

## **Management Plan for Antarctic Specially Protected Area No. 145**

### **PORT FOSTER, DECEPTION ISLAND, SOUTH SHETLAND ISLANDS**

#### **1. Description of values to be protected**

These two sub areas were originally designated as SSSI N° 27 by Rec. XIV-5 of October 6, 1987 after a proposal by Chile.

Values protected under original designation included the diversity of benthic fauna on two different kinds of sea bottom substrates. The original research about the ecological process of recolonization after volcanic eruption needed protection from the risk of undue interference.

Deception Island is a caldera formed by subsidence of a group of Cenozoic volcanoes superimposed along radial faults. Port Foster is an almost entirely enclosed body of water, receiving large volumes of fresh water during periods of melt. In several places there is geothermal activity.

The area is of exceptional ecological interest because of its actively volcanic character. The two habitat areas are subject to long-term research programs and the purpose in designating them is, as far as possible, to reduce the risk of accidental interference that could jeopardize these scientific investigations.

#### **2. Aims and objectives**

The management of Port Foster aims to:

- Avoid degradation or substantial risk to the values of the area by preventing unnecessary human disturbance.
- Allow scientific research on the marine benthic system, ensuring protection from interference.

#### **3. Management activities**

The following management activities shall be undertaken to ensure the protection of the values of the area:

- Preparation and distribution of a map showing the location of the area, with explicit statement of the special restrictions that apply. This map shall be available at the Deception Island Stations and to visitors.
- Periodical visits and assessment of the effectiveness of the protection.
- Sampling of benthic fauna to verify that the values for which the site was originally designated remain valid.

## II. Measures

### **4. Period of designation.**

Designated for two years.

### **5. Maps.**

Map 1: Port Foster, showing bathymetry, and the location of sub-sites A and B.

### **6. Description of the area**

#### *6(i) Geographical coordinates*

Benthic habitat A: between 50 and 150 m depths and the coordinates: lat 62°55.5'S long 60°38'00"W, lat 62°56.2'S long 60°37'00"W.

Benthic habitat B: between 100 and 150 m depths and the coordinate: lat 62°57.2'S long 60°37'20"W, lat 62°57.9'S long 60°36'20"W.

#### *6(ii) Physical features*

The bottom of habitat A consists of coarse to medium-sized, poorly sorted volcanic sediments including scoria and lapilli, and that of habitat B of medium to fine, better sorted volcanic ash. Volcanic sediments are at least 30 cm thick, on both habitats. Soft bottom habitats are low on water dissolved oxygen.

Water temperature, near Benthic habitat A, may fluctuate widely depending on circulation and due to under-water hot springs in the neighboring area.

#### *6(iii) Biological features*

Benthic fauna was severely impacted by the volcanic eruption of 1967, due to volcanic ash and high concentrations of dissolved toxic compounds.

Following the volcanic eruption of December 1967 at Deception Island, a long-term program of research was initiated at Port Foster to study the mechanism and paths of the re-establishment of the benthic communities. Community studies to observe biota changes, including other relevant studies to meet the requirements of long-term biological monitoring programs, are performed periodically.

The most conspicuous macrofauna in dredge samples include the nemerteans *Lineus* sp and *Paraborlasia corrugatus*, the isopod *Serolis kemp*, the bivalve *Yoldia eightsii*, the echinoids *Abatus agassizii* and *Sterechinus neumayeri*, the asteroids *Lysasterias perrieri* and *Odontaster validus*, the ophiuroid *Ophionotus victoriae* and the holothurian *Ypsilothuria* sp. The composition of the benthic assemblages has varied greatly since the volcanic eruption of December 1967.

Soft bottom habitat predominant groups are: Polichaeta, Bivalvia, Nemertina, Cumacea and Amphipoda.

Hard bottom habitat predominant groups are: Echinoderms, Amphipoda and Tunicata.

6 (iv) *Location of other protected areas within close proximity*

ASPAs 140 comprises eleven small sub-sites of unique and important vegetation on Deception Island. Also, in the vicinity of Pendulum Cove is HSM 76, the remains of Pedro Aguirre Cerda Station. HSM 71 at Whalers Bay comprises the remains of Hektor Whaling station, other artefacts which predate the whaling station, and the remains of 'Base B' (UK).

Other protected areas in the vicinity are ASPAs N° 126 Byers Peninsula approximately 40 km northwest and ASPA N° 149 Cape Shirreff, both on Livingston Island.

## 7. **Permit conditions**

Conditions for issuing a sampling permit:

- It is issued only for scientific study of the marine benthic system and geology of the area, or for compelling scientific reasons that cannot be served elsewhere.
- It is issued for essential management purposes consistent with management plan objectives such as inspection or review.
- The actions permitted will not jeopardize the ecological or geological scientific values of the area.
- A visit report shall be supplied to the authority named in the Permit, as well as to the Chair of the Deception Island Management Group.
- Permits shall be issued for a stated period.

7(i) *Access to and movement within the area*

Although access points as such are not designated, free passage of ships through these areas is not in any way prejudiced. Movement in shallow waters should be undertaken carefully so as to minimize the probability of disturbing bottom fauna and flora.

7(ii) *Activities that may be conducted*

- Scientific research other than that disturbing benthic habitats and communities.
- Essential management activities, including monitoring.

7(iii) *Scientific sampling*

Samples from benthic habitats should be taken only for compelling scientific purposes.

7(iv) *Other restrictions*

The dumping of waste from ships and bottom trawling shall be avoided. Anchoring shall be avoided except in compelling circumstances. Siting of bottom devices should be avoided.

## II. Measures

### *7(v) Taking or harmful interference with native flora and fauna*

Taking or harmful interference with native flora and fauna is prohibited, except by permit issued in accordance with Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Where taking of animals for scientific purposes is involved, the SCAR Code of Conduct for the Use of Animals for scientific Purposes in Antarctica should be used as a minimum standard.

### *7(vi) Waste disposal*

Disposal of all waste, including human waste, is prohibited in this area.

### *7(vii) Measures that are necessary to ensure that the aims and objectives of the management plan can continue to be met*

Access to the area by permit to carry out site inspection and monitoring; this may involve collection of benthos samples for analysis and review of protective measures.

### *7(viii) Requirements for reports*

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority, and to the Chair of the Deception Island Management Group, a report of the activities undertaken. This report shall be submitted no later than six months after the visit. Such reports should be stored and made available to interested parties, SCAR, CCAMLR and COMNAP if requested, to ensure good management.

## **Bibliography**

Gallardo, V.A., and J. Castillo, 1970 Quantitative observations on benthic macrofauna of Port Foster (Deception I.), Chile Bay (Greenwich I.). In: Antarctic Ecology 1:242-243 (Ed) M. Holdgate. Academic Press London N.York.

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Retamal, M., R. Quintana, and F. Neira. 1970. Análisis cuali y cuantitativo de las comunidades bentónicas en Bahía Foster, I. Decepción. Ser. Cient. INACH 29:5-15

Valenzuela, E., L. Chavez, F. Munizaga. 1970. Actividad Volcánica en Isla Decepción. Ser. Cient. INACH 1(1):25-39.

Figure 1. Antarctic Specially Protected Area No. 145, Port Foster, Deception Island, South Shetland Islands.

