Management Plan

for Antarctic Specially Protected Area No. ? DANGER ISLANDS ARCHIPELAGO (NORTH-EASTERN ANTARCTIC PENINSULA)

Introduction

The Danger Islands are located east of the northern tip of the Antarctic Peninsula, about 10 – 25 km east of Joinville Island, in zone 54°56'– 54°35'W, 63°22'- 63°30'S ("the Area"). The Antarctic Specially Protected Area (ASPA) includes seven islands and has an approximate terrestrial area of 4.48 km².

The primary reason for designation of the Area is its outstanding number and diversity of seabirds, which are representative of the region. The Area hosts large colonies of seabirds, which are of exceptional ecological and scientific interest. This relates above all to Adélie penguins (*Pygoscelis adeliae*). The Area hosts the third and fourth largest Adélie penguin colonies in the world and more Adélie penguins than the rest of the Antarctic Peninsula region combined. In addition, there are breeding sites of nine further species of Antarctic seabirds on the Danger Islands, including a large colony of Antarctic shags (*Phalacrocorax atriceps*).

The Areais designated because it has been rarely visited and is in almost pristine condition, i.e. it is of great value as a reference site for comparative scientific studies and long-term monitoring. Furthermore, the Area has exceptional aesthetic and wilderness values.

There has been a low level of ship-based tourism in this Area with rare and irregular visits/landings. The overall human footprint in the different sites of the Area is considered to be low to medium (Pertierra *et al*., 2017).

Resolution 3 (2008) recommended that the "Environmental Domains Analysis for the Antarctic Continent", be used as a dynamic model for the identification of Antarctic Specially Protected Areas within the systematic environmental-geographical framework referred to in Article 3(2) of Annex V of the Protocol (see also Morgan *et al*., 2007). Using this model, the ASPA No.? is contained within Environment Domain E (Antarctic Peninsula, Alexander and other islands).

Resolution 6 (2012) recommended that the Antarctic Conservation Biogeographic Regions (ACBRs) be used for the 'identification of areas that could be designated as Antarctic Specially Protected Areas within the systematic environmental-geographic framework referred to in Article 3(2) of Annex V to the Protocol. The ASPA No.? is located within Antarctic Conservation Biogeographic Region (ACBR) 3 (North-west Antarctic Peninsula).

Through Resolution 5 (2015) Parties recognised the usefulness of the list of Antarctic Important Bird Areas (IBAs) in planning and conducting activities in Antarctica. The IBAs ANT062 (Danger Islands), ANT063 (Brash Island, Danger Islands) and ANT064 (Earle Island, Danger Islands) are located within the boundary of the ASPA No.? , recognizing the extensive colonies of Pygoscelid penguins and a high diversity of flying seabirds (Harris *et al*. 2015). The waters surrounding the islands of the ASPA No.? are identified as marine IBA 13, acknowledging their importance as foraging ground for chick-rearing adult Adélie penguins (Handley *et al*. 2021) and as part of an Area of Ecological Significance due to its preference by multiple predator species as indicators of high levels of lower trophic biomass and biodiversity (Hindell 2020).

The closest other ASPA is Mount Flora at Hope Bay, Antarctic Peninsula (ASPA No. 148), which was designated primarily to protect its rich fossil flora. Danger Islands complement the network of ASPAs by protecting a representative sample of the Antarctic ecosystem including some of the largest Adélie Penguin colonies worldwide.

1. Description of values to be protected

The ASPA No.? Danger Islands (North-eastern Antarctic Peninsula, 54°56'- 54°35'W / 63°22'- 63°30'S) includes seven islands and has an approximate area of 4.48 km². The primary reasons for designation of the Area are its large colonies of seabirds, which are of exceptional ecological and scientific interest, and its almost pristine condition.

There are approx. 750,000 Breeding Pairs (BP) of Adélie penguins (*Pygoscelis adeliae*) on Danger Islands (see fig. 1) according to Borowicz *et al*. (2018), which 'is more than the rest of Antarctic Peninsula region combined, and include the third and fourth largest Adélie penguin colonies in the world'. At Earle Island (site 6) a colony of 156 BP of Antarctic shag (*Phalacrocorax atriceps*) was recorded by Borowicz *et al*. (2018). This is equivalent to 1.2 % of the global population of this species (Schrimpf *et al*., 2018).

In addition, Danger Islands host breeding sites of gentoo penguin (*Pygoscelis papua*), chinstrap penguin (*Pygoscelis antarcticus*), cape petrel (*Daption capense*), snowy sheathbill (*Chionis albus*), kelp gull (*Larus dominicanus*), brown skua (*Stercorarius antarcticus lonnbergi*), Wilson's storm-petrel (*Oceanites oceanicus*) and snow petrel (*Pagodroma nivea*). (Borowicz *et al*., 2018; Harris *et al*., 2015; Naveen and Lynch, 2011).

Planned scientific research in the Area is related to repeated penguin population assessment. An investigation of the extensive ornithogenic deposits (Kalvakaalva *et al*., 2020) revealed its potential for paleoecologic research.

There has been low ship-based tourism in the Area with rare and irregular visits/landings. The degree of human interference for the most of the Danger Islands can be considered low as these islands are only rarely visited by tourists or scientists. Thus, wilderness can be regarded as an additional value of the Area. For those islands where occasional visits (Heroina, Beagle) occur human interference can be considered as medium (Pertierra *et al*., 2017).

A particular aesthetic value is based on the partly spectacular formations (see Fig. 2).

According to the IUCN red list (birdlife.org), all three penguin species that breed on Danger Is-lands are listed as threatened by climate change. In the last decades, changes in penguin popula-tion rates have been observed, especially at the Antarctic Peninsula. Climate change impacts are not the same for all penguin species. For example, Adélie penguins are in decline at the Peninsula region, while gentoo and chinstrap penguins are expanding their ranges southward at the Peninsu-la (Forcada and Trathan, 2009). Danger Islands host large pygoscelis penguin colonies, so shifts in occupation by the different species are to be expected.

2. Aims and objectives

Management of the Danger Islands aims to:

- Avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human presence, disturbance and sampling in the Area
- Allow visits for management purposes in support of the aims of the Management Plan;
- Allow scientific research on the ecosystem and physical environment in the Area provided it is for compelling reasons, which cannot be served elsewhere and that will not compromise the values for which the Area is protected;
- Minimize the possibility of introduction of non-native plants, animals and microbes into the Area;
- Minimize the possibility of the introduction of pathogens that may cause disease in faunal populations within the Area;
- Preserve the natural ecosystem of the Area as a reference Area for future comparative scientific studies and for monitoring faunistic and ecological change and population development;
- Preserve the wilderness and aesthetic value of the Area.

3. Management activities

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

- Notices showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at Base Petrel (Argentina) on Dundee Island, at Base Esperanza (Argentina) and Ruperto Elichiribehety Station (Uruguay) in Hope Bay on the Antarctic Peninsula at Base Marambio (Argentina) at Marambio Island, at Base General Bernardo O'Higgins Riquelme (Chile) and GARS Station (Germany) at Cape Legoupil on the Antarctic Peninsula and at Johann Gregor Mendel Station (Czech Republic) on James Ross Island, where copies of this management plan and maps of the Area shall also be made available;
- Copies of this management plan shall be made available to all vessels and aircrafts visiting the Area, and the appropriate national authority shall inform all personnel operating in the vicinity of, accessing or flying over the Area, of the location, boundaries and restrictions applying to entry and overflight within the Area;
- National programs shall take steps to ensure the boundaries of the Area and the restrictions that apply within are marked on relevant maps and nautical / aeronautical charts;
- Markers, signs or other structures should not be installed within the Area except for essential scientific or management purposes. If installed, they shall be recorded, secured and maintained in good condition and removed when no longer required by the responsible National Antarctic program;
- The Area shall be visited as necessary to assess whether it continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate. These assessments shall be undertaken at least once every five years although.
- The current and projected impact of climate change to the protected values of the Area should be assessed as well as its potential for mitigation and adaption.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

See Appendix

6. Description of the Area

6(i) Geographical coordinates, boundary markers and natural features

Boundaries and coordinates

The components of the ASPA are seven islands in Zone 54°56'– 54°35'W, 63°22'- 63°30'S, without the marine part in between. (see maps)

1. Beagle Island (GBR/USA); Bertil, Islote (Chile); Sarandí, islote (Argentina): (63°24'52"S, 54°40'2"W, 1.01 km²

2. Brash Island (GBR/USA/RUS): (63°23'11"S, 54°54'47"W, 0.58 km²)

3. Heroina Island (GBR/USA); Ercilla, Islote (Chile); Heroína, islote (Argentina) (63°23'39"S, 54°36'20"W, 0.83 km²)

4. Darwin Island (GBR/USA/RUS); Darwin, isla (Argentina); Darwin, Islote (Chile) (63°26'16"S, 54°43'38"W, 1.59 km²)

5. Platter Island (GBR); Plato Island (USA); Plato, islote (Argentina) (63°26'2"S, 54°40'26"W, 0.19 km²)

6. Earle Island (GBR/USA) (63°29'16"S, 54°47'14"W, 0.17 km²)

7. Comb Island (GBR); Peine Island (USA, Argentina)(63°24'37"S, 54°43'4"W, 0.11 km²)

The ASPA boundaries are the shorelines of these islands.

Climate

No climatic data are available, but the Danger Islands lie in the track of depressions approaching the Antarctic Peninsula from the west. "Despite their relative proximity to the Western Antarctic Peninsula, pack ice is common around the Danger Islands even in austral summer. In fact, due to the currents of the Weddell Sea, which drive sea ice northward, access to the islands is precluded in most years." (Borowicz *et al*., 2018; Comiso and Gordon, 2013).

Geology, geomorphology, and soils

The Area is one of the largest areas of basic plutonic rock exposed in the Antarctic Peninsula region. Its petrography ranges from gabbro to alkali-feldspar quartz syenite of Cretaceous origin (Hamer, 1984). The topography of the islands ranges from low and flat (Platter Island) to sheer cliff faces (Darwin and Comb Island) steep scree slopes, flat areas, and cliffs.

Ingólfsson (2003) suggests these islands may have been glaciated until around 6,000 BP.

The oldest recovered ornithogenic soils at Platter Island date to about 600 years before present (Kalvakaalva *et al*., 2020) which fits to comparable results from other northern Antarctic Peninsula breeding sites (Emslie *et al*., 2018).

Terrestrial ecology

The freshwater environment within the Area has yet to be described. Given the limited extent of available ice-free ground, streams and ponds are likely to be relatively few, small and seasonal. For example, several small ponds are evident in satellite imagery which are likely to be enriched by nutrients from local breeding penguins.

Vegetation:

The vegetation of the Danger Islands has yet to be described. Preliminary observations using high resolution satellite remote sensing indicates more widespread vegetation cover on Heroina and Beagle Island, particularly on Areas not covered by breeding penguins or snow.

The invertebrate fauna of the Danger Islands has yet to be described.

Breeding birds and mammals

At least 10 species of birds breed in the Danger Islands: Adélie penguin (*Pygoscelis adeliae*), Chinstrap penguin (*Pygoscelis antarctica*), Gentoo penguin (*Pygoscelis papua*), Antarctic shags (*Phalacrocorax atriceps*), Skua species (*Stercorarius* spp.), Cape (pintado) petrel (*Daption capense*), Snow petrel (*Pagodroma nivea*), Wilson's storm petrel (*Oceanites oceanicus*), Kelp gull (*Larus dominicanus*) and Snowy sheathbill (*Chionis albus*) (Appendix One, Table 1). Southern giant petrels (*Macronectes giganteus*) are verified as not breeding at six of the seven islands in 2015 and the presence of Antarctic tern (*Sterna vittata*) was observed on two islands only (Borowicz *et al*., 2018). Available data on seabird population numbers are summarised in Appendix One, Table 2. No (breeding) birds were detected on nearby Dixey Rock (see Map 1) in December 2015 (Borowicz *et al*., 2018), which is therefore not included in ASPA No. ?.

Adélie penguins breed on all islands within ASPA No. ? with a total population of 751,527 (95th CI = [710,103–792,443]) BP in December 2015 (Borowicz *et al*., 2018). The biggest colonies are on Heroína Island (292,363 BP) and Beagle Island (284,535 BP). The study of (Borowicz *et al*., 2018) suggests that the Area occupied by Adélie penguin colonies has remained stable or has modestly increased over the last 60 years.

Breeding gentoo penguins were found on four islands (>100 nests), particularly at Brash Island (2,270 BP). The gentoo population at Heroína Island seems to be increased from 1996 till 2015 (Appendix One, Table 2).

Breeding chinstrap penguins were found only on Heroína Island with 27 BP (Borowicz *et al*., 2018).

Earl Island is the only island where breeding Antarctic shags were found (156 BP) (Borowicz *et al*., 2018). This is equivalent to 1.2% of the global population of this species (Schrimpf *et al*., 2018).

There is no evidence of breeding seals at the Danger Islands, though the presence of individual Weddell seals (*Leptonychotes weddellii*) have been found at four islands (Appendix One, Table 1). Non-breeding Antarctic fur seals (*Arctocephalus gazella*) inhabit the region especially in the late summer and early autumn (Blix and Nordøy, 2007). However, detailed studies are missing through haulout and pupping season.

Human activities and impact

Because of the high numbers of fascinating fauna, particularly penguins, the Danger Islands have been subject to occasional tourist visits during the last decades. Data (IAATO) show that numbers of visiting tourists have been relatively constant at some hundred visitors (mean = 315; max = 754) until 2015. Between 2015 and 2022 the numbers increased slightly with exceptional numbers (1,269 tourists) in 2019/2020 season. In the Antarctic season of 2018/2019 and 2019/2020 a tremendous increase in visits has been reported, with about 1,800 tourists reaching the islands each season (1,721/1,855 respectively). Most of the visits have been reported from Heroína Island, but the increase in recent years most likely happened on the other islands, since Heroína had the highest visitor number in 2011/2012 (754 visits), and a mean of 423 visitors (in years of reported visits >0) over all reported years. Beagle Island was first visited in 2015/2016 according to the records by 31 persons, and again in 2019/2020 by more than the fourfold (134). For Darwin Island and Earle Island only small numbers (6/14, respectively) of visitors have been reported. For all other islands, information is only available as cumulative data 'Danger Islands' from IAATO. Data also shows that visits in most cases fall under the category of 'small boat cruising' (mean = 55 % of visits) and/or 'small boat landing' (mean = 45 % of visits), so most likely small rubber boats transporting small groups of people from cruise ships to the shore. The impact of cruising rubber boats can be regarded small, since they are not likely to go very closely to breeding birds. Entry to the colony or exit from the colony of penguins could be blocked for the amount of time a boat is present, and general disturbance by boat activities (noise, transfer to/from cruise ship) could be apparent, but those disturbances should be relatively minimal with low numbers of visitors during one season. In 2004/2005, one report is given of an 'extended walk' on Heroína island, which could, depending on the behaviour of the group, impose a medium to large impact. Even small boat landings on Heroina Island might have the potential to disturb breeding birds present near the landing site (see Figure 1). Other (rarely) reported activities ('kayaking', 'polar plunge', 'scuba diving') have been taking place in the water and should therefore, as described above for 'small boat cruising', have small impact on breeding birds. Only in the 2015/2016 season, 'science support' has been reported, including Remotely Piloted Aircraft Systems (RPAS) activities. This can be assumed to have had a higher impact than other visits. Other potentially impactful activities like aircraft landings, camping/overnight stays, helicopter flights, filming or marathon events have not yet been reported for the Area.

There are no permanent human settlements on the Islands, the closest permanent scientific station is Petrel (ARG), about 70 km to the west, which at present is only operated during Antarctic summer, but plans are being made to renovate the station for year-round occupation.

6(ii) Access to the area

Access to the Area is generally provided by ship and small boat. There might be some spots on Darwin Island where helicopter landings seem possible without significantly disturbing the wildlife present on the islands. However, the suitability of possible landing sites on Darwin Island is not yet verified. On all the other six Islands during the breeding and moulting season take-offs and landings seem impossible without massively disturbing the wildlife. Take offs and landings are therefore prohibited during October through March, except on Darwin Island (see chapter 7 (ii)).

Furthermore, preconditions for take-offs and landings depend much on variable circumstances. Therefore, the possible landing site has to be carefully assessed and confirmed before landing takes place. Generally, helicopter landing should only be done when small boat access does not seem possible or useful.

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

There are no known permanent human structures in the Area. Debris can eventually be found along the coastline. This should be removed as long as it is not of historic value.

6(iv) Location of other protected areas in the vicinity

The closest ASPA is Mount Flora, Hope Bay, Antarctic Peninsula (ASPA No. 148), some 100 kilometres to the East. The ASPA No. ? includes three Important Bird Areas (IBAs): ANT 62 (Danger Islands); ANT 63 (Brash Island, Danger Islands); and ANT 64 (Earle Island, Danger Islands) (Harris *et al*., 2015). The ASPA Area is also part of the Antarctic Marine IBA 13 (Handley *et al*., 2021).

7. Terms and conditions for entry permits

7(i) General permit conditions

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

- it is issued for compelling scientific research that cannot be served elsewhere, and in particular for research on the terrestrial ecosystem and fauna in the Area or for reasons essential to the management of the Area;
- the actions permitted are in accordance with this Management Plan;
- the activities permitted will give due consideration via the environmental impact assessment process to the continued protection of the environmental and scientific values of the Area;
- it is issued for compelling educational or outreach purposes that cannot be served elsewhere, and which do not conflict with the objectives of this Management Plan; Activities for educational and / or outreach purposes do not include tourism which is generally prohibited within the ASPA Nr. ?;
- the permit shall be issued for a finite period;
- the permit, or a copy, shall be carried within the Area.

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

Access to the Area shall be by small boat, by aircraft (between October and March Darwin Island only), or on foot. Access by vehicles is prohibited.

Foot access and movement within the area

All movement on land within the Area shall be on foot. All people in boats are prohibited from moving on foot beyond the immediate vicinity of their landing or access site unless specifically authorised by permit.

Pedestrians should maintain the following minimum approach distances from wildlife, unless it is necessary to approach closer for purposes allowed for by the permit:

- Southern Giant petrels (*Macronectes giganteus*) – 50 m
- Antarctic Fur seals – 15 m
- other birds and seals – 5 m.

Visitors should move carefully to minimize disturbance to flora, fauna, soils, and water bodies. Pedestrians should walk on snow or rocky terrain if practical, but taking care not to damage lichens. Pedestrians should walk around the penguin colonies and should not enter sub-groups of nesting penguins unless required for research or management purposes. Pedestrian traffic should be kept to the minimum consistent with the objectives of any permitted activities and every reasonable effort should be made to minimize effects.

Small boat access

On Heroina Island there are three known landing sites for small boats which are already proven in practice. These landing sites are shown in map 3. The primary landing beach is located in a small harbour which is greatly affected by tides. This very small landing area that is tide dependent and can only take small numbers of passengers at a time. The landing area is small and is only viable when the tide is in. The swell and waves into the site are the primary risks to landing here. This should be carefully assessed. Also, of consideration is the amount of ice in the water at the proposed landing sites. Large chunks of ice and growlers are often present in the bay where the landing sites are, and so careful consideration of the swell and impacts of moving ice are necessary: Rocky shoal that needs to be covered by the tide to allow small boats approach the primary landing site (see map 3). Hence the tide dependent nature of this landing site.

Alternatively, there is another, much more narrow landing site between the rocks. It is located south of the entrance of the natural harbour on the western side of Heroina Island.

The third landing site is located on the eastern side of Heroina Island. It also narrower and rockier than the primary landing site (see map 3).

Aircraft access and overflight

Restrictions on aircraft operations apply year-round, when pilots shall operate aircraft over the Area according to strict observance of the following conditions:

1. Piloted aircraft landings, including by helicopters, are prohibited during October through March, except on Darwin Island. Outside this period, it is only permissible for urgent management or scientific purposes in accordance with a permit issued by an appropriate national authority.
2. Overflight of the Area by piloted aircraft below 2000 ft (~610 m) is prohibited, except in accordance with a permit issued by an appropriate national authority. Pilots operating within the Area should follow the Guidelines for the Operation of Aircraft near Concentrations of Birds (Resolution 2 (2004)).
3. Overflight below 2000 ft (610 m) and landings within the Area by Remotely Piloted Aircraft Systems (RPAS) are prohibited except in accordance with a permit issued by an appropriate national authority. RPAS use within the Area should follow the Environmental Guidelines for Operation of Remotely Piloted Aircraft Systems (RPAS) in Antarctica (Resolution 4 (2018)).

7(iii) Activities that may be conducted within the area

- Scientific research that will not jeopardize the ecosystem or values of the Area;
- Activities with educational and / or outreach purposes (such as documentary reporting (e.g. visual, audio or written) or the production of educational resources or services) that cannot be served elsewhere. Activities for educational and / or outreach purposes do not include tourism;
- Essential management activities, including monitoring and inspection. This includes monitoring of the breeding birds of the Area.
- Touristic activities should be restricted to small boat cruising or kayaking outside the ASPA boundaries.
- Small boat landings shall only be conducted for science support missions in accordance with a permit issued by the national competent authority. During small boat cruising along the coastline special attention shall be paid to exit/entry points of the penguins nesting or moulting on the Islands. Keep a generous distance from these heavily frequented Areas, always give right of way to penguins swimming past.

7(iv) Installation, modification, or removal of structures

- No structures are to be erected within the Area except as specified in a permit and, with the exception of survey markers, permanent structures or installations are prohibited;
- All structures, scientific equipment or markers installed in the Area must be authorized and clearly identified by country, name of the principal investigator, year of installation and date of expected removal. All such items should be free of organisms, propagules (e.g. seeds, eggs) and non-sterile soil, and be made of materials that can withstand the environmental conditions and pose minimal risk of contamination or damage to the values of the Area;
- Installation (including site selection), maintenance, modification or removal of structures or equipment shall be undertaken in a manner that minimizes disturbance to flora and fauna, preferably avoiding the main breeding season (01 October – 31 March);
- Removal of specific structures / equipment for which the permit has expired shall be the responsibility of the authority which granted the original permit, and shall be a condition of the permit.

7(v) Location of field camps

Temporary camping is allowed within the Area for scientific or management purposes only. Specific camp sites have yet to be identified or designated, although any camp sites should by preference be located on beach gravels, snow surfaces or rocky ground far enough away not to disturb any wildlife aggregations. Camping on surfaces with significant vegetation cover is prohibited.

Visitors should however be aware of the great danger of ending up stranded on the islands due to difficult landing conditions and a continuous discharge of ice from the Weddell gyre and the prevailing currents. Therefore, camping on the islands should only be done if absolutely necessary.

7(vi) Restrictions on materials and organisms that may be brought to the area

In addition to the requirements of the Protocol, restrictions on materials and organisms that may be brought into the Area are:

- Deliberate introduction of animals, plant material, micro-organisms and non-sterile soil into the Area is prohibited. Precautions shall be taken to prevent the accidental introduction of animals, plant material, micro-organisms and non-sterile soil from other biologically distinct regions (within or beyond the Antarctic Treaty Area);
- Visitors shall ensure that sampling equipment and / or markers are clean. To the maximum extent practicable, clothing, footwear and other equipment (including e.g. backpacks, carry-bags, tents, walking poles, tripods etc) shall be thoroughly cleaned prior to entry. Visitors should also consult and follow as appropriate recommendations contained in the Committee for Environmental Protection Non-native Species Manual (Resolution 4 (2016); CEP 2019), and in the Environmental Code of Conduct for Terrestrial Scientific Field Research in Antarctica (Resolution 5 (2018));
- Poultry and all poultry products are prohibited from the Area;
- Herbicides or pesticides are prohibited from 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;
- Fuel, food, and other materials shall not be stored in the Area, unless required for essential purposes connected with the activity for which the permit has been granted. In general, all materials introduced shall remain for a stated period only and shall be removed at or before the conclusion of that stated period;
- All materials shall be stored and handled so that risk of their introduction or release into the environment is minimized;
- If release occurs which is likely to compromise 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 or fauna

Taking or harmful interference with native flora and fauna is prohibited, except in accordance with a permit issued under Article 3 of Annex II of the Protocol. Where animal taking or harmful interference is involved, this should, as a minimum standard, be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

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. This includes biological samples and rock or soil specimens.
- Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the permit holder or otherwise authorized, may be removed from any part of the Area, 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 and approval obtained.
- The appropriate national authority should be notified of any items removed from the Area that were not introduced by the permit holder.

7(ix) Disposal of waste

All wastes, including human wastes, shall be removed from the Area.

7(x) Measures that may be necessary to continue to meet the aims of the Management Plan

Permits may be granted to enter the Area to:

1. carry out monitoring and Area inspection activities, which may involve the collection of a small number of samples or data for analysis or review;
2. install or maintain signposts, markers, structures or scientific equipment;
3. carry out protective measures;
4. carry out research or management in a manner that avoids interference with long-term research and monitoring activities or possible duplication of effort. Persons planning new projects within the Area should consult with established programs working within the Area before initiating the work.

7(xi) Requirements for reports

- The principal permit holder for each visit to the Area shall submit a report to the appropriate national authority as soon as practicable after the visit has been completed in accordance with national procedures.
- Such reports should include, as appropriate, the information identified in the visit report form contained in the Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas (Resolution 2 (2011)). If appropriate, the national authority should also forward a copy of the visit report to the Parties that proposed the Management Plan, to assist in managing the Area and reviewing the Management Plan.
- Parties should, wherever possible, deposit originals or copies of such original visit reports in a publicly accessible archive to maintain a record of usage, for the purpose of any review of the Management Plan and in organising the scientific use of the Area.
- The appropriate authority should be notified of any activities/measures that might have exceptionally been undertaken, and / or of any materials released and not removed, that were not included in the authorized permit.

8. Supporting documentation

Literature

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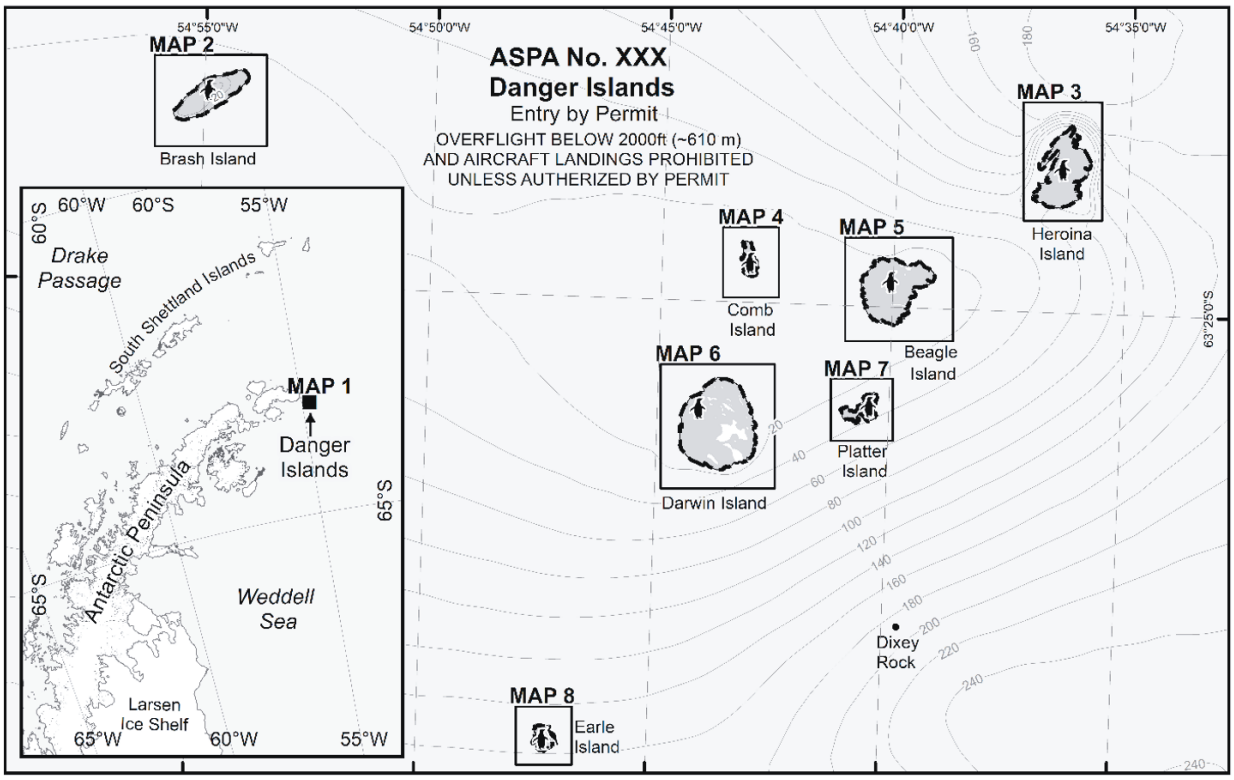
Appendix 1 - Maps

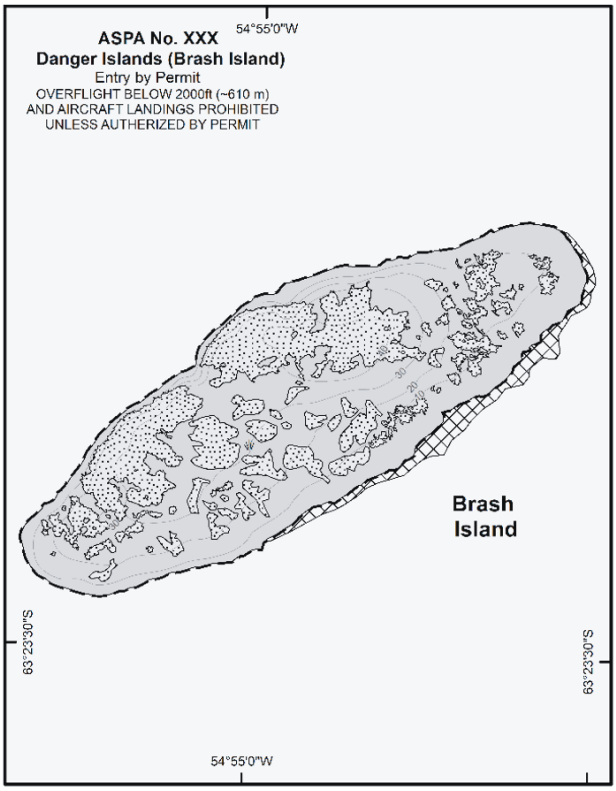


MAP 1: ASPA No. XXX Danger Islands - Overview

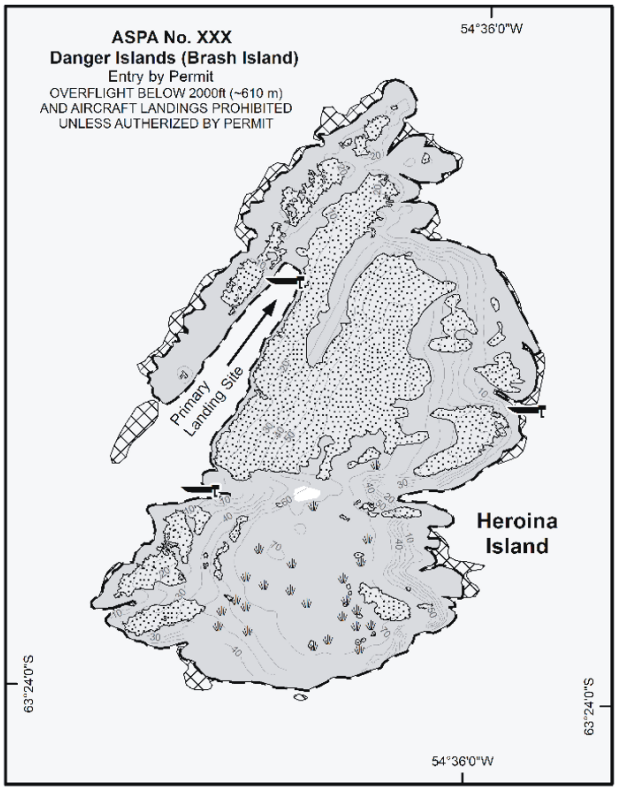
Coastline · Contour (20m) · Isobath (20m) · Permenant ice · Ice free ground · Ocean · Penguin colony · Antarctic shag colony · ASPA boundary

0 1,5 3 Kilometers

Projection: UTM Zone 21E; Spheroid and Datum: WGS 1984
Data sources: Coastline, Wildlife: derived from WorldView2 image (30Dec2020);
Permenant ice: derived from Sentinel2 image (13Feb2021);
Contour: REMA; Bathemetry: IBCSOv2; ASPA:ThINK



MAP 2: ASPA No. XXX Danger Islands (Brash Island)

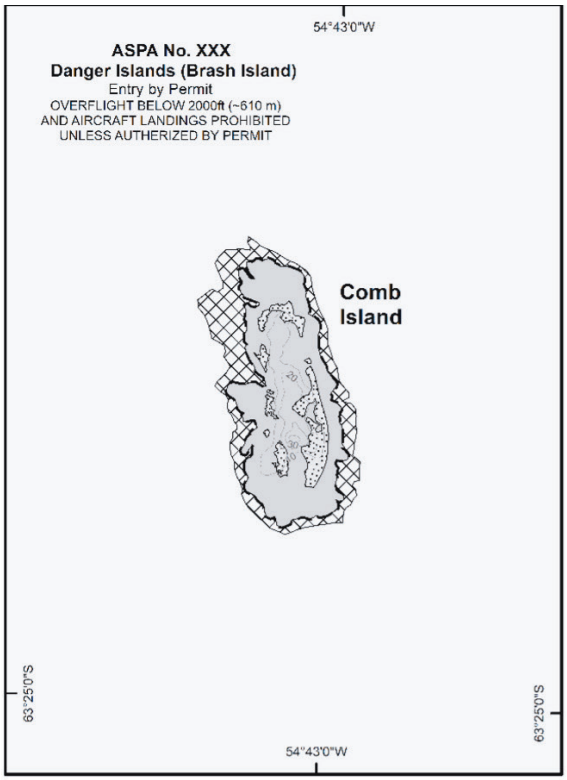


MAP 3: ASPA No. XXX Danger Islands (Heroina Island)

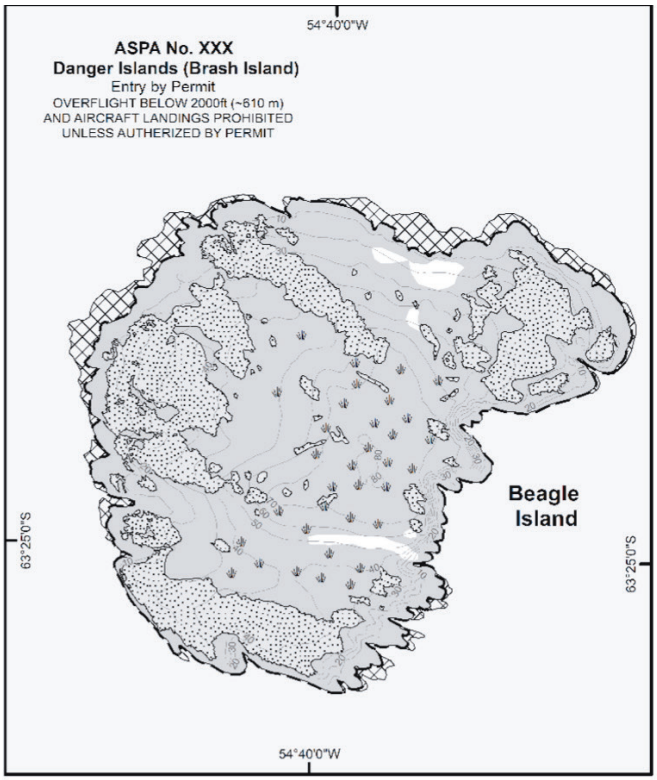
Coastline · Contour (10m) · Shallow Water · Ice free ground · Permanent ice · Ocean · Penguin breeding area · Vegetation · ASPA boundary · Boat landing site

0 250 500 Meters

Projection: UTM Zone 21E; Spheroid and Datum: WGS 1984
Data sources: Coastline, Penguin breeding area, Vegetation, Shallow Water derived from WorldView2 image (30Dec2020);
Permenant ice: derived from Sentinel2 image (13Feb2021);
Contour: REMA; ASPA:ThINK



MAP 4: ASPA No. XXX Danger Islands (Comb Island)

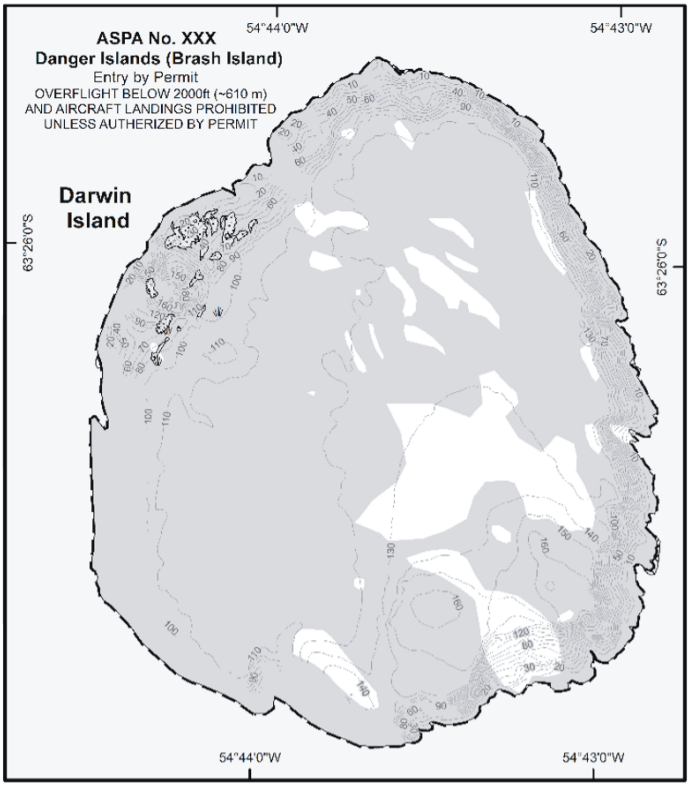


MAP 5: ASPA No. XXX Danger Islands (Beagle Island)

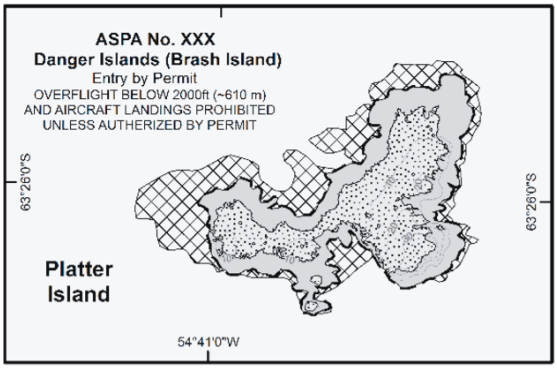
Coastline
Contour (10m)
Shallow water
Permenant ice
Ice free ground
Ocean
Penguin breeding area
Vegetation
ASPA boundary

0 250 500
Meters

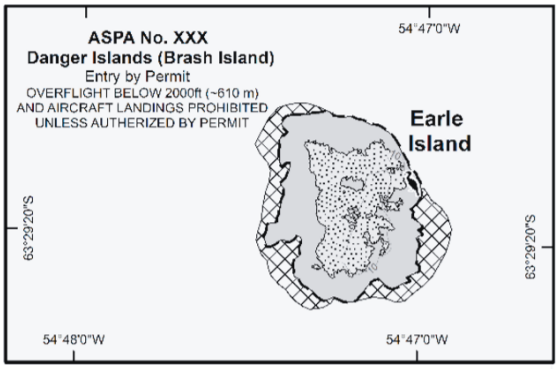
Projection: UTM Zone 21E; Spheroid and Datum: WGS 1984
Data sources: Coastline, Guano, Vegetation, Shallow: derived from WorldView2 image (30Dec2020);
Permenant ice: derived from Sentinel2 image (13Feb2021);
Contour: REMA; ASPA:ThINK



MAP 6: ASPA No. XXX Danger Islands (Darwin Island)



MAP 7: ASPA No. XXX Danger Islands (Platter Island)



MAP 8: ASPA No. XXX Danger Islands (Earle Island)

Coastline
Contour (10m)
Shallow water
Permenant ice
Ice free ground
Ocean
Penguin breeding area
Vegetation
ASPA boundary
Antarctic shag colony

0 250 500
Meters

Projection: UTM Zone 21E; Spheroid and Datum: WGS 1984
Data sources: Coastline, Guano, Vegetation, Shallow: derived from WorldView2 image (30Dec2020);
Permenant ice: derived from Sentinel2 image (13Feb2021);
Antarctic Shags: Borowicz et al. (2020), ThINK;
Contour: REMA; ASPA:ThINK

Appendix 2 – Figures

Figure 1 Danger Islands Expedition Image 2015: 'The team lands at Heroina in the Danger Islands and the scale of the task ahead (counting and mapping seabirds) becomes apparent'; Credit: Tom Hart, © Oxford University/Penguinwatch

Figure 2 Danger Islands Expedition 2015: 'Adélie penguins on sea ice next to Comb Island, Danger Islands, Antarctica'; Credit: Michael Polito, ©Louisiana State University

Appendix 3 Tables

Table 1: List of species present in the Danger Islands (Borowicz et al. 2018). B = Verified as breeding, I = Individuals present, NB = Verified as not breeding, -= Not observed or No data

	Beagle	Brash	Comb	Darwin	Dixey Rock	Earle	Heroina	Platter	Scud Rock
Birds									
Adélie penguin (*Pygoscelis adeliae*)	B	B	B	B	NB	B	B	B	NB
Gentoo penguin (Pygoscelis papua)	NB	B	B	-	NB	B	B	B	NB
Chinstrap penguin (*Pygoscelis antarcticus*)	NB	NB	NB	-	NB	NB	B	NB	NB
Antarctic shag (*Phalacrocorax atriceps*)	NB	NB	-	-	NB	B	I	B	NB
Skua species (*Stercorarius* spp.)	-	I	I	B	-	B	B	I	-
Southern giant petrel (*Macronectes giganteus*)	NB	I/NB	NB	-	-	NB	I/NB	I/NB	-
Cape (pintado) petrel (*Daption capense*)	-	-	-	-	-	-	B	B	-
Snow petrel (*Pagodroma nivea*)	-	-	B	-	-	I	I	-	-
Wilson's storm-petrel (*Oceanites oceanicus*)	-	B	-	-	-	-	I	I	-
Kelp gull (*Larus dominicanus*)	-	B	I	-	-	I	I	I	-
Snowy sheathbill (*Chionis albus*)	-	B	B	I	-	B	B	B	-
Antarctic tern (*Sterna vittata*)	-	-	I	-	-	-	I	-	-
Seals									
Weddell seal (*Leptonychotes weddellii*)	-	-	I	-	-	I	I	I	-

Table 2: Available data on seabird population numbers. Counts are given including the count accuracy using the scale of (Ainley, 1993; Croxall and Kirkwood, 1979): N1 and C1 = nests or chicks dividually counted, accurate to better than ±5%; N2: Nests counted in known Area then extrapolated over total site Area, accurate to 5–10 %; N3: Accurate estimate of nests, accurate to 10–15 %; N4: Rough estimate of nests, accurate to 25–50 %; N5: Estimate of nests to nearest order of magnitude. Where an accuracy was not indicated, we have indicated the accuracy as "UNK". The source of the counts are indicated by superscripted letters: a (Borowicz et al., 2018), b (Lynch et al., 2008), c (Lynch et al., 2013), d (Lynch and LaRue, 2014), e (Naveen et al., 2000), for more recent updates please see https://www.penguinmap.com/mapppd/

Location	Date	Adelie p. [PB]	Gentoo p. [PB]	Chinstrap p. [PB]	Antarctic shag. [PB]	Source?
Beagle Island	Jan. 1999	20,000 – >100,000 (UKN)				(Naveen *et al.*, 2000)
	22.01.2011	96,892 (N5)				(Lynch and LaRue, 2014)
	Dec. 2015	284,535 (N2)	0 (N1)	0 (N1)		(Borowicz *et al.*, 2018)
Brash Island	2000-02-23	123,666 - 228,268 (95th percentile CI)				(Lynch and Schwaller, 2014)
	Dec. 2015	94,951 (N2)	2,270 (N1)	0 (N1)		(Borowicz *et al.*, 2018)
Comb Island	January 1999	100 – 7,499 (UKN)				(Naveen *et al.*, 2000)
	22.01.2011	3,311 (N5)				
	Dec. 2015	12,000 (N4)	186 (N1)	0 (N1)		(Lynch and LaRue, 2014)
Darwin Island	Jan. 1999	20,000 – >100,000 (UKN)				(Naveen *et al.*, 2000)
	2000-02-23	5,384 – 9,931 (95th percentile CI)				(Lynch and Schwaller, 2014)
	Dec. 2015		0 (N1)	0 (N1)		(Borowicz *et al.*, 2018)
Earle Island	2000-02-23	17,361 – 32,163 (95th percentile CI)				(Lynch and Schwaller, 2014)
	Dec. 2015	21,071 (N2)	847 BP (N1)	0 (N1)	156 (N1)	(Borowicz *et al.*, 2018)
Heroína Island	December 1996	285,115 - 305,165 (N2)	215 (N1)			(Naveen *et al.*, 2000)
	3 February 2006		142 chicks (C1)			(Lynch *et al.*, 2008)
	21 January 2008		173 chicks (C1)			(Lynch *et al.*, 2013)
	22.01.2011	51,358 (N5)				(Lynch and LaRue, 2014)
	Dec. 2015	292,363 (N2)	999 (N2)	27 (N1)		(Borowicz *et al.*, 2018)
Platter Island	Jan. 1999	7,500 to 19,999 (UKN)				(Naveen *et al.*, 2000)
	22.01.2011	27,902 (N5)				(Lynch and LaRue, 2014)
	Dec. 2015	40,803 (N1)	223 (N1)	0 (N1)		(Borowicz *et al.*, 2018)