the changeover of the wardens in duty on these islands.

Current research activities are implemented both by SPNM and external institutions. Research activities include inventory research, complex ecological studies based on interdisciplinary approach as well as long-term monitoring projects. Particularly, the long-term monitoring projects focused on studies on ecological processes or management impact assessments are among the priorities of the SPNM Administration.

6. SITE DESCRIPTION

6.1. VULNERABILITY

Ever since the Desertas Islands were protected by law in 1990, measures have been implemented with the objective of minimising and preventing any threats or limiting factors to the habitats and species. These measures are part of the strategic objectives of the Management Plan for the Desertas Islands:

- Conserve, improve and protect all the ecosystems;
- Promote, coordinate and support research that has in view a better understanding of the species and habitats;
- Improve the dissemination, knowledge and appreciation of the site;
- Manage the visitors in terms of the recreational-tourist activities so that these do not collide with the value of conservation of the Desertas Islands;
- Maintain the legal conditions so that the management of the Reserve is carried out in an efficient manner;
- and Manage the Reserve in a suitable and effective manner, in accordance with the proposed guidelines.

In this way, the main threat factors identified in the Desertas Islands, and which may compromise the conservation of the natural resources, are prevented or minimised, such as the introduction and dispersion of invasive species, uncontrolled human pressure, illegal fishing and possible spills of crude oil (hydrocarbons) resulting from the washing of tanks and/or accidents.

6.2. PROTECTION STATUS

Designation	Year of designation	% of area
Desertas Islands Nature Reserve	1990[1]	100%

Biogenetic Reserve of the European Council	1992	100%
Natura 2000 network (SPA and SAC) [2]	2000 and 2009	100%
Important Bird Area by BirdLife International	2002	10%[3]

[1]In 1990 the Desertas Islands were given the status of Special Protection Area by means of Regional Legislative Decree n.º 14/90/M, of 23 May, and in 1995 they were granted the status of Nature Reserve by means Regional Legislative Decree n.º 9/95/M, of 20 May.
[2]Recently a proposal to expand this SPA to offshore areas have been submitted to the authorities.
[3]Corresponds to the total terrestrial area of the Reserve.

6.3. OWNERSHIP

The Desertas Islands are property of the Madeira Autonomous Region.

6.4. DOCUMENTATION

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7. SITE MANAGEMENT

7.1. MANAGEMENT PLANS

In accordance with the Management Plan for the Desertas Islands, various strategic objectives were defined, along with the corresponding operational objectives and actions that are given below, most of which are in progress.

Strategic Objective: Conserve, improve and protect all the ecosystems

OPERATIONAL OBJECTIVES	ACTIONS
A - Protect the terrestrial and marine habitats and species; B – Maintain the sustainability of the marine resources; C – Protect and monitor in a specific manner the species of fauna and flora with greater conservation value; D - Mantain the vegetation of Ilhéu Chão in a good state of conservation and maintain the conditions for the recuperation of the plant cover of Deserta Grande and Bugio.	Continue the work of surveillance and protection of the site by sea and by land; Evaluate the need to improve the surveillance conditions of the site (boat, communication systems, etc.); Evaluate the possibility of implementing a video surveillance system over the entire site; Continue the work of protecting and monitoring the Mediterranean monk seal (*Monachus monachus*); Maintain the conditions necessary for the rehabilitation of the Mediterranean monk seal (*Monachus monachus*); Maintain the monitoring of the tarantula *Hogna ingens*; Restore the habitat of the tarantula *Hogna ingens*, through the removal of *Phalaris aquatica;* Promote a programme for monitoring the marine fauna and flora; Monitor the appearance and/or dispersion of exotic

	plants; Prevent the introduction of animals; Maintain a low number of goats on Deserta Grande and eliminate them, if possible; Continue the dispersion of native plants of the Desertas on Bugio; Continue the work of placing barriers for holding the soil and correcting the torrential runoff lines on Bugio, so as to minimise the erosion caused by rain wate; Press the competent authorities to consider a contingency plan in the event of environmental pollution.

Strategic Objective: Promote, coordinate and support research that has in view a better understanding of the species and habitats

OPERATIONAL OBJECTIVES	ACTIONS
A - Promote studies to better the understanding of the Desertas Islands; B - Promote the carrying out of research programmes on habitats and species; C - Develop mechanisms for sharing information and promoting coordination between researchers.	Map the distribution of the species and habitats of the Habitat and Birds Directives found at the site; Promote a survey study of all the species found at the site; Promote the study and monitoring of endemic plant species; Promote the undertaking of reference studies of the habitats and species of the Habitat and Birds Directives found at the site; Evaluate the need to improve the conditions for the reception of and logistical support to researchers, scientists and students interested in carrying out a study and/or in collaborating in research programmes in progress at the site; Train and prepare personnel of the managing entity so they can support and collaborate in the research programmes; Maintain in effect the basic scheme for monitoring the different groups of animals and plants that can be carried out by the personnel of the management entity on duty at the site; Continue and increase the studies on the plant communities;

	Evaluate the current and future needs for research of the biology and ecology of the different groups of fauna and flora, and of the geology of the site, setting priorities; Establish protocols of cooperation between different entities (regional, national and international) with the objective of carrying out scientific works on the fauna, flora, and geology of the site; Participate in and present information at scientific meetings, whether national or international; Promote the exchange of information through the holding of forums for debate and discussion; Promote the publication in scientific magazines of the results of the works carried out.

Strategic Objective: Improve the dissemination, knowledge and appreciation of the site

OPERATIONAL OBJECTIVES	ACTIONS
A – Increase the support of the general public and institutions for the conservation of the Desertas Islands; B – Improve the conditions for visitor reception and information.	Maintain the preparation of material publicising the site and the emblematic species, such as the Mediterranean monk seal (*Monachus monachus)* and Deserta's petrel (*Pterodroma deserta*); Increase publicity through a broadening of the target public, with the objective of embracing all the groups who might contribute to the preservation of species and habitats; Maintain the publicising of the site and its projects through the mass media; Offer seminars and training courses to the employees of the managing entity so they can better transmit information about the site to visitors Evaluate the need to improve the exhibition on display at the reception centre at Doca (Deserta Grande); Maintain the informative trail at Doca (Deserta Grande).

Strategic Objective: Manage the visitors in terms of the recreational-tourist activities so that these do not collide with the value of conservation of the Desertas Islands

OPERATIONAL OBJECTIVES	ACTIONS

A – Acquire the knowledge needed to define strategies that would permit the conservation of the site in the face of human pressure from the recreational-tourist activities; B – Evaluate the need to improve the mechanisms and the conditions for controlling visitors and their activities.	Maintain an up-to-date study of the balance of the problems and potentials of the site; Maintain enforcement of the Internal Regulations of the Reserve; Maintenance of the locations designated for the recreational-tourist activities (trails, rest area, area for overnight stay within the scope of the pedagogical and awareness-raising activities);

Strategic Objective: Maintain the legal conditions so that the management of the Reserve is carried out in an efficient manner

OPERATIONAL OBJECTIVES	ACTIONS
A – Keep the site provided with an appropriate legal framework; B – Evaluate the need to improve the legal protection mechanisms for a sensible use of the site.	Continuously evaluate the need for up-dated legislation on the site; Evaluate the need for up-dating the Internal Regulations of the Reserve; Maintain the implementation of the proper mechanisms, so that the legal protection is effective; Evaluate the need to promote the inclusion of the Reserve in the Special Sea Areas under the MARPOL 73/78.

Strategic Objective: Manage the Reserve in a suitable and effective manner, in accordance with the proposed guidelines

OPERATIONAL OBJECTIVES	ACTIONS
A – Monitor the implementation of the proposed plan; B – Maintain the provision of the financial means for performing the activities presented in this plan.	Follow up and evaluate the execution of this plan by the Consultative Commission of the managing entity; Maintain the allocation of the human, logistical and budgetary means for the management of the site in accordance with the plan proposed herein; Seek out external sources of financial support for the site.

7.2. BUDGET AND PERSONEL

The Desertas Islands Nature Reserve is managed by the SPNM, the body responsible for the management of all the Protected Areas of the archipelago of Madeira. This service has two divisions: the Nature Conservation Division and the Land Use, Projects and Environmental Education Division, supported by the Corps of Nature Wardens and by several administrative and logistic units. In all, the SPNM has 69 employees, with the technical skills listed below.

Director	Biologist
2 Division Heads	2 Biologists
10 Higher Technicians	4 Biologists
	2 Forestry Engineers
	2 Agronomy Engineers
	1 Jurist
	1 Accountant
7 Operational technicians	
38 Nature Wardens	
11 Administrative technicians	
1 Sailorman	

The Desertas Islands Nature Reserve is coordinated by a Biologist who manages the work done by the Nature Wardens on duty on that Reserve. These Nature Wardens work in teams of three members each, who alternate every 15 days. In addition, and according to the work of research, monitoring or maintenance of equipment or areas that are carried out there, they are frequently joined by other SPNM staff.

Besides these, there are many researchers (mainly ornithologists, botanists, biologists and geologists), biology and geology students and volunteers, both nationals and foreigners, who seek out this Reserve, not only to do their work, but also to join in the work teams of SPNM.

Technical means

Logistic facilities - buildings

At the close of 1988, the first facility to support the work carried by SPNM was built at Doca (Deserta Grande). In 2005 this house was replaced by a new one that, in addition to housing the SPNM employees, included a reception centre for visitors and improve facilities to support researchers that come to carry on work in those islands.

Besides the house at Doca, there are three other houses, one in the Castanheira valley (formerly one of the shelters built by the Funchal Port Captaincy during WWII, rebuilt in 1996 within the scope of the project for the elimination of the herbivores on Deserta Grande) and two on the Island of Bugio. These two small structures were installed on the plateau of Bugio within the scope of the project LIFE “SOS Deserta’s petrel”.

The system of energy for all the houses is renewable, working on solar energy. At Doca, the water for the house comes from rainwater that is collected and from a small desalinisation plant.

Recreational and leisure areas

At Doca there is a small circuit with information in Portuguese and English, and a rest and barbecue area for visitors.

Rehabilitation Unit for monk seals

In 1997, a small centre was built for the rehabilitation of monk seals that might be found in a weakened condition.

Equipment
For the surveillance work and for travelling among the islands, there is an inflatable boat (4.7m) equipped with a 25 HP motor and a semi-rigid boat (4.7m) with a 2-stroke 25 HP motor.

The transport of personnel, goods and equipment is carried out on ships of the Portuguese Navy, and in the SPNM vessels – the sailboat "Buteo" 15.85m long with a diesel motor of 100 HP and the semi-rigid boat "Freira-do-Bugio", 8.5m long and a 320 HP motor.

"Freira do Bugio" is regularly used to support logistically the different works carried in these islands.

Financial Resources
In 2009 and 2010, the total expenses of SPNM including expenses for personnel were 2,575,920.20 Euros and 3,486,997.91 Euros respectively. These amounts are for the salaries of all the employees and all the expenses incurred in the management of all the areas allocated to the SPNM (Desertas Islands Nature Reserve, Selvagens Islands Nature Reserve, Garajau Nature Reserve, Rocha do Navio Nature Reserve, the Network of Protected Marine Areas of Porto Santo and the Madeira Nature Park) as well as the conservation programmes for the conservation of endangered species. In total, every year 10% to 15% of the total budget of the SPNM is allocated to the management of Desertas Islands Nature Reserve.

8. MAP OF THE SITE

• Physical map:

NATIONAL MAP NUMBER	SCALE	PROJECTION
Carta Hidrográfica das Ilhas Desertas	1 :50000	Mercator Elipsoide Internacional Datum Porto Santo

REFERENCE TO AVAILABILITY OF BOUNDARIES IN DIGITISED FORM
Available by request to Madeira Nature Park Services.

• Map of designated sites described in 6.2.

Provide this information on a map with the same characteristics as above.

• Aerial photograph(s) included:

YES	NO
X	

NUMBER	AREA	SUBJECT	COPYRIGHT	DATE
482-497	Desertas Islands	Desertas Islands	SRA/DROTA	2012

9. SLIDES

NUMBER	PLACE	SUBJECT	COPYRIGHT	DATE
1	Desertas Islands	Landscape	Yes	2005

2	Ilhéu Chão	Landscape	Yes	2005
3	Ilhéu Chão (top)	Landscape	Yes	2010
4	Deserta Grande (west)	Landscape	Yes	2005
5	Deserta Grande (top)	Landscape	Yes	2010
6	Deserta Grande (Castanheira valley)	Landscape	Yes	2005
7	Deserta Grande (Doca)	Landscape	Yes	2007
8	Deserta Grande (Fajã Grande)	Landscape	Yes	2010
9	Deserta Grande (Tabaqueiro, monk seal sea cave)	Landscape	Yes	2007
10	Bugio	Landscape	Yes	2005
11	Bugio (top)	Landscape	Yes	2005
12	Desertas Islands	Flora: formations of Euphorbia	Yes	2003
13	Desertas Islands	Flora: *Musschia isambertoi*	Yes	2010
14	Desertas Islands	Flora: *Sinapidendron sempervivifolium*	Yes	2010
15	Desertas Islands	Flora: *Chamaemeles coriacea*	Yes	2010
16	Desertas Islands	Flora: *Convolvulus massoni*	Yes	2004
17	Desertas Islands	Flora: *Musschia aurea*	Yes	2005
18	Desertas Islands	Flora: *Sideroxylon marmulano*	Yes	2010
19	Desertas Islands	Flora: *Calendula maderensis*	Yes	2008
20	Desertas Islands	Flora: *Phyllis nobla*	Yes	2010
21	Desertas Islands	Flora: Lichens	Yes	2003
22	Desertas Islands	Flora: Algae	Yes	2010
23	Desertas Islands	Fauna: *Monachus monachus*	Yes	2012
24	Desertas Islands	Fauna: *Caretta caretta*	Yes	2006
25	Desertas Islands	Fauna: *Balaenoptera physalus*	Yes	2003
26	Desertas Islands	Fauna: Coastal fish	Yes	2004
27	Desertas Islands	Fauna: *Pterodroma deserta*	Yes	2008
28	Desertas Islands	Fauna: *Calonectris diomedea*	Yes	2005
29	Desertas Islands	Fauna: *Bulweria bulwerii*	Yes	2005
30	Desertas Islands	Fauna: *Oceanodroma castro*	Yes	2008
31	Desertas Islands	Fauna: *Sterna hirundo*	Yes	2005

32	Desertas Islands	Fauna: *Anthus bertheloti madeirensis*	Yes	2004
33	Desertas Islands	Fauna: *Serinus canaria canaria*	Yes	2003
34	Desertas Islands	Fauna: *Falco tinnunculus canariensis*	Yes	2005
35	Desertas Islands	Fauna: *Teira dugesii mauli*	Yes	2008
36	Desertas Islands	Fauna: *Hogna ingens*	Yes	2008
37	Ilhéu Chão (top)	Cultural heritage: Lighthouse	Yes	2005
38	Deserta Grande (Castanheira valley)	Cultural heritage: Castanheira valley lodge	Yes	2004
39	Deserta Grande (top)	Cultural heritage: Lookout post (East)	Yes	2010
40	Deserta Grande (top)	Cultural heritage: Lookout post (West)	Yes	2010
41	Deserta Grande (Doca)	Cultural heritage: Doca infrastructures	Yes	2010
42	Deserta Grande (Doca)	Cultural heritage: Lodge/Reception centre	Yes	2010
43	Deserta Grande (Doca)	Cultural heritage: Picnic area	Yes	2010
44	Deserta Grande (Doca)	Cultural heritage: Mediterranean monk seal rehabilitation unit	Yes	2010
45	Deserta Grande (Doca)	Cultural heritage: Mediterranean monk seal rehabilitation unit	Yes	2010
46	Bugio (top)	Cultural heritage: Lodge	Yes	2010
47	Bugio (top)	Cultural heritage: Lighthouse	Yes	2005
48	Deserta Grande (Doca)	Environmental education	Yes	2010
49	Deserta Grande (Doca)	Environmental education	Yes	2010
50	Deserta Grande (Doca)	Environmental education	Yes	2010
51	Deserta Grande (Doca)	Environmental education	Yes	2010
52	Deserta Grande (Doca)	Environmental education	Yes	2010
53	Deserta Grande (Doca)	Environmental education	Yes	2010
54	Deserta Grande (Doca)	Environmental education	Yes	2010
55	Deserta Grande (Doca)	Environmental education	Yes	2010
56	Deserta Grande (Doca)	Environmental education	Yes	2010

APPENDIX 1