Management Plan

for Antarctic Specially Protected Area No. 134 CIERVA POINT AND OFFSHORE ISLANDS, DANCO COAST, ANTARCTIC PENINSULA

Introduction

This Area was originally designated as SSSI No. 15 in Recommendation XIII-8 of the ATCM XIII (1985), after a proposal by Argentina, due to its great diversity of vegetation and the fact that it has breeding colonies of at least ten bird species.

During the XXI Antarctic Treaty Consultative Meeting (Christchurch, 1997), the revised Management Plan for the Area was adopted in accordance with the format established by Annex V of the Madrid Protocol and Measure 3 (1997). During the XXV Antarctic Treaty Consultative Meeting (Warsaw, 2002), and once Annex V entered into force, *Site of Special Scientific Interest* No. 15 became, by Decision 1 (2002), *Antarctic Specially Protected Area* No. 134. The Management Plan was subsequently revised and in the XXIX Antarctic Treaty Consultative Meeting, (Edinburgh, 2006), Measure 1 (2006) adopted the new version of the above, now replaced by this Management Plan.

The original reasons for the designation of the Area remain in force and other reasons have been added in recent years, giving the designation of the Area greater relevance.

This Area has great scientific value due to its unusual biodiversity, which includes numerous species of birds, flora, and invertebrates. The unique topography of the Area, together with the abundance and diversity of vegetation, create highly favourable conditions for the formation of numerous microhabitats, which, in turn, support the development of rich biodiversity and give the Area exceptional aesthetic value.

At present, there is a need to increase the volume of studies related to the abundance and reproduction of marine birds and mammals, given that they hold the potential to be used as indicators of ecological processes on a global scale (Croxall *et al,* 1998). In this regard, the geographical location of ASPA 134 is a key to achieving these kinds of studies as well as other comparative observations between its fauna and the fauna inhabiting other areas in Antarctica. Climatic and oceanographic variations have been shown to have an effect on the populations of marine birds, generally with profound implications, such as a reduction of the reproductive success and alterations in the mating cycles of some species (Chambers et al. 2011). The region of the Antarctic Peninsula is one of the areas of the planet where the most extensive effects of global climate change have been observed, directly impacting on the formation and duration of marine ice and, as a result, affecting the entire food chain. Stability in the positive phase of the SAM (Southern Hemisphere Annular Mode) has had an impact on the winds, the circulation of water and the spread of marine ice (Stammerjohn *et al.* 2008; Thompson and Solomon 2002) and has repercussions on Antarctic flora and fauna.

In this context, ASPA 134 has characteristics which allow for comparative studies between populations that inhabit areas with frequent human disturbance (accumulation of refuse, pollution, tourism and fishing) and those which suffer little disturbance (Woehler *et al.* 2001, Patterson *et al.* 2008). In recent years, there has been a trend of increasing abundance in some populations which inhabit the ASPA, as is the case for penguins, contrary to what is observed in other areas, where the frequency of human disturbance is proportionate to the decrease in abundance of some populations (Woehler *et al 2001,* Lynch *et al.* 2008, Gonzalez-Zeballos *et al.* 2013).

Its designation as ASPA guarantees that the current research programmes will not be adversely affected by accidental human interference, destruction of vegetation and soil, pollution of water bodies and disturbance of birds, especially at times that coincide with reproductive periods.

Scientific research currently being conducted in ASPA N° 134 includes:

1) "*Primavera Mammals*" project: Study of the potential effects of climate change on 3 Antarctic pinnipeds with different affinity to marine ice: *Arctocephalus gazella, Leptonychotes weddellii*, and *Hydrurga leptonyx* in relation to the ice cover in the Area and global phenomena such as El Niño Southern Oscillation (ENSO) through an evaluation of the impact of these predators on marine resources, their feeding strategies and their relationship with the availability of prey. Project in cooperation between Argentina and Australia.

2) Project "*Response of Antarctic bird populations to interannual variability of their prey in areas with obvious effects of global warming*", whose goal is the implementation, during incubation periods, of bird census, with the aim of understanding population sizes of their colonies and determining the reproduction chronology as well as the reproductive success of their

different sectors. These studies include: (1) Ringing giant petrels and skuas, both adults and chicks nearing independence, in order to continue the marking and monitoring programme for these birds (2) Obtaining in vivo dietary samples (3) Placing equipment to record the time and depth of dives (TDR) and (4) Collecting endoparasites in birds found dead and in faeces as well as ectoparasites in live birds.

3) "Project phylogeography of *Deschampsia antarctica* on the basis of molecular, morphological and cariological studies: a window to the past under scenarios of change" whose purpose is to evaluate the genetic structure and diversity of *Deschampsia antarctica* and other species of vegetation.

1. Description of the values to be protected

The coastal area is home to a significant quantity of bird colonies, breeding colonies of marine mammals and extensive vegetation. The coverage of lichens, mosses and communities dominated by grasses is very extensive in Cierva Point. The Area's values are linked to its high biological diversity in terms of flora and fauna and its topographic characteristics, further enhanced by a high landscape value.

In addition, its particular geographic location in the northwest of the Antarctic peninsula gives the numerous scientific research programmes that take place in the Area crucial importance in attempting to explain, at least party, alterations in Antarctic ecosystems caused by climate change and human disturbance.

According to Morgan et al. (2007) ASPA 134 contains environment domain "Antarctic peninsula mid-northern latitudes geologic" and according to Terauds *et al.* (2012) the Area is located in the biogeographical region "Northeast of the Antarctic Peninsula".

For more details on the characteristics of the Area refer to point 6 of this document.

2. Aims and objectives

Management of ASPA 134 aims to:

- Protect the biodiversity of the Area, avoiding major changes in the structure and composition of communities of flora an fauna.
- Prevent unnecessary human disturbance.
- Allow the development of scientific research that cannot be conducted elsewhere, and the continuance of long-term biological studies established in the Area, as well as the development of any other type of scientific research that does not compromise the values for which the Areas is protected.
- Avoid or minimize the unintentional introduction of seeds, plants, animals or microbes, as well as pathogens that could potentially be harmful to the flora and fauna.
- Allow the development of studies and monitoring activities to assess the direct and indirect effects of the activities of the neighbouring station (Primavera Base).

3. Management Activities

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

- Primavera Base (Argentina) staff will be specifically instructed as to the conditions of the Management Plan.
- Copies of the management plan of this Area will be provided in Primavera Base.
- Movement will be limited to areas free of vegetation, avoiding proximity to fauna, except when otherwise required by scientific projects and the corresponding permits of harmful interference have been obtained.
- Collection of samples will be limited to the minimum required for approved scientific research plans.
- Visits shall be made as necessary, to ensure that management and maintenance measures are adequate.
- All signs, as well as other structures erected in the Area with scientific or management objectives, will be adequately secured and maintained in proper conditions.
- Pedestrian paths to research sites will be marked to limit movement.
- In accordance with requirements of Annex III of the Protocol on Environmental Protection to the Antarctic Treaty, any abandoned or disused equipment or material must be removed on condition that this does not have an adverse impact on the environment.
- The management plan should be reviewed no less than once every five years, and updated if necessary.
- All those responsible for aircraft operating in the Area should be informed of the location, boundaries and restrictions that apply to the entry and overflight of the Area.
- Preventive measures will be implemented to prevent the introduction of non-native species and for the eradication of the recorded introduced species (example of Poa pratensis)

4. Period of designation

Designated for an indefinite period.

5. Maps

Map 1 shows the general location of ASPA 134. Map 2 shows the ASPA in relation to Danco Coast. The shaded area indicates the group of areas that make up ASPA 134 (the subtidal marine environment between the continental and insular portions is not included in the ASPA). Map 3 shows the area surrounding Primavera Base in detail, (excluded from ASPA No. 134).

6. Description of the Area

6 (I) Geographical coordinates, limits, and natural features

Geographic coordinates and limits

Cierva Point (Lat. 64 ° 10 ' 1.05 " S, Lon. 60 ° 56 ' 38.06 " W) is located on the south coast of Cierva Cove, to the north of Hughes Bay, between the Danco and Palmer Coasts, in the northwestern portion of the Antarctic Peninsula. The site comprises the ice-free area between the southwest coast of Cierva Cove and the northeast coast of Santucci Cove. Also included are Apéndice (Lat. 64 ° 11 ' 41.99 " S, Long. 61° 1 ' 3.25 " W) and José Hernández islands (Lat. 64 ° 10 ' 10.06 " S, Long. 61° 6 ' 11.34 " W) and Moss (Lat. 64 ° 10 ' 2.22 " S, Long. 61° 1 ' 49.43 " W) and Penguin islets (Lat. 64° 8 ' 35.90 "S, Long. 60 ° 59 ' 11.43 " W), found to the west/southwest of Cierva Point. Although the intertidal zone of each of these areas is included in the Area, the subtidal marine environment is not.

Primavera Base (Argentina) and its associated installations, as well as the beach area utilized for access to the base, are excluded from the Area.

Natural Characteristics

The Area is rich is species of both animals and vegetation, and in some cases, the abundance of some species is exceptional.

Also, the Area has great aesthetic value thanks to the great diversity in relief and coastal forms, the presence of different lithologies and a pronounced system of fractures. In addition to this, an extensive and varied vegetation cover provides unusual scenic diversity for the Antarctic environment.

Cierva point displays a relatively simple structural design. It is dominated by three summits: The Mojón, Escombrera and Chato hills, aligned in an East-West direction, with steep South facing hillside slopes, permanently covered by snow, and the other hillside a moderate to gente North facing slope, free of snow during the summer. On the latter slopes we observe a very developed vegetation, with areas of a continuous cover by bryophyte grasses and associated lichens, as well as numerous species of birds, including the settlement of a colony of Gentoo Penguins (P. papua) (Novatti 1978, Agraz et al, 1994). These characteristics give the Area an exceptional scientific and aesthetic value.

In previous studies, Agraz *et al.* (1994) divided Cierva Point into two environmental zones according to the type of substrate and vegetation cover, (1) rocky wall (or coastal zone) and (2) exposed slope. The rocky wall is a strip of coastline with abrupt slopes, a rocky surface with scree of different sized pieces. In some sectors this substrate is unstable and is crossed by numerous canyons. Most of it is free from snow during the austral summer. The vegetation is very scant, with lichens and grasses. There are many natural cavities between the rocks. This first area is the nesting site of five bird species. The second site, the exposed side, comprises a large variety of environments and of exposures, extending from the coast up to the peaks. The slopes are moderate to abrupt, the rocks of variable sizes, consolidated or not, and the surface is free of ice during the austral summer. The highest areas have glaciers which, in summer, give rise to numerous little water streams. These feed the lowest areas, where the vegetation is most developed.

There are 10 species of nesting birds in the Area: Chinstrap Penguin (*Pygoscelis antarctica*), Gentoo Penguin (*P. papua*), Southern Giant Petrel (*Macronectes giganteus*), Cape Petrel (*Daption capense*), Wilson's Storm Petrel (*Oceanites oceanicus*), Antarctic Shag (*P. bransfieldensis*), Pale-faced Sheathbill (*Chionis alba*), Skuas (predominant species *Catharacta maccormickii*), Kelp Gull (*Larus dominicanus*) and Antarctic Tern (*Sterna vittata*).

The most numerous colonies are those of the Chinstrap Penguin (*Pygoscelis antarctica*), Gentoo Penguin (*P. papua*), Wilson's Storm Petrel (*Oceanites oceanicus*), South Polar skua (*Catharacta maccormickii*) and Kelp Gull (*Larus dominicanus*).

Summary of the estimated number of nesting pairs by species and nesting site is shown in tables 1, 2 and 3.

Table 1. Number of reproductive pairs by location for Pygoscelis papua. The year in which the estimation was made is indicated in brackets. (data from Gonzalez-Zeballos et al. 2013)

Localidad	Novatti (1978)	Poncet & Poncet (1987)	Quintana et al. (1998)	Favero et al. (2000)	**Gonzalez-Zeballos et al. (2013)**
Punta Cierva	559–614 (1954–58)	600 (1984)	800–1041 (1991–96)	593 (1998)	2680
Isla Apéndice		450 (1987)		905 (1998)	2795

Table 2. Number of reproductive pairs by location for Pygoscelis antarctica. The year in which the estimation was made is indicated in brackets. (data from Gonzalez-Zeballos et al. 2013)

Localidad	Muller-Schwarze (1975)	Poncet & Poncet (1987)	Woehler (1993)	Favero et al. (2000)	**Gonzalez-Zeballos et al. (2013)**
Ite. Pingüino o Mar		500 (1984)		1553 (1998)	2763
I. José Hernández	2060 (1971)	200 (1987)		546 (1998)	180
I. Apéndice		1100 (1987)		152 (1998)	33

Table 3. Number of reproductive pairs by species and location. PB: Phalacrocorax bransfieldensis, MG: Macronectes giganteus, DP: Daption capense, CA: Chionis alba, SM: Stercorarius maccormicki, LD: Larus dominicanus, SV: Sterna vittata The year in which the estimation was made is indicated in brackets. (data from Gonzalez-Zeballos et al. 2013)

Localidad	PB			MG			DP			CA			SM			LD			SV		
	Ns1	*Ns2*	*λ*	*Ns1*	*Ns2*	*λ*	*Ns1*	*Ns2*	*λ*	*Ns1*	*Ns2*	*λ*	*Ns1*	*Ns2*	*λ*	*Ns1*	*Ns2*	*λ*	*Ns1*	*Ns2*	*λ*
Punta Cierva	0	0	–	0	0	–	7	3	0.94	2	1	0.95	145	166	1.01	158	73	0.94	45	57	1.02
Ite. Pingüino o Mar	9	0	0	0	0	–	1	0	0	3	1	0.92	3	3	1	8	10	1.02	0	3	–
Ite. Musgo	0	0	–	35	42	1.01	28	17	0.96	3	4	1.02	10	26	1.08	120	70	0.96	15	19	1.02
José Hernández	21	21	1	0	7[b]	–	0	0	–	1	1	1	3	17	1.14	15	9	0.96	35	11[b]	0.91
I. Apéndice	0	0	–	5[b]	41	1.17	23	11	0.94	1[b]	2	1.05	2[b]	12	1.15	68	12	0.87	15	12	0.98

The flora is very abundant and is located in both wet and dry areas. In wet areas mosses dominate, in the form of carpet cover (*Drepanocladus uncinatus*) and turf (*Polytrychum alpestre*). In dry places, on rocks, lichen of genus Usnea and Xanthoría are dominant. Deschampsia antarctica grass is also abundant.

The cover of mosses, lichens, and grasses is very extensive. The most conspicuous vegetation communities are associations of dominant lichens, moss turf dominated by *Polytrichum alpestre* and *Chorisodontium aciphillum* as well as *Deschampsia-Colobanthus* subformation. The moss turf covers areas of more than one hundred square metres, with an average depth of about 80 cm. The flora that is present includes the two Antarctic flowering plant species, 18 moss species, 70 lichen species, two hepatic, as well as 20 species of fungi. The non-marine microalgae, especially on Moss and Penguin Islets, are very abundant with unusual records. Terrestrial arthropods are also very numerous and are occasionally associated with tidal pools in the littoral zone of the Area.

Relevant data is the record of a non-native grass, *Poa pratensis*. The grass was introduced to Ciera Point inadvertently during experiments which involved transplanting *Nothofagus antarctica* and *N. ward* between 1954 and 1955 (Ross et al 1996, Court 1961, Smith 1996). From 1995, a rise in the spread of this species was recorded. It is likely that its recent expansion is related to environmental changes recorded in the Area, increasing scientific interest in this species. Consequently, studies of Poa pratensis have resumed, also extending to the communities to which this grass is associated, in order to define the eradication strategy with minimal impact on the ecosystem (see Information Document 13, presented to ATCM XXXV). Also, there is a unique record of an alien arthropod found in the Area.(Convey y Quintana 1997)

6 (II) Access to the Area.

Only in the case of authorised exceptions, the Area must only be accessed on foot from Primavera base.

The adjacent islands will be accessed by small boats. This sea access is permitted to any point of the islands included in the Area.

Access to the Area via the beaches should always be avoided if animal fauna is present, especially during breeding season.

For further information see section 7 (II).

6 (III) Structures located within the Area and in its vicinity.

Location of structures within the Area

There are no structures within the Area.

Structures adjacent to the Area

Adjacent to the ASPA, but beyond the limits of the Area, is Primavera Base (Argentina. 64 ° 09' S; 60 ° 58 ' W), located to the northwest of Cierva Point and adjacent to the Area. Primavera Base is only open during the summer months. It consists of eight buildings and a designated helicopter landing area. The buildings are interconnected by walkways to prevent damage to vegetation.

6. (IV) Location of other nearby Protected Areas

- ASPA No. 152 , western portion of the Bransfield Strait (Mar de la Flota), off the coast of Low Island, South Shetland Islands, about 90 kilometres to the northwest of ASPA 134. It is located off the west and south coast of Low Island, between 63 ° 15' S and 63 ° 30' S and between 62 ° 00' W and 62 ° 45 ' W.
- ASPA 153, eastern portion of the Dallmann Bay, off the western coast of Brabant Island, Palmer Archipelago, about 90 kilometres west of ASPA 134. It is located between latitudes 64 ° 00' S and 64 ° 20' S and from 62 ° 50 ' W eastward to the western coast of Brabant Island, (approximately 520 km^2)

6 (V) Special areas within the Area.

There are no special areas within the Area.

7. Terms and conditions of entry Permit

7 (I) General permit conditions

Entry into the Area is prohibited, except with a permit issued by appropriate national authorities.

Conditions for issuing a permit to enter the Area are that:

- It is issued for a scientific purpose, in accordance with the objectives of the Management Plan, and that cannot be conducted elsewhere.
- The actions permitted will not harm the natural ecological system of the Area.
- It is issued for any management activities (inspection, maintenance, or revision) in support of the objectives of the Management Plan.
- The actions permitted are in accordance with this Management Plan.
- The Permit, or an authorised copy, is carried by the principal investigator authorized to enter the Area.
- A post-visit report is given to the competent National Authority mentioned in the Permit.
- Tourism and any other recreational activity is not permitted.

7 (II). Access to and movements within the Area

Any access to the Area will be by permit issued by a competent authority, and will only be issued for activities which are in accordance with this Management Plan.

The only access for helicopters is outside the boundaries of the Area, in the area adjacent to Primavera Base. Helicopters may only land in the specified area to the east-southeast of the Base. The flight route to be used is limited to a north approach and departure. The operation of aircrafts over the Area will be carried out, as a minimum requirement, in compliance with that established in Resolution 2 (2004), "Guidelines for the Operation of Aircraft near Concentrations of Birds" As a general rule, no aircraft should fly over the ASPA at less than 610 metres (2000 feet), except in cases of emergency or air security.

Movements within the Area will be carried out avoiding disturbance to the flora and fauna, especially during the breeding season

Vehicle traffic of any type is not permitted.

7 (III) Activities which are or may be conducted within the Area

- Scientific research activities that cannot be conducted elsewhere and that do not harm the ecosystem of the Area.
- Essential management activities, including monitoring.
- If it is considered necessary for scientific or conservation reasons, access to determined bird nesting sites and mammal colonies may include greater restrictions between the end of October and the beginning of December. This period is considered especially sensitive because it coincides with peaks in egg-laying for nesting birds in the Area.

7 (IV). Installation, modification or removal of structures

No additional structures will be built or equipment installed within the Area, except for essential scientific or management activities with an appropriate permit.

Any scientific equipment installed in the Area, as well as any research signage, should be approved by permit and clearly labelled, indicating the country, the name of the principal investigator, and the year of installation. All the installed materials should be of such nature that they pose a minimum of contamination risk to the Area or the minimum risk of causing disturbance to the vegetation or to the fauna.

Research signage should not remain after the permit expires. If any specific project cannot be finished within the permitted time period, an extension should be requested which authorizes any object to remain in the Area.

7 (V) Location of field camps

The Parties that utilise the Area will normally have access to Primavera Base for lodging, subject to prior coordination with the Argentine Antarctic Programme. Only the installation of tents with the purpose of housing scientific material or instruments, or to be used as an observation base, shall be permitted.

7 (VI) Restrictions on materials and organisms which may be brought into the Area

- No living animals or plant material shall be deliberately introduced into the Area. All necessary recommendations must be adopted in preventing all intentional introduction of non-native species to the Area. In this regard, it should be noted that these species are often introduced by humans. Clothing as well as personal equipment or scientific instruments and work tools can introduce insect larvae, seeds, propagules, etc. For further information see the Manual for non-native species - CEP 2011.
- No uncooked farm products shall be introduced.
- No herbicides or pesticides shall be introduced into the Area. Any other chemical product, which should be introduced with the corresponding permit, shall be removed from the Area upon conclusion of the activity for which the permit was granted. The use and type of chemical products should be documented, as clearly as possible, for other researchers to be made aware of.
- Fuel, food, and other materials are not to be stored in the Area, unless required for essential purposes by the activity authorized in the corresponding permit.

7 (VII). Taking or causing harmful interference to flora and fauna

Any taking or causing harmful interference, except in accordance with a permit, is prohibited. When an activity involves taking or causing harmful interference, these should, as a minimum requirement, be consistent with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

Information on taking or causing harmful interference will be duly exchanged through the System of Information Exchange of the Antarctic Treaty, and its record should be incorporated, at the least, in the *Antarctic Master Directory* or, in Argentina, in the *National Antarctic Data Centre*.

Scientists who collect samples of any kind must refer to the electronic information exchange system of the Antarctic Treaty (EIES) and/or communicate with the corresponding national Antarctic programmes that might be involved in sampling in the Area, in order to minimise the risk of a possible duplication.

7 (VIII). Collection or removal of any item not brought into the Area by the permit holder

Any material from the Area may only be collected and removed from the Area with an appropriate Permit. Collection of dead biological specimens for scientific purposes should not exceed such a level that the collection degrades the nutritional base of local scavenger species. This will depend on the species in question and on the need to seek the advice of an expert prior to the extension of the permit.

7 (IX). Waste Disposal

Any non-physiological waste shall be removed from the Area.

In the case of residual waters and domestic residual liquids, sanitation facilities are available in Primavera Base (Argentina), provided they are open. In the case of research carried out on adjacent islands, residual waters can be discharged into the ocean, in accordance with Article 5 of Annex III of the Madrid Protocol.

Waste resulting from research activities in the Area can be temporarily stored at Primavera Base, pending removal. Said storage should be carried out in compliance with Annex III to the Madrid Protocol, marked as waste, and appropriately closed to avoid accidental escape.

7 (X). Measures that may be necessary to ensure that the aims and objectives of the Management Plan remain in force

Permits to enter the Area may be granted to conduct biological monitoring and inspection activities, which may include the collection of samples of plants and animals for research purposes, the erection and maintenance of signs, or other management measures. All the structures and signage installed in the Area for scientific purposes, including signs, should be approved in the Permit and clearly identified by country, indicating the name of the principal investigator and the year of installation.

7 (XI). Requirements for reports on visits to the Area

For each permit and once the activity has finished, the main permit holder shall submit a report of the activities conducted in the Area, using the format provided beforehand along with the Permit. The report should be sent to the permit issuing authority.

Records of permits and post-visit reports relating to the ASPA will be exchanged with the other Consultative Parties as part of the System of Information Exchange according to Art. 10.1 of Annex V.

The permits and reports should be stored and made accessible to any interested Party, SCAR, CCAMLR and COMNAP, so as to provide necessary information on human activities in the Area to ensure adequate management.

Figure 1: General location of Antarctic Specially Protected Area No. 134, Cierva Point and offshore islands, Danco Coast, Antarctic Peninsula.

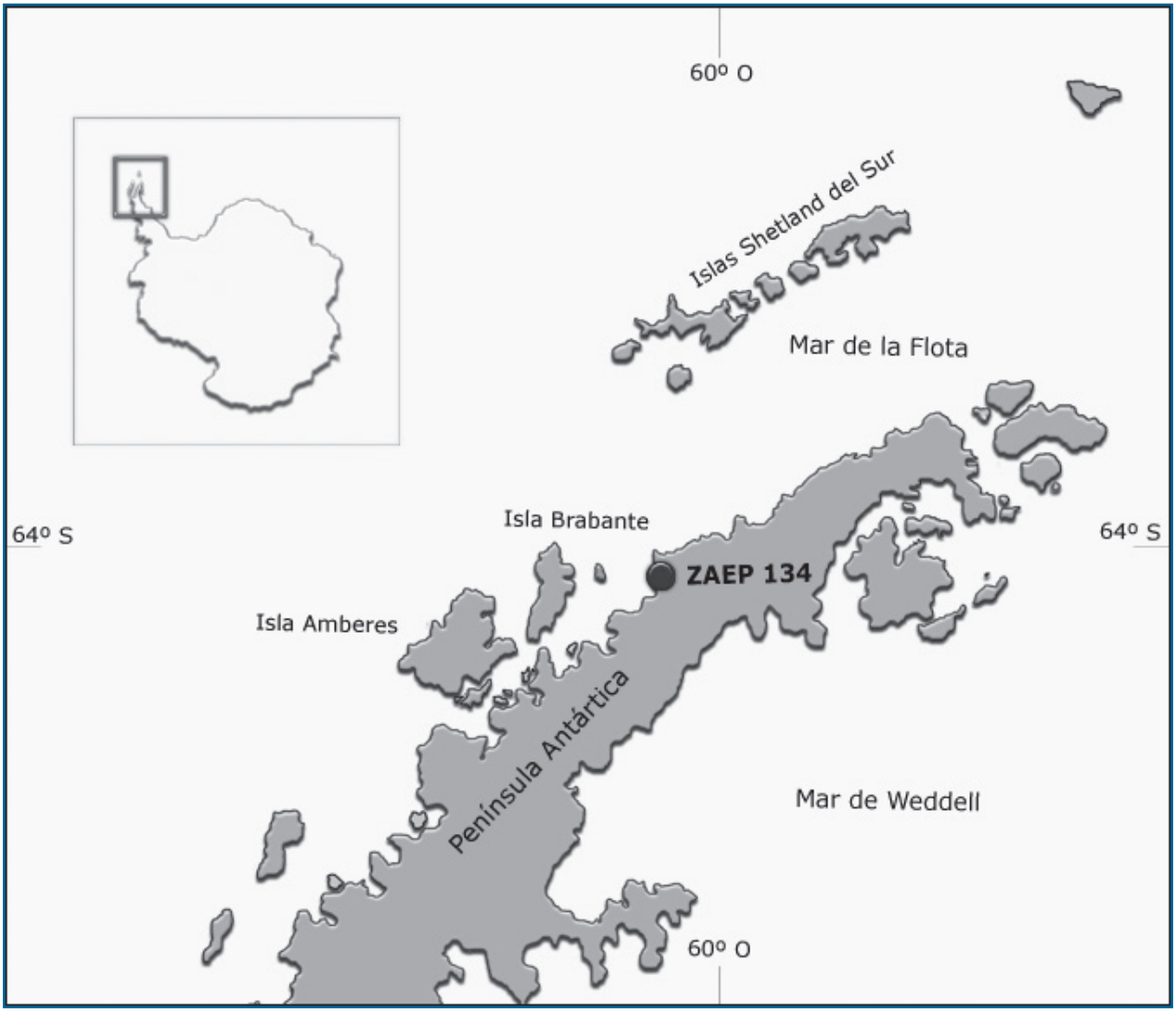


Figure 2: Antarctic Specially Protected Area No. 134, Cierva Point and offshore islands, Danco Coast, Antarctic Peninsula. The shaded area indicates the group of areas that make up ASPA 134 (the subtidal marine environment between the continental and insular portions is not included in the ASPA).

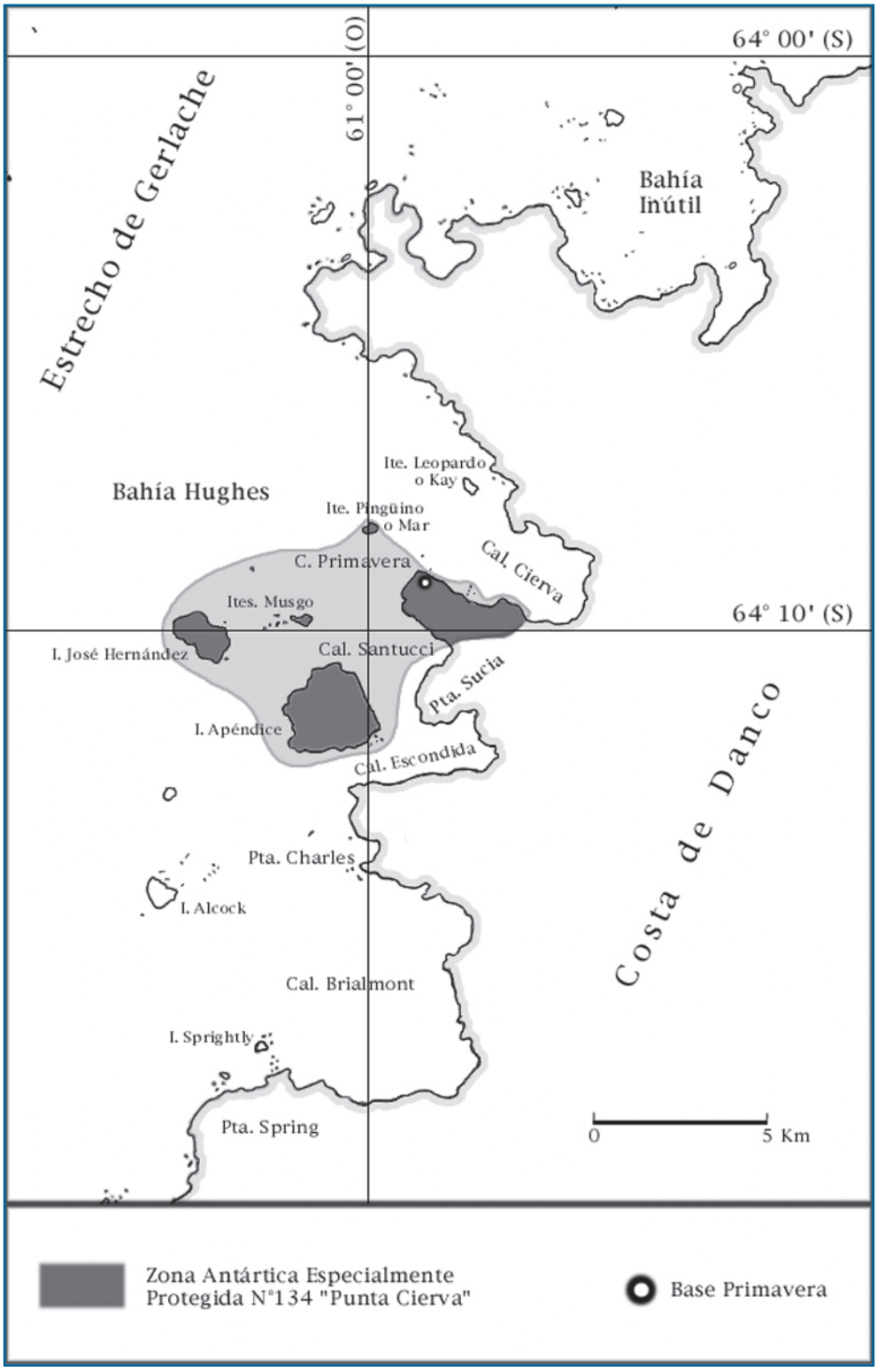
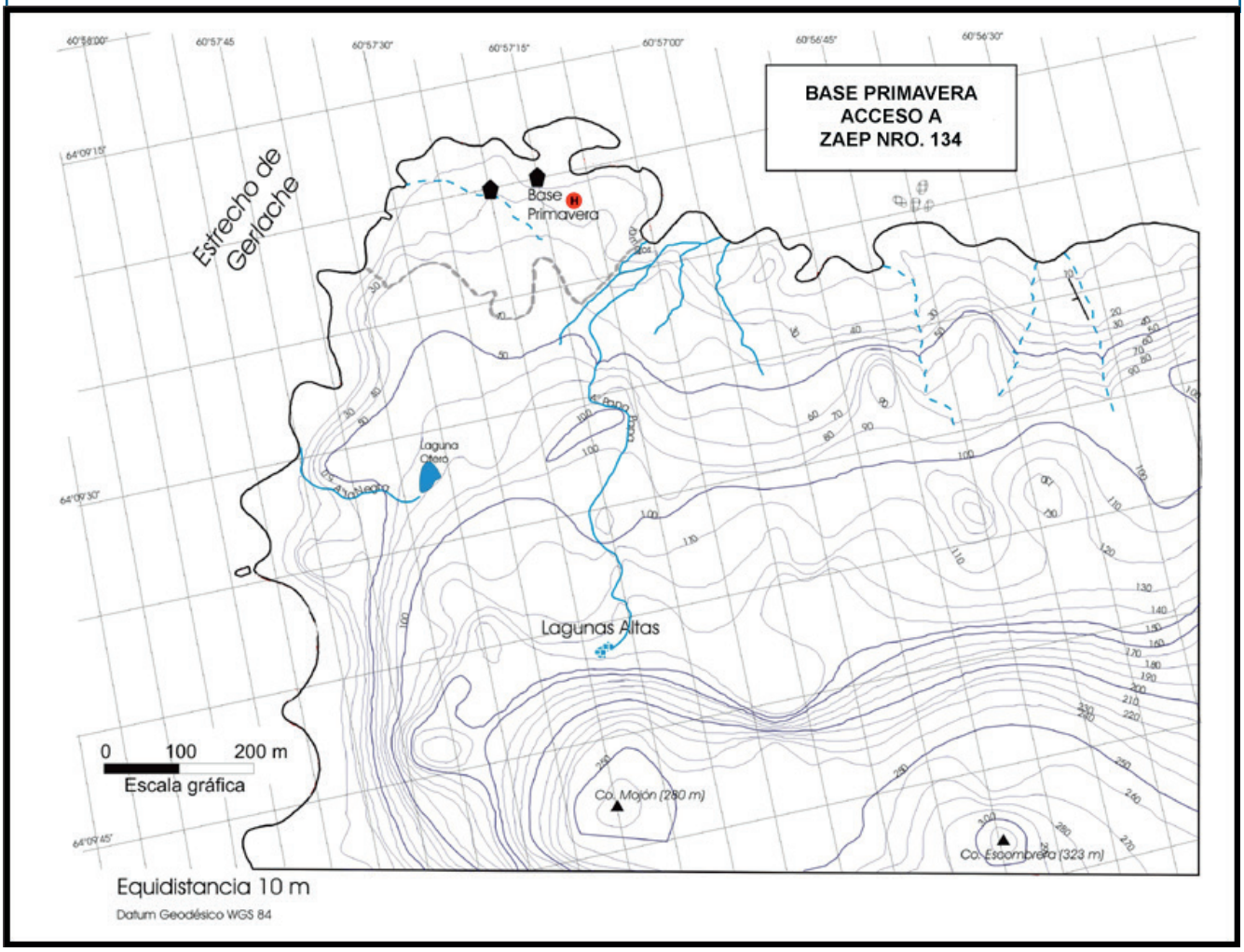


Figure 3: Area of Cierva Point that includes Primavera Base (the grey pointed line above the 40 m contour line indicates the base area, excluded from ASPA 134).



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