

Management Plan for Antarctic Specially Protected Area No. 112

COPPERMINE PENINSULA, ROBERT ISLAND SOUTH SHETLAND ISLANDS

Introduction

Coppermine Peninsula (62°24'S; 59°30'W) is located in the north western coast of Robert Island, South Shetland Islands, in front of the English Strait. The Area was designated as Specially Protected Area SPA No. 16 through Recommendation VI-10 (1970). The first Management Plan was approved by Recommendation XVI-6 (1991). In accordance with Decision 1 (2002), the Area came to be called Antarctic Specially Protected Area No. 112.

The Area is mainly protected due to its significant terrestrial ecosystem, with the presence of large Antarctic flora and fauna colonies, which are of special interest for scientific research.

1. Description of values to be protected

Coppermine Peninsula is a biologically rich area with a diverse biota typical of the South Shetland Islands. It supports a wide range of plant communities with associated invertebrate fauna; the vertebrate fauna is also particularly well represented.

Much of the higher ground is permanently ice-covered. There are numerous small streams and pools in summer.

The principal value of the Area is the vegetation, which is characterised by a vast moss carpet, together with hepatic, lichen and algae species. One of the Antarctic vascular plant species is also present in the Area. The Area is also renowned for the presence of bird colonies nesting here, mainly the giant petrel, *Macronectes giganteus*.

Scientific studies have been developed in the Area in order to know the composition of its biological communities, and identify the impacts that may affect them.

2. Aims and objectives

Management at Coppermine Peninsula aims to:

- Protect the terrestrial ecosystem and the community of birds that breed in the Area;
- Avoid degradation or substantial risk to the values of the Area by preventing unnecessary human disturbance;
- Avoid major changes in the structure and composition of the flora and fauna communities;
- Allow scientific research in the terrestrial environment, while ensuring protection from over-sampling;
- Allow for the development of other scientific research in the Area, provided they do no compromise the values for which the Area has been protected; and
- Allow visits for management purposes in support of the aims of this Management Plan.

3. Management Activities

The following management activities are to be undertaken to protect the values of the Area:

- The staff authorised to access the Area shall be specifically instructed on the conditions of this Management Plan.
- Approach distances to fauna must be respected, except when the scientific projects may require otherwise and this is specified in the relevant permits.
- Collection of samples will be limited to the minimum required for the development of authorised scientific research plans.
- Wherever possible, cloths, shoes and equipment shall be sanitised before visiting the Area, in order to avoid the introduction of microorganisms.
- Signs may be placed (markers, boards or other information structures) in places that do not disturb the values protected or the development of research, either for scientific, management or dissemination purposes, which shall be maintained in good condition.
- The signs or structures to be installed in the Area for scientific or management purposes shall be maintained in good condition.
- The equipment and materials to be installed in the Area shall be removed when no longer required.
- The entry of any type of vehicles to the Area is strictly prohibited.
- Visits shall be made as necessary to assess whether the Area continues to serve the purposes for which it was designated and to ensure management measures are adequate.

4. Period of designation.

The Area is designated for an indefinite period.

5. Maps

Map 1: Part of South Shetland Islands, showing the location of Nelson, Robert and Greenwich Islands, as well as the Antarctic Specially Protected Areas located there, including ASPA No. 112, Coppermine Peninsula.

Map 2: Coppermine Peninsula, Robert Island. ASPA No. 112 is marked in grey. Based on the Chart of the Hydrographical Institute of the Chilean Army (Instituto Hidrográfico de la Armada de Chile), English Strait and Lautaro Channel, scale 1:40,000.

6. Description of the Area

6(i) Geographical co-ordinates, boundary markers and natural features

GENERAL DESCRIPTION

Coppermine Peninsula (62°24'S; 59°30'W) is located at the northwestern end of Robert Island. It covers an elongated strip (2 km long by 500 m wide), from the isthmus connecting Robert Island to Cape Fort Williams. It has an irregular relief, with average heights of 30 to 40 masl, and many protrusions reaching over 80 masl, such as the basaltic columns of Neptune's Cathedral and the snout near the facilities at Luis Risopatrón Base (Chile).

The peninsula features Late Cretaceous volcanic rocks, mainly formed by basaltic lavas and olivine, of a prominent cindery red colour at interfaces. The articulated columns at Fort Williams and Neptune's Cathedral are intrusions from the Pliocene or recent periods.

Soil formation through plant decomposition and humus deposit is slow and scarce, but the accumulation of organic matter can reach 85 cm locally. Low-ground soils resemble moss carpets, usually 3 to 10 cm deep.

The topography and weather conditions of the Area favour various types of habitats for plant communities, which are strongly influenced by the marine aerosols.

BOUNDARIES

The Coppermine Peninsula extends from Cape Morris to Triplet Hill, separating Carlota and Coppermine Coves. This peninsula is the westernmost area of Robert Island and ends in the western tip in Fort Williams, a cape with striking features, such as Morris Rock, located in the coastal area. This peninsula represents one of the earlier stages of the Late Cenozoic volcanism of the region.

The peninsula is connected to Robert Island through a terrace-shaped isthmus featuring marine gravel, about 10 m above sea level, and 250 m wide. The isthmus is interrupted to the east by a small horseshoe-shaped hill. At the south-eastern end of Coppermine Cape, the Triplet Hill emerges, with a height of 140 m.

FLORA

The main value of the Area is its vegetation, which is characterised by a vast moss carpet covering around 1.5 ha, representing one of the most important bryophyte communities in Antarctica. The moistest areas of the peninsula are dominated by *Calliergidium austrostramineum* and *Calliergon sarmentosum*, which is merged in the interior of *Drepanocladus uncinatus*, where drainage is higher. In the dryer marginal areas, *Polytrichum alpinum*, *Bryum algens*, *Psoroma cinnamomeum*, *Sphaerophorus globosus*, *Ceratodon* sp., and *Usnea* sp., together with other lichens, are associated with *Drepanocladus*. In moist slopes near the summit, moss peats have developed with moist peats of about 85 cm wide. Areas with moist ash soils in valley soils and troughs represent vast communities of foliose lichens. Coastal rocks are frequently covered in lichens, mainly *Caloplaca* sp., *Haematomma erythromma*, *Physcia caesia*, *Ramalia tenebrata* and *Usnea* sp., which are occasionally associated with moss.

The *Prasiola crispa* alga is present in areas influenced by bird colonies, and the bluish green alga *Nostoc commune* can also be found in some areas. The *Clammydomonas nivalis* and *Scottiella Antarctica* algae can be found in the areas covered by snow, and give a characteristic reddish colour to the ice.

Deschampsia antarctica is frequently located in the sheltered slopes of the peninsula.

Table 1 shows plant species identified in the Area:

Table 1. Plant species present in Coppermine Peninsula, Robert Island.

Vascular plants		
<i>Deschampsia antarctica</i>		
Mosses		
<i>Andreaea depressinervis</i>	<i>Ceratodon</i> cf. <i>grossiretis</i>	<i>Polytrichum piliferum</i>
<i>Andreaea gainii</i>	<i>Ceratodon</i> cf. <i>purpureus</i>	<i>Pottia austro-georgica</i>
<i>Andreaea regularis</i>	<i>Chorisodontium aciphyllum</i>	<i>Schistidium</i> (= <i>Grimmia</i>) <i>antarcticum</i>

<i>Bartramia patens</i>	<i>Dicranoweisia grimmiae</i>	<i>Tortula cf. conferta</i>
<i>Brachythecium austro-salebrosum</i>	<i>Drepanocladus uncinatus</i>	<i>Tortula excelsa</i>
<i>Bryum algens</i>	<i>Pohlia cruda</i> var. <i>imbricata</i>	<i>Tortula fusco-viridis</i>
<i>Calliergidium austro-stramineum</i>	<i>Pohlia nutans</i>	<i>Tortula grossiretis</i>
<i>Calliergon sarmentosum</i>	<i>Polytrichum alpinum</i>	
Hepatic		
<i>Barbilophozia hatcheri</i>	<i>Nostoc commune</i>	
<i>Cephaloziella varians</i>	<i>Prasiola crispa</i>	
Lichens		
<i>Buellia</i> sp.	<i>Haematomma erythromma</i>	<i>Ramalia terebrata</i>
<i>Caloplaca regalis</i>	<i>Lecania brialmontii</i>	<i>Rinodina</i> sp.
<i>Caloplaca</i> sp.	<i>Lecanora</i> sp.	<i>Sphaerophorus globosus</i>
<i>Candelariella vitellina</i>	<i>Leptogium puberulum</i>	<i>Stereocaulon glabrum</i>
<i>Cladonia balfourii</i>	<i>Mastodia tessellata</i>	<i>Umbilicaria antarctica</i>
<i>Cladonia</i> cf. <i>carneola</i>	<i>Ochrolechia frigida</i>	<i>Usnea aurantiaco-atra</i> (forma postrada)
<i>Cladonia furcata</i>	<i>Physcia caesia</i>	<i>Usnea fasciata</i>
<i>Cladonia</i> sp.	<i>Psoroma hypnorum</i>	<i>Xanthoria candelaria</i>
<i>Cornicularia epiphorella</i>	<i>Psoroma</i> cf. <i>cinnamomea</i>	<i>Xanthoria elegans</i>

FAUNA

Vegetation present in the Area favours habitats for terrestrial invertebrate communities. Coppermine Peninsula habitats include Collembola, mites, nematodes, rotifers, tardigrades and a variety of protozoa. The main specimen in this group is the Collembola *Cryptopygus antarcticus*, usually associated with moss carpets.

The Coppermine Peninsula hosts various seabird colonies, either breeding or resting. Breeding colonies include giant petrels *Macronectes giganteus*, Wilson's storm petrels, *Oceanites oceanicus*, Antarctic terns, *Sterna vittata*, kelp gulls, *Larus dominicanus*, and brown skuas, *Stercorarius (Catharacta) lonnbergi*.

The Area is also visited by seals and fur seals, which rest on the beaches.

Table 2. Fauna present in Coppermine Peninsula, Robert Island.

Vertebrates
Flying birds

Scientific name	Common name
<i>Macronectes giganteus</i>	Giant petrel
<i>Daption capense</i>	Cape petrel
<i>Oceanites oceanicus</i>	Wilson's storm-petrel
<i>Phalacrocorax bransfieldensis</i>	Antarctic shag
<i>Larus dominicanus</i>	Dominican gull
<i>Sterna vittata</i>	Antarctic tern
<i>Stercorarius (Catharacta) antarcticus</i>	Antarctic skua
<i>Chionis albus</i>	Seathbill
Swimming birds	
Scientific name	Common name
<i>Pygoscelis antarctica</i>	Antarctic or chinstrap penguins
<i>Pygoscelis papua</i>	Gentoo penguins
<i>Pygoscelis adeliae</i>	Adélie penguin
Pinnipeds	
Scientific name	Common name
<i>Mirounga leonina</i>	Southern elephant seal
<i>Leptonychotes weddelli</i>	Weddell seals
<i>Hydrurga leptonyx</i>	Leopard seals
<i>Arctocephalus gazella</i>	Antractic fur seal

6(ii) Access to the Area

The Area can only be accessed by sea, landing on the Carlota Cove or Coppermine Cove beaches, only in front of the facilities at Luis Risopatrón scientific station (Chile).

Access by air is only permitted by helicopter and in cases of emergency, landing to the east of the isthmus, on Robert Island, outside the Area.

6(iii) Location of structures within and adjacent to the Area

The Luis Risopatrón scientific station (Chile) is located about 100 m west of the Area, in Coppermine Peninsula. The scientific station stands 40 m above sea level, on solid rock surface, located 150 m from the coastal line. It has 5 modules used for accommodation, laboratories and storage areas. The station operates in the austral summer and can currently host 5 people.

6(iv) Location of other Protected Areas within close proximity

The following Protected Areas are located in the vicinity of the Coppermine Peninsula:

- ASPA No. 133, Point Harmony, Nelson Island, 30 km northwest.
- ASPA No. 144, Chile Bay (Discover Bay), Greenwich Island, about 12 km to the south.

6(v) Special zones within the Area

None.

7. Permit conditions

7(i) General conditions

Access to the Area is prohibited except in accordance with a permit issued by an appropriate national authority. Conditions for issuing a Permit to enter the Area are that:

- The permit is issued for essential scientific or management purposes, consistent with the objectives of the plan, such as inspections, maintenance or review tasks, which cannot be served elsewhere;
- The actions permitted will not jeopardise the ecological and scientific values of the Area;
- Any management activity are in support of the objectives of the Management Plan;
- Actions permitted are in accordance with this Management Plan;
- Scientific staff present in the Area carries the Permit or an authorised copy thereof during the specified period; and
- At the end of the period, a report is submitted before the relevant national authority mentioned in the Permit, making reference to any undertaken activity not expressly mentioned in the Permit.

7(ii) Access to and movement within or over the Area

The Area can only be accessed by sea, landing on the Carlota Cove or Coppermine Cove beaches, in front of the Luis Risopatrón scientific station (Chile).

Movement within the Area shall be on foot.

Vehicle access

Access to the Area by any type of vehicles is prohibited.

Overflights

Due to the presence of seabirds breeding on the island, the landing of aircrafts within the Area is prohibited. Access by air is permitted by helicopter and in case of emergency, landing outside Area, to the east of the isthmus. In addition, any overflight operations shall comply with the guidelines established in Resolution 2 (2004), *Guidelines for the Operation of Aircraft near Concentrations of Birds*.

7(iii) Activities which may be conducted in the Area

- Scientific research that will not jeopardise the ecosystem or scientific values of the Area, or affect in any way the value of the Area as a reference site.
- Essential management activities, including monitoring.

7(iv) Installation, modification or removal of structures

- No structures are to be erected within the Area except as specified in a Permit. Permanent structures or installations are prohibited.

- All structures, scientific equipment or markers installed in the Area must be authorised by a permit for a definite period and clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination to the Area.
- The installation (including site selection), maintenance, modification or removal of structures must be performed in a way that produces minimal disturbance to the flora and fauna present.
- The authority issuing the original permit shall be in charge of removing the specific equipment which permit is overdue, this being a condition for the permit to be granted.

7(v) Location of field camps

Camping in the Area is prohibited. The Luis Risopatrón scientific station offers accommodation to researchers, subject to prior arrangement with the Chilean Antarctic Program.

Tents will be allowed for the sole purpose of storing scientific instruments or equipment, or to be used as an observation post, and shall be removed upon conclusion of the activity.

If camping in the Coppermine Peninsula is absolutely necessary, the tents shall be located near Risopatrón Station. No other locations shall be used for this purpose, in order to restrict the human impact.

7(vi) Restrictions on materials and organisms that may be brought into the Area

- No alien living animals, plants or microbes may be deliberately introduced into the Area, and precautions shall be taken to avoid their accidental introduction. Whenever possible, all clothes, shoes and equipment must be thoroughly inspected and cleaned before entering the Area.
- To ensure that the fauna, flora and ecological values of the Area are preserved, special precautions shall be taken by visitors against accidentally introducing microorganisms or invertebrates from other Antarctic sites or from regions outside Antarctica. All sampling equipment and markers brought into to the Area shall be cleaned or sterilised before use in the Area, to the extent possible.
- In order to protect the avifauna of the island, no poultry meat or derived products may be introduced into the Area for consumption by researchers.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in the Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.
- All materials introduced into the Area shall remain there only for the period stated in the Permit, shall be removed at or before the conclusion of the stated period, and shall be handled so that the risk of introduction into the environment is minimised.
- If release occurs which may affect the values of the Area, removal is encouraged only where the impact of removal is not likely to be greater than that of leaving the material *in situ*.

7(vii) Taking of, or harmful interference with, native flora and fauna

Taking of or harmful interference with native flora or fauna is prohibited, except under a Permit issued in accordance with Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty, by a relevant national authority.

Where taking of or harmful interference with animals 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(viii) Collection or removal of materials not brought into the Area by the Permit holder

- Material may be collected or removed from the Area only in accordance with a Permit, and should be limited to the minimum necessary to meet scientific or management needs. Permits shall not be granted if there is reasonable concern that the sampling proposed would take, remove or damage such quantities of soil, sediment, flora or fauna that their distribution or abundance within the Area would be significantly affected.
- Material of human origin likely to compromise the values of the Area, and which was not brought into the Area by the Permit holder or otherwise authorised, may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*; if this is the case, the appropriate authority should be notified.

7 (ix) Disposal of waste

All wastes shall be removed from the Area. However, organic human waste can be released into the sea in accordance with article 5, Annex III of the Protocol on Environmental Protection to the Antarctic Treaty.

Waste generated as a consequence of the activities performed in the Area must be temporarily stored near the scientific station, so as to avoid accidental releases. Such waste shall be adequately labelled as litter. Upon conclusion of the activity, it shall be removed from the Area and from the Antarctic Treaty Area.

7(x) Measures that may be necessary to ensure that the aims and objects of the Management Plan continue to be met

Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of limited samples for analysis or review, or to adopt protective measures.

Whenever possible, all sites where long-term monitoring activities are carried out, which are vulnerable to involuntary disturbance, shall be duly marked on the site and Area maps.

7(xi) Requirements for reports

Parties should ensure that the principal holder for each permit issued submits to the appropriate authority a report of the activities undertaken, no later than six months after the visit. Such reports should include, as appropriate, the information identified in the Visit Report form contained in Appendix 2 of Resolution 2 (2011).

Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should offer sufficient detail to allow for the evaluation of the effectiveness of the Management Plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive, to be used both for review of the management plan and in organizing the scientific use of the Area.

The relevant authority shall be informed of any activity undertaken, any measure taken or material released and not removed which are not covered by a permit.

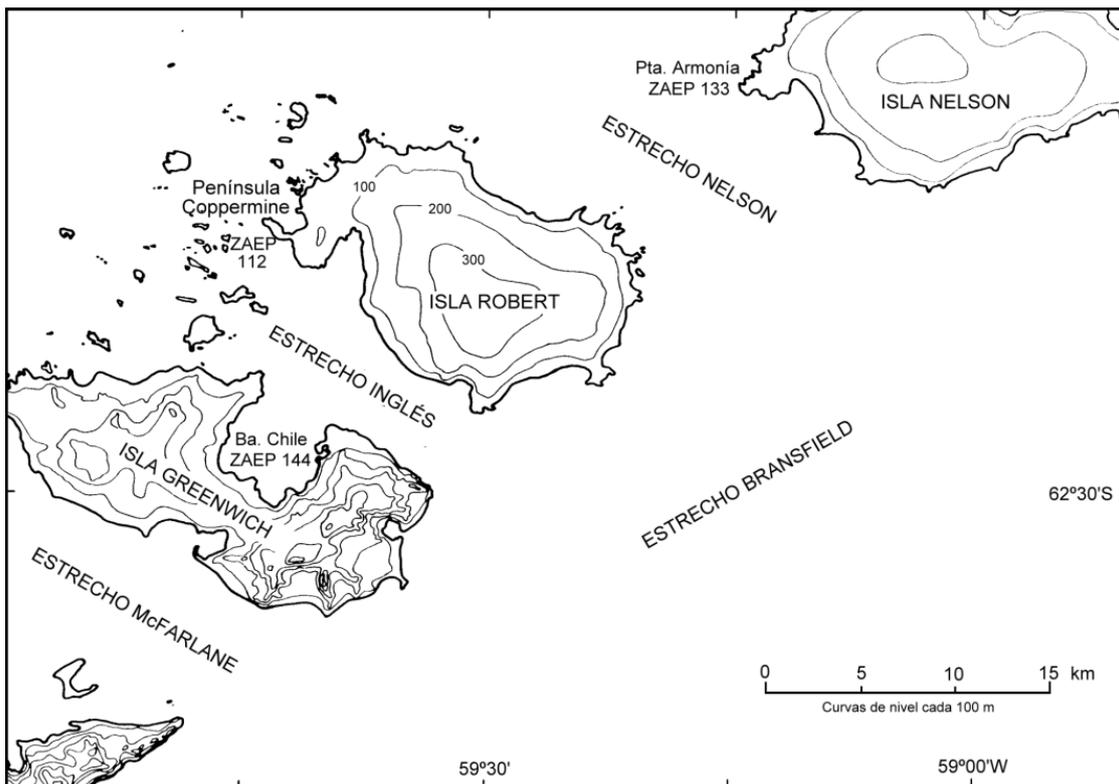
8. Supporting documentation

Bustamante, R., I. Serey y G. Guzmán. 1987. Importancia de península Coppermine (isla Robert) para el desarrollo de un programa de investigación en ecología terrestre. Bol. Antárt. Chileno 7 (2): 5-8.

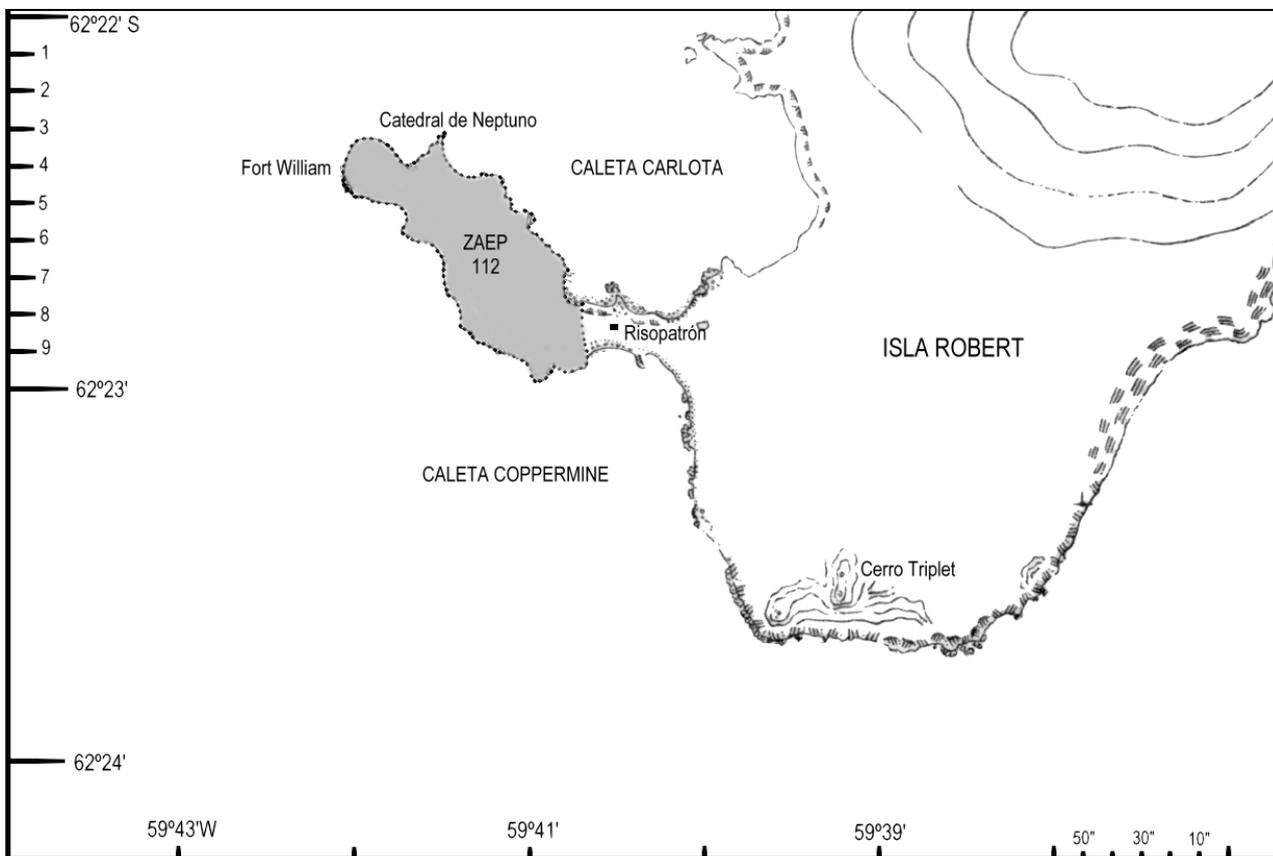
Bustamante, R., I. Serey y G. Guzmán. 1989. Mortalidad de musgos y distribución de *Usnea aurantiaco-atra*: ¿Efectos alelopáticos?. Ser. Cient. INACH 39: 69-73.

Casanova-Katny, M.A., G.E. Zúñiga, L.J. Corcuera, L. Bravo y M. Alberdi. 2010. *Deschampsia antarctica* Desv. primary photochemistry performs differently in plants grown in the field and laboratory. Polar Biol. 33 (4): 477-483.

- Casaretto, J.A., L.J. Corcuera, I. Serey y G.E. Zúñiga. 1994. Size structure of tussocks of a population of *Deschampsia antarctica* Desv. in Robert Island, maritime Antarctica. Ser. Cient. INACH 44: 61-66.
- Cuba, M., A. Gutiérrez-Moraga, B. Butendieck y M. Gidekel. 2005. Micropropagation of *Deschampsia antarctica* – a frost-resistant Antarctic plant. Antarctic Science 17 (1): 69-70.
- Etchegaray, J., F. Sáiz y E.R. Hajek. 1977. Análisis de las relaciones entre mesofauna antártica y algunos factores climáticos. Ser. Cient. INACH 5 (1): 35-44.
- Machado., A., F. Chemale Jr., R.V. Conceição, K. Kawaskita, D. Morata, O. Oteiza y W.R. Van Schmus. 2005. Modeling of subduction components in the genesis of the Meso-Cenozoic igneous rocks from the South Shetland Arc, Antarctica. Lithos 82: 435-453.
- Orrego, C. y C. Campusano. 1970. Investigaciones ecológicas en isla Robert (Shetland del Sur). Instituto Antártico Chileno, Boletín No 5: 40-41.
- Orrego, C. y C. Campusano. 1971. Temperaturas de nidificación de aves de isla Robert (Shetland del Sur). Ser. Cient. INACH 2 (1): 51-63.
- Pefaur, J.E. y R. Murúa. 1972. Estudios Ecológicos en Isla Robert (Shetland del Sur). 7. Aves de la península de isla Robert. Ser. Cient. INACH 2 (2): 11-23.
- Sáiz, F. y E.R. Hajek. 1967. Estudios Ecológicos en Isla Robert (Shetland del Sur). 1. Observaciones de temperatura en nidos de petrel gigante. Publicación INACH. 15 pp
- Schlatter, R., W. Hermsilla y F. Di Castri. 1968. Estudios Ecológicos en Isla Robert (Shetland del Sur). 2. Distribución altitudinal de los artrópodos terrestres. Publicación INACH. 26 pp.
- Schlatter, R., W. Hermsilla, F. Di Castri y R. Covarrubias. 1970. Estudios Ecológicos en Isla Robert (Shetland del Sur). Efecto de filtros microclimáticos sobre la densidad de artrópodos muscícolas en la Antártica. Instituto Antártico Chileno, Boletín No 5: 11-16.
- Serrano, E. y J. López-Martínez. 1997. Geomorfología de la península Coppermine. Ser. Cient. INACH 47: 19-29.
- Torres-Mellado, G.A., R. Jaña y M.A. Casanova-Katny. 2011. Antarctic hairgrass expansion in the South Shetland archipelago and Antarctic Peninsula revisited. Polar Biol. 34 (11): 1679-1688.



Map 1: Part of the South Shetland Islands, showing the location of Nelson, Robert and Greenwich Islands, as well as the Antarctic Specially Protected Areas located there, including ASPA No. 112, Coppermine Peninsula.



ASPA No 112 - Coppermine Peninsula

Map 2: Coppermine Peninsula, Robert Island ASPA No. 112 is shown in grey.
Based on the Chart of the Hydrographical Institute of the Chilean Army. English Strait and Lautaro
Channel, scale 1:40,000.

Map 1. Part of South Shetland Islands, showing the location of Nelson, Robert and Greenwich Islands, as well as the Antarctic Specially Protected Areas located there, including ASPA No. 112, Coppermine Peninsula.

Español	English	Français	Русский
Isla Nelson	Nelson Island	Île Nelson	Остров Нельсон
Punta Armonía, ZAEP 133	Harmony Point, ASPA 133	Pointe Harmony, ZSPA 133	Мыс гармония, ООРА 133
Estrecho Nelson	Nelson Strait	Détroit Nelson	Пролив Нельсон
Isla Robert	Robert Island	Île Robert	Остров Роберт
Península Coppermine, ZAEP 112	Coppermine Peninsula, ASPA 112	Péninsule Coppermine, ZSPA 112	Полуостров Коппермайн, ООРА 112
Estrecho Inglés	English Strait	Détroit anglais	Английский пролив
Bahía Chile, ZAEP 144	Chile Bay, ASPA 144	Baie Chile, ZSPA 144	Залив Чили, ООРА 144
Isla Greenwich	Greenwich Island	Île Greenwich	Остров Гринвич
Estrecho McFarlane	McFarlane Strait	Détroit McFarlane	Пролив МакФарлейн
Estrecho Bransfield	Bransfield Strait	Détroit Bransfield	Пролив Брансфилд
Curvas de nivel cada 100 m	Level contours each 100 m	Courbes de niveau tous les 100 m	Горизонталы проведены через каждые 100 м.

Map 2: Coppermine Peninsula, Robert Island ASPA No. 112 is shown in grey.
Based on the Chart of the Hydrographical Institute of the Chilean Army. English Strait and Lautaro Channel, scale 1:40,000.

Español	English	Français	Русский
Isla Robert	Robert Island	Île Robert	Остров Роберт
Caleta Carlota	Carlota Cove	Anse Carlota	Бухта Карлота
Caleta Coppermine	Coppermine Cove	Anse Coppermine	Бухта Коппермайн
Catedral de Neptuno	Neptune's Cathedral	Cathédrale de Neptune	Храм Нептуна
Fort William	Fort William	Fort William	Мыс Форт-Вильям
ZAEP 112	ASPA 112	ZSPA 112	ООРА 112
Risopatrón	Risopatron	Risopatron	Станция «Ризопатрон»
Cerro Triplet	Triplet Hill	Colline Triplet	Тройной холм