



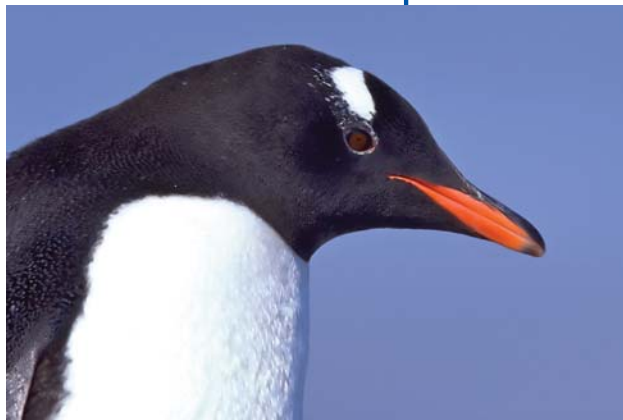
**ANTARCTIC  
PENINSULA  
COMPENDIUM**

3rd edition

**Ron Naveen  
Heather Lynch**

**ANTARCTIC  
PENINSULA  
COMPENDIUM**

**3rd Edition**



**Ron Naveen  
Heather Lynch**

**Oceanites, Inc.  
PO Box 15259  
Chevy Chase, MD USA 20015**

**March 15, 2011**

**Antarctic Site Compendium, 3<sup>rd</sup> edition**

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## TABLE OF CONTENTS

	<b>page</b>
<b>Introductions</b>	5
<b>Part I Design, Purpose, and Goals of the Antarctic Site Inventory</b>	
List of Sites (alphabetical)	9
<b>Part II Site Descriptions</b>	
Species Presence / Absence Codes	15
Census Data Codes	16
Map of Antarctic Site Inventory Regions	17
Central Western (CW) Region Site List + Map	19
Elephant Island (EI) Region Site List + Map	23
Northeastern (NE) Region Site List + Map	24
Northwestern (NW) Region Site List + Map	26
South Orkney Islands (SO) Region Site List + Map	27
South Shetland Islands (SH) Region Site List + Map	28
Southwestern (SW) Region Site List + Map	30
<b>Part III Selected ASI Publications, Bibliography &amp; Appendices</b>	
Selected ASI Publications	
ASI Censuses, 1994-2000 (Naveen et al. 2000)	244
ASI Censuses, 2001-2007 (Lynch et al. 2008)	256
Bibliography	271
Appendices	
ASMA No. 4 Management Plan (Deception Island)	277
ASPANo. 108 Management Plan (Green Island)	291
ASPANo. 117 Management Plan (Avian Island)	303
ASPANo. 134 Management Plan (Cierva Point)	320
ASPANo. 139 Management Plan (Biscoe Point)	329
ASPANo. 140 Management Plan (Parts of Deception Island)	344
ASPANo. 145 Management Plan (Port Foster, Deception Island)	367



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## Introduction to the 3<sup>rd</sup> Edition

by Ron Naveen

President, founder of Oceanites, Inc.

Co-Principal Investigator, Antarctic Site Inventory

This revision updates the *Compendium of Antarctic Peninsula Visitor Sites, 2<sup>nd</sup> edition* to cover the 142 sites that have been visited and censused by Antarctic Site Inventory (ASI) researchers in 17 field seasons from November 1994 through February 2011 — an increase in coverage by 60 sites. These 142 locations include sites that are regularly visited by tourists or other visitors, sites with historic census data, national research stations, and a few Antarctic Specially Protected Areas (ASPAs) and Antarctic Specially Managed Areas (ASMAs) that are off-limits to tourists that ASI researchers have visited pursuant to appropriate permits under the U.S. Antarctic Conservation Act.

Critically, data from *all* of these sites assist the analyses presently underway to assess the drivers of change in the vastly warming Antarctic Peninsula ecosystem, where it is warming faster — or as fast — as any other location on Earth.

In collaboration with colleagues at The Fagan Lab (University of Maryland) and extending recently to The Lynch Lab (Stony Brook University), our analytical goal is to monitor penguin population trends and to use these trends to understand how ecological communities are changing in response to a suite of potential environmental, anthropogenic, or other stressors.

Because of the comprehensive spatial and temporal nature of our analyses, as well as recognizing that the *Compendium* assists *everyone* who's connected with or interested in the Antarctic Treaty system — from scientists and diplomats to tourism operators, their expedition staff, and environmentalists, we have renamed this 3<sup>rd</sup> edition the *Antarctic Site Compendium*.

This new edition revises Antarctic Peninsula regional maps, updates site-specific species presence/absence information, and summarizes recent ASI census data for each site (with brief comments, as appropriate, whether populations are increasing or decreasing).

Previous site descriptions have been updated and, as well, this 3<sup>rd</sup> edition incorporates all site-specific visitation guidelines in the Antarctic Peninsula adopted by Antarctic Treaty countries through the 2010 Antarctic Treaty Consultative Meeting.

Appropriate notice appears in descriptions of “off limits” sites to help ensure that ASPA and ASMA boundaries are not encroached, and that advance notice is provided to stations before visiting.

The Treaty's site guidelines reflect efforts of Oceanites and the Antarctic Site Inventory to compile a database that assists the implementation of the 1991 Protocol on Environmental Protection to the Antarctic Treaty. The Antarctic Site Inventory began collecting data in November 1994, recognizing that the 1991 Protocol, among other things, would require *a priori* environmental impact assessments for all human activities and, as well, called for monitoring, as and when necessary, to ensure that activities do not have unacceptable environmental impacts.

Those of us who have worked on and for the Inventory are enormously gratified by our effort over 17 seasons, utilizing opportunistic shipboard visits to meaningfully characterize these sites, examine changes in the populations of key indicator species, collect relevant data in a repetitive and rigorous fashion from visit-to-visit and season-to-season, and utilize cutting-edge statistical methods in our analyses.

In terms of monitoring of potential environmental impacts, as described in my colleague and co-author Heather Lynch's introduction, the ASI database now is used to analyze how the entire Antarctic

Peninsula region is changing — for example, whether or not detected penguin population changes are related to food (krill and fish distribution and abundance), disease, oceanography, other changes in the physical environment, or a synergy of these factors.

Because Oceanites is the *only* non-governmental, publicly supported, organization doing scientific research in Antarctica, I'm immensely proud of the contribution the Antarctic Site Inventory has made — and, hopefully, will continue to make — to the Antarctic Treaty system.

Reflecting comments from many who use the *Compendium* regularly, a number of formatting changes have been incorporated in this revision. In contrast to earlier editions, site descriptions are now arranged alphabetically for quicker access. Another change from the 2<sup>nd</sup> edition: the northwestern (NW) and southwestern (SW) regions have been repartitioned into three regions — northwestern (NW), central western (CW), and southwestern (SW) to better reflect the spatial distribution of visitor landing sites. Finally, this new edition eliminates the myriad "zodiac landing" tables from previous editions, because these data are available readily elsewhere, for example, on the IAATO website.

**PART I** of this new edition describes various aspects of the Antarctic Site Inventory project, including: Design, Purpose, and Goals of the Antarctic Site Inventory; and details regarding the nongovernmental education and science organization Oceanites, Inc.

**PART II** contains descriptions of the 142 sites Inventory researchers have censused or surveyed from November 1994 through February 2011, arranged alphabetically.

**PART III** contains reprints of key papers regarding the work of the Antarctic Site Inventory and a bibliography of additional papers that relate to Antarctic tourism and conservation.

## Introduction to the 3<sup>rd</sup> Edition

by Heather Lynch

Senior Research Associate, Oceanites, Inc.

Co-Principal Investigator, Antarctic Site Inventory

Since the last edition of the *Compendium*, The Antarctic Site Inventory project has expanded its data collection and analysis efforts considerably. Through our partnership with the University of Maryland, we have entered a new era of scientific analysis that focuses explicitly, but not exclusively, on three goals:

- to find and map every penguin breeding colony in the Antarctic Peninsula region (including the South Shetland and South Orkney Islands),
- to use ASI census data to maintain updated estimates of total regional penguin populations and to contribute these data to estimates of global penguin populations, and
- to monitor penguin population trends and to use these trends to understand how ecological communities may be changing in response to a suite of environmental or other anthropogenic stressors.

In addition to our historic focus on penguins and other seabirds, we are expanding our monitoring efforts with a new project that will catalogue moss and lichen biodiversity in this region, adopting a new approach based on photographic sampling that promises to greatly improve our understanding of processes driving floral biodiversity in the Antarctic.

In the last few years, we have used ASI data to show a southward migration of gentoo penguin breeding and extremely rapid population growth in newly established colonies at their southern range boundary. We have used the comprehensive spatial coverage of the ASI to update estimates of the global population of gentoo penguins and found that significant population increases resulting from climate change warrant re-evaluation of their “Near Threatened” IUCN status. As well, our data have provided unambiguous evidence that chinstrap penguins are declining rapidly throughout the Antarctic Peninsula region, despite a loss of sea ice that was thought to be to their benefit. Despite the methodological challenges inherent to opportunistic data collection, we have repeatedly demonstrated its utility for monitoring ecosystems on the Antarctic Peninsula, and intend to continue pushing the envelope on low-footprint, spatially-extensive ecological monitoring.

In collaboration with the Antarctic Geospatial Information Center at the University of Minnesota (AGIC), we also have initiated a new program to integrate high-resolution commercial satellite imagery into our monitoring program through the creation of a complete catalogue of satellite imagery for each location in the ASI. Using census data from the ASI and this regional catalogue of penguin breeding colonies, we will be able to construct statistical models for population abundance that will allow us to track penguin populations, and identify new or undiscovered colonies, in future years.

This integration of statistics, imagery analysis, and field work is a genuinely unique synthetic approach to regional-scale monitoring which will significantly advance our understanding of penguin population dynamics in this region and will serve as a prototype for similar integrated monitoring programs in other remote locations around the world.

We are committed to maintaining the most comprehensive and up-to-date environmental database of Antarctic Peninsula sites available and invite all corrections, updates, or new data that may be used to improve future editions of the *Antarctic Peninsula Compendium*.



## DESIGN, PURPOSE AND GOALS OF THE ANTARCTIC SITE INVENTORY

The Antarctic Site Inventory began fieldwork in November 1994, examining whether opportunistic visits can be used:

1. to effectively and economically detect possible visitor-caused changes in the physical features, flora, and fauna of sites in the Antarctic Peninsula being visited repeatedly by ship-based tourists;
2. to collect baseline information necessary to detect possible changes in the physical and biological variables being monitored; and
3. to determine how best to minimize or avoid possible environmental impacts of tourism and non-governmental activities in the Antarctic Peninsula area.

The Antarctic Site Inventory has demonstrated an ability to reach Antarctic Peninsula visitor sites frequently and cost-effectively, relying opportunistically on expedition tour vessels and, occasionally, the United Kingdom / HM Royal Navy ice patrol vessel *HMS Endurance* and the U.S. National Science Foundation vessel *Lawrence M. Gould* for logistics support. Well-timed visits by trained researchers have proved an effective means of characterizing sites and for collecting relevant biological data (Naveen 1996; Naveen 1997; Naveen et al. 2001; Naveen 2003).

Data collected by the Inventory are intended to assist the implementation of the 1991 Protocol on Environmental Protection to the Antarctic Treaty, which, among other things, requires a priori environmental impact assessments for all activities for which advance notification is required, including tourism, and for monitoring to be done, as and when necessary, to assess and verify predicted environmental impacts.

The Inventory is the *only* project monitoring penguin and seabird populations throughout the Peninsula, and the *only* project regularly censusing the species-diverse, environmentally sensitive tourism sites now subject to site visitation guidelines adopted under the aegis of the Antarctic Treaty.

The project involves two interconnected research activities: continued, long-term monitoring and censusing by the Antarctic Site Inventory of penguin and seabird populations throughout the Antarctic Peninsula using opportunistic ship-based data collection; and the synthesis and quantitative analyses of numerous datasets detailing long-term environmental changes at diverse sites throughout the Peninsula.

These syntheses and analyses intend to:

- characterize decadal scale changes in these populations throughout the Peninsula;
- discern how Antarctic species are changing in abundance, relative abundance, and spatial distribution;
- identify the factors specifically driving these long-term changes;
- understand how Peninsula biological and physical processes, as well as direct/cumulative impacts from human activities, may connect;
- identify the likely drivers of population shifts (both numerical and spatial); and
- forecast Peninsula-wide changes in the relative balance between the three *pygoscelid* penguin species.

The Inventory is creating fully digitized and annotated GPS maps for all of the locations in the Inventory. These maps include both biologically relevant information such as the location and boundaries of breeding bird colonies, as well as information on zodiac landing sites, commonly used

visitor trails, locations of historical sites and markers such as cairns and stakes. Where appropriate, map locations are associated with regular and repeated photodocumentation of sensitive features such as lichen and moss assemblages.

With respect to penguins and flying birds, the focus is collecting data on the key biological variables of breeding population size (nest counts) and breeding productivity (number of chicks per active nest), which are the appropriate biological parameters for detecting direct and cumulative impacts on these populations.

The Antarctic Site Inventory project is managed and operated by Oceanites, Inc., a non-profit science and education foundation based in Chevy Chase, Maryland USA, pursuant to U.S. Antarctic Conservation Act permits and a determination by the US Environmental Protection Agency that the multi-year Initial Environmental Evaluation submitted by Oceanites and the Antarctic Site Inventory meets the criteria established in 40 §8.4(c) of the US Code Of Federal Regulations.

Ron Naveen is the founder and chief executive officer of Oceanites, Inc., and the principal investigator of the Antarctic Site Inventory project. Further information about Oceanites and the Antarctic Site Inventory may be obtained via the Oceanites website, email ([info@oceanites.org](mailto:info@oceanites.org)), or regular mail (P.O. Box 15259, Chevy Chase, MD 20825 USA).

**Results.** In 17 seasons from November 1994 through February 2011, the Inventory has made 1,156 site visits and collected data at 142 Antarctic Peninsula locations.

**Site Coverage.** A cumulative, alphabetical list of sites included in the Antarctic Site Inventory database is noted below.

An asterisk (“ \* ”) notes sites for which the Antarctic Treaty has adopted a site-specific visitation guideline, all of which are reprinted in this edition of the *Compendium*.

A dagger (“ † ”) indicates sites that are appropriately visited *only* by zodiac cruising; where accessing breeding bird populations is dangerous, difficult, or impossible; and where monitoring is most appropriately accomplished by photodocumentation.

A site denoted in **bold** type is off limits to visitors without a proper permit from national authorities (Antarctic Specially Protected Areas and Antarctic Specially Managed Areas), or a research station that requires *a priori* permission to visit.

	Site Name	ASI Code	Region	Latitude (dd)	Longitude (dd)	page
1	Active Reef / Active Sound †	ACTI	NE	-63.38	-55.87	31
2	Alcock Island	ALCO	CW	-64.23	-61.13	32
3	Amphibolite Point	AMPH	SO	-60.68	-45.35	33
4	Andresen Island	ANDR, ANDI	SW	-66.88	-66.67	34
5	<b>Arctowski Station</b>	ARCT	SH	-62.25	-58.85	35
6	Astrolabe Island	ASTR	CW	-63.28	-58.67	36
7	Astrup, Cape	ASTU	NW	-64.71	-63.21	37
8	<b>Avian Island</b>	AVIA	SW	-67.77	-68.90	38
9	Baily Head*	BAIL	SH	-62.97	-60.50	39
10	Bald Head	BALD	NE	-63.63	-57.60	42
11	Barrientos Island*	AITC	SH	-62.41	-59.75	43

12	Bay Point	BAYP	CW	-64.77	-63.33	46
13	Belsham, Cape	BELS	EI	-61.08	-54.88	47
14	Beneden Head	BENE	CW	-64.77	-62.70	48
15	<b>Bernardo O'Higgins Station</b>	BERN	NW	-63.32	-57.90	49
16	Berthelot Islands	BERT	CW	-65.33	-64.15	50
17	<b>Biscoe Point</b>	BISC	CW	-64.82	-63.82	51
18	Blaiklock Island	BLAI	SW	-67.55	-67.07	52
19	Booth Island	BOOT	CW	-65.08	-64.00	53
20	Brown Bluff*	BROW	NE	-63.53	-56.92	55
21	<b>Brown Station</b>	ALMI	CW	-64.88	-62.87	58
22	Bryde Island Vicinity	BRYC, BRYE, BRYS	CW	-64.87	-63.03	59
23	Burd, Cape	BURD	NE	-63.65	-57.15	60
24	Camp Hill	HILL	NE	-63.68	-57.87	61
25	Cecilia Island	CECI	SH	-62.42	-59.72	62
26	Charles Point	CHPT	CW	-64.22	-61.00	63
27	<b>Cierva Point Vicinity</b>	CIER	CW	-64.15	-60.97	64
28	Cockburn Island	COCK	NE	-64.20	-56.85	65
29	Crystal Hill	CRYS	NE	-63.65	-57.73	66
30	Cuverville Island *	CUVE	CW	-64.68	-62.63	67
31	d'Urville Monument	DURV	NE	-63.42	-56.30	70
32	Danco Island *	DANC	CW	-64.73	-62.62	71
33	Delaite Island	DELA	CW	-64.55	-62.18	74
34	Detaille Island *	DETA	SW	-66.87	-66.80	75
35	Devil Island *	DEVI	NE	-63.80	-57.28	79
36	Dorian Bay / Damoy Point *	DAMO	CW	-64.82	-63.53	83
37	Dorian Bay Beacon	DOBE	CW	-64.82	-63.53	86
38	Duff Point	DUFF	SH	-62.45	-60.03	87
39	Duthiers Point	DUPT	CW	-64.21	-62.82	88
40	Eagle Island	EAGL	NE	-63.67	-57.48	89
41	Eckener Point	ECKE	CW	-64.43	-61.60	90
42	Eden Rocks	EDEN	NE	-63.48	-55.67	91
43	Entrance Point	ENTR	SH	-63.00	-60.55	92
44	Extension Reef †	EXTE	SW	-65.97	-66.13	93
45	Eyrie Bay	EYRI	NE	-63.58	-57.63	94
46	False Island Point	FALS	NE	-63.92	-57.33	95
47	<b>Ferraz Station</b>	FERR	SH	-62.17	-58.80	96
48	Fish Islands	FISH	SW	-66.03	-65.42	97
49	Fort Point	FORT	SH	-62.57	-59.57	98
50	Foyn Harbor	FOYN	CW	-64.55	-62.02	99
51	Gaston Island	GAST	CW	-64.49	-61.83	100
52	Georges Point & Rongé Is. EAST	GEOR, RONE	CW	-64.67	-62.67	101



53	Gibbon Bay	GIBA	SO	-60.65	-45.18	103
54	Gibbs Island	GIBB	EI	-61.47	-55.57	104
55	Glandaz Point †	GLAN	CW	-65.08	-63.98	105
56	Gourdin Island	GOUR	NW	-63.20	-57.30	106
57	Gouvernøren Harbor, Enterprise Is.	GOUV, ENTE	CW	-64.53	-62.00	107
58	Half Moon Island *	HALF	SH	-62.60	-59.92	109
59	Hannah Point *	HANN	SH	-62.65	-60.62	113
60	Heroína Island	HERO	NE	-63.40	-54.60	116
61	<b>Hope Bay / Esperanza Station</b>	HOPE	NE	-63.38	-57.00	117
62	Horseshoe Island *	HORS	SW	-67.85	-67.20	119
63	Hovgaard Island	HOVG	CW	-65.13	-64.13	122
64	Humphries Heights †	HUMP	CW	-65.05	-63.87	123
65	Hunt Island	HUNT	CW	-64.33	-62.10	124
66	Hurd Peninsula West	HURW	SH	-62.70	-60.42	125
67	Hydrurga Rocks	HYDR	CW	-64.13	-62.10	126
68	Jacques Peaks	JACP	CW	-64.51	-61.85	127
69	Jade Point	JADE	NE	-63.60	-57.58	128
70	Jenny Island	JENN	SW	-67.73	-68.40	129
71	Jonassen Island	JONA	NE	-63.55	-56.67	130
72	Jougla Point *	JOUG	CW	-64.83	-63.50	131
73	<b>Jubany Station</b>	JUBA	SH	-62.23	-58.63	134
74	Ketley Point	KETL	CW	-64.70	-62.77	135
75	Lachman, Cape	LACH	NE	-63.78	-57.78	136
76	Lainez Point	LAIN	SW	-67.68	-67.80	137
77	Lautaro Neck, Lautaro Island	LAUT	CW	-64.83	-63.10	138
78	Lecointe Island	LECO	CW	-64.27	-62.05	139
79	Lindblad Cove †	LIND	NW	-63.85	-59.45	140
80	<b>Lockroy, Port / Goudier Island *</b>	LOCK	CW	-64.83	-63.50	141
81	Lookout, Cape	LOOK	EI	-61.27	-55.20	144
82	Loubat Point †	LOUB	CW	-65.07	-63.93	145
83	Madder Cliffs	MADD	NE	-63.30	-56.48	146
84	<b>Marambio Station Vicinity</b>	MARA	NE	-64.25	-56.66	147
85	Marshall Bay	MARS	SO	-60.65	-45.63	148
86	Martin Islands South	SOMI	SW	-65.69	-65.33	149
87	McCall Point	MCAL	SW	-67.03	-66.63	150
88	Melchior Islands †	MELC	CW	-64.32	-62.95	151
89	Miers Bluff	MIER	SH	-62.72	-60.43	152
90	Mikkelsen Harbor	MIKK	CW	-63.90	-60.78	153
91	Mitchell Cove	MITC	SH	-62.39	-59.63	154
92	Moot Point	MOOT	CW	-65.20	-64.10	155
93	Neko Harbor *	NEKO	CW	-64.83	-62.55	157
94	O'Neil Point	ONEI	CW	-64.82	-63.10	160

94	Obelisk, Cape	OBEL	NE	-64.13	-58.45	161
96	<b>Orcadas Station</b>	ORCA	SO	-60.77	-44.67	162
97	Orne Islands	ORNE	CW	-64.67	-62.67	163
98	Paradise Harbor Beacon	PABE	CW	-64.85	-62.90	164
99	Paulet Island *	PAUL	NE	-63.58	-55.78	165
100	Pendulum Cove	PEND	SH	-62.93	-60.60	168
101	Penguin Island *	PENG	SH	-62.10	-57.90	169
102	Penguin Point	PEPO	NE	-64.32	-56.72	172
103	Persson Island	PERS	NE	-64.22	-58.40	173
104	Petermann Island *	PETE	CW	-65.17	-64.17	175
105	Pléneau Island *	PLEN	CW	-65.10	-64.07	179
106	Portal Point	PORT	CW	-64.50	-61.77	182
107	Pourquoi Pas Island	POUR	SW	-67.68	-67.47	183
108	President Head	PRES	SH	-62.73	-61.20	184
109	Priest Island	PRIE	CW	-64.87	-63.52	185
110	Prospect Point	PROS	SW	-66.02	-65.35	186
111	Py Point	PYPT	CW	-64.88	-63.62	187
112	Red Rock Ridge	RRRI	SW	-68.30	-67.13	188
113	Robert Point	ROBE	SH	-62.47	-59.38	189
114	Rum Cove	RUMC	NE	-64.10	-58.42	190
115	Sandefjord Bay	SAND	SO	-60.62	-46.05	191
116	Saxum Nunatak	SAXU	NE	-63.17	-56.03	192
117	Selvick Cove	SELV	CW	-64.65	-62.57	193
118	Shingle Cove *	SHIN	SO	-60.65	-45.57	195
119	Shumskiy Cove	SHUM	SW	-67.07	-67.35	198
120	Siffrey Point	SIFF	NW	-63.22	-57.22	199
121	Skottsberg Point	SKOT	CW	-63.92	-60.82	200
122	Snow Hill Island *	SNOW	NE	-64.47	-57.20	201
123	Spigot Peak	SPIG	CW	-64.63	-62.57	204
124	Spine Island	SPIN	SO	-60.60	-46.03	205
125	Sprightly Islands Vicinity	SPRI	CW	-64.30	-61.05	206
126	Stonington Island *	STON	SW	-68.18	-67.00	207
127	Tay Head	TAYH	NE	-63.35	-55.57	210
128	Telefon Bay *	TELE	SH	-62.93	-60.67	211
129	Tetrad Islands	TETR	CW	-63.92	-60.73	214
130	<b>Torgersen Island * / Palmer Station</b>	TORG	CW	-64.77	-64.07	215
131	Turret Point *	TURR	SH	-62.08	-57.92	219
132	Useful Island	USEF	CW	-64.72	-62.87	222
133	Vapour Col	VAPO	SH	-62.98	-60.73	223
134	<b>Vernadsky Station / Wordie House *</b>	VERN	CW	-65.25	-64.26	225
135	View Point	VIEW	NE	-63.55	-57.37	228
136	Vortex Island	VORT	NE	-63.73	-57.63	229

137	<b>Waterboat Point / Gonz. Videla Station</b>	WATE	CW	-64.82	-62.85	230
138	Webb Island	WEBB	SW	-67.45	-67.93	231
139	Whaler's Bay *	WHAL	SH	-62.98	-60.57	233
140	Wild, Point	WILD	EI	-61.10	-54.87	236
141	Yalour Islands	YALO	CW	-65.23	-64.17	237
142	Yankee Harbor *	YANK	SH	-62.53	-59.78	239

**Map design.** *Compendium* maps are based on the SCAR Antarctic Digital Database and are shown in Lambert Conformal Conic projection using the WGS84 Horizontal Datum.

**Dissemination of Data and Information, Publications.** Biological data and site descriptions collected by the Antarctic Site Inventory have been published and routinely are made available in peer-reviewed papers, government reports, and popular publications.

Data and information about the Antarctic Site Inventory are also available on the Oceanites website:

[www.oceanites.org](http://www.oceanites.org)

And the Oceanites news/content site:

<http://oceanitesfeed.wordpress.com/>

As well as the newly available Oceanites iPhone App that is freely available via Apple's iTunes Store.

## PART II

### SITE DESCRIPTIONS

As noted above, this revision updates the *Compendium of Antarctic Peninsula Visitor Sites, 2<sup>nd</sup> edition* to cover the 142 sites that have been visited and censused by Antarctic Site Inventory (ASI) through February 2011. It is hoped that all of these data and site-descriptions ultimately assist further investigations and studies, as well as a better understanding of the Antarctic Peninsula ecosystem.

**Format.** In this edition, site descriptions are listed alphabetically, ignoring the geographical precursors “Cape,” “Point,” and “Port.” Many visitor sites are now covered by site guidelines adopted by the Antarctic Treaty countries, and these guidelines are replicated in full, supplemented by additional notes, as appropriate, regarding ASI effort, species presence/absence, and recent ASI census data.

For sites not covered by Treaty-adopted guidelines, the site description in the *Compendium* presents the following details:

- Name, ASI 4-letter code, Antarctic Peninsula region, geographical coordinates (decimal format)
- History, prominent features (physical or topographical)
- Landing characteristics (as appropriate)
- Site sensitivity to potential environmental disruptions and suggestions (“pointers”) for avoiding potential disruptions (as appropriate)
- Antarctic Site Inventory effort, 1994-2011
- Species presence/absence information
- Recent ASI census data
- Other proximate visitor sites.

The primary sources for site names and coordinates is the Antarctic Names directory maintained by the U.S. Board On Geographic Names (<http://geonames.usgs.gov/antarctic/index.html>) and cited herein as “USBGN 95”).

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**Antarctic Site Inventory Effort.** Each site description presents a matrix of ASI effort, indicating, on a seasonal basis, from the 1992-93 season forward, how frequently ASI researchers have visited the site and collected data. The Inventory officially began data collection in the 1994-95 season, after two years’ testing of field methods and project design.

**Species Presence / Absence.** Each site description presents a matrix of species presence and absence, as recorded by ASI researchers, which focuses on penguins, seabirds, and elephant seals.

The following species codes are used:

<b>ADPE</b>	Adélie penguin	<i>Pygoscelis adeliae</i>
<b>CHPE</b>	chinstrap penguin	<i>Pygoscelis antarctica</i>
<b>GEPE</b>	gentoo penguin	<i>Pygoscelis papua</i>
<b>MCPE</b>	macaroni penguin	<i>Eudyptes chrysolophus</i>
<b>SOGP</b>	southern giant petrel	<i>Macronectes giganteus</i>

<b>ANFU</b>	Antarctic fulmar	<i>Fulmarus glaciodes</i>
<b>PIPE</b>	pintado petrel	<i>Daption capense</i>
<b>SNPE</b>	snow petrel	<i>Pagodroma nivea</i>
<b>BESH</b>	Antarctic blue-eyed shag	<i>Phalacrocorax atriceps</i>
<b>SNSB</b>	snowy sheathbill	<i>Chionis alba</i>
<b>SPSK</b>	south polar skua	<i>Catharacta maccormicki</i>
<b>BRSK</b>	Antarctic brown skua	<i>Catharacta lonnbergi</i>
<b>SKsp</b>	skua, spp.	(unknown <i>Catharacta</i> species, or hybrid)
<b>WISP</b>	Wilson's storm-petrel	<i>Oceanites oceanicus</i>
<b>BBSP</b>	Black-bellied storm-petrel	<i>Fregetta tropica</i>
<b>KEGU</b>	kelp gull	<i>Larus dominicanus</i>
<b>ANTE</b>	Antarctic tern	<i>Sterna vittata</i>
<b>ELPH</b>	southern elephant seal	<i>Mirounga leonina</i>

The following presence/absence codes are used:

For penguins and seabirds —

<b>Br</b>	confirmed breeder
<b>SBr</b>	suspected breeder
<b>Oc</b>	individuals occasionally present (but not known to breed)

For elephant seals —

<b>Wa</b>	seal wallows regularly observed
<b>Oc</b>	individuals occasionally present (but no regular wallows)

The ASI has begun to systematically record and catalogue site-specific floral data, information, and photographs. Notes regarding presence of lichens and moss, particularly of large assemblages that may be easily trampled, are noted, as appropriate, in various site descriptions.

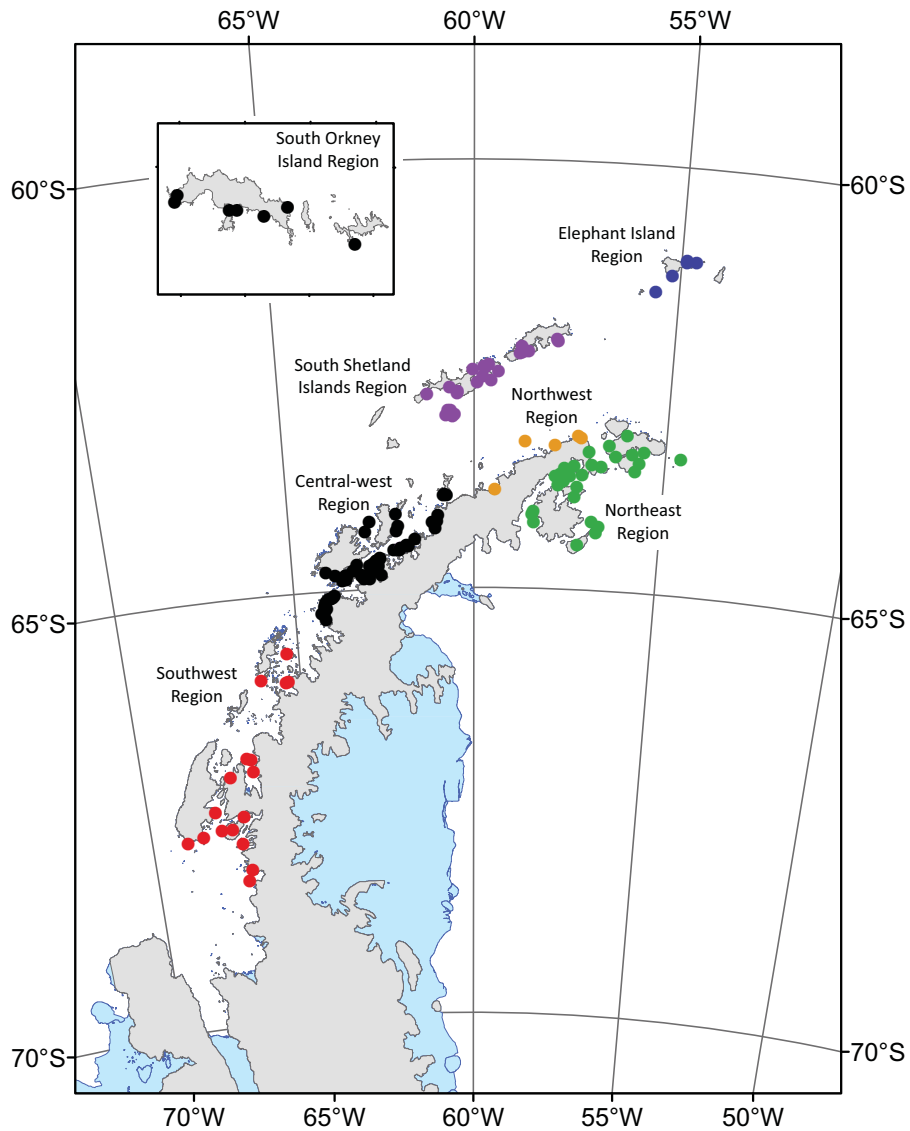
**Recent ASI Census Data.** The site descriptions present capsules of penguin and seabird census data collected by the Inventory and previously published (Naveen et al., 2000; Lynch et al. 2008). Occasionally these are accompanied by commentary whether a population has been changing in size. Note that where new unpublished data are critical to a site's description, they have been included as well, although counts are rounded and should not be cited or used for analysis. As well, there are occasional references to historic census data deriving from Woehler and Croxall (1997), Woehler (1993), Croxall and Kirkwood (1979), Poncet and Poncet (1985), Poncet and Poncet (1987), and Shuford and Spear (1988), which are cited as W&C 97, W 93, C&K 79, P&P 85, P&P 87, and S&S 88, respectively.

All nest and chick census data are presented in the same format suggested in Woehler and Croxall (1997) and Woehler (1993):

N1	Nests individually counted, accurate to better than $\pm 5\%$
N2	Nests counted in known area then extrapolated over total colony area, accurate to 5-10%
N3	Accurate estimate, accurate to 10-15%
N4	Rough estimate, accurate to 25-50%
C1	Chicks individually counted, accurate to better than $\pm 5\%$
C2	Chicks counted in known area then extrapolated over total area, accurate to 5-10%
C3	Accurate estimate, accurate to 10-15%

- C4 Rough estimate, accurate to 25-50%
- A1 Estimates based on counts of total birds or adults individually counted, accurate to better than +/- 5%
- A2 Estimates based on counts of total birds or adults individually counted, accurate to 5-10%
- A3 Estimates based on counts of total birds or adults individually counted, accurate to 10-15%
- A4 Estimates based on counts of total birds or adults individually counted, accurate to 25-50%

As noted above, **PART III** of the *Compendium* contains a complete bibliography of references and reprints of key papers regarding the work of the Antarctic Site Inventory and the examination of biological changes in the Peninsula.





## CENTRAL WESTERN (CW) Region

From Mikklesen Harbor (-63.90, -60.78) south to the Berthelot Islands (-65.33, -64.15)

Sites (56)	ASI Code	Latitude (dd)	Longitude (dd)	page
Alcock Island	ALCO	-64.23	-61.13	32
Astrup, Cape	ASTU	-64.71	-63.21	36
Bay Point	BAYP	-64.77	-63.33	46
Beneden Head	BENE	-64.77	-62.70	48
Berthelot Islands	BERT	-65.33	-64.15	50
Biscoe Point	BISC	-64.82	-63.82	51
Booth Island	BOOT	-65.08	-64.00	53
Brown Station	ALMI	-64.88	-62.87	58
Bryde Island Vicinity	BRYC, BRYE, BRYS	-64.87	-63.03	59
Charles Point	CHPT	-64.22	-61.00	63
Cierva Point Vicinity	CIER	-64.15	-60.97	64
Cuverville Island *	CUVE	-64.68	-62.63	67
Danco Island *	DANC	-64.73	-62.62	71
Delaite Island	DELA	-64.55	-62.18	74
Dorian Bay / Damoy Point*	DAMO	-64.82	-63.53	83
Dorian Bay Beacon	DOBE	-64.82	-63.53	86
Duthiers Point	DUPT	-64.21	-62.82	88
Eckener Point	ECKE	-64.43	-61.60	90
Foyn Harbor	FOYN	-64.55	-62.02	99
Gaston Island	GAST	-64.49	-61.83	100
Georges Point & Rongé Is. EAST	GEOR, RONE	-64.67	-62.67	101
Glandaz Point †	GLAN	-65.08	-63.98	105
Gouvernøren Harbor / Enterprise Island	GOUV	-64.53	-62.00	107
Hovgaard Island	HOVG	-65.13	-64.13	122
Humphries Heights †	HUMP	-65.05	-63.87	123
Hunt Island	HUNT	-64.33	-62.10	124
Hydrurga Rocks	HYDR	-64.13	-62.10	126
Jacques Peaks	JACP	-64.51	-61.85	127
Jougla Point *	JOUG	-64.83	-63.50	131
Ketley Point	KETL	-64.70	-62.77	135
Lautaro Neck, Lautaro Island	LAUT	-64.83	-63.10	138
Lecointe Island	LECO	-64.27	-62.05	139
Lockroy, Port / Goudier Island *	LOCK	-64.83	-63.50	141
Loubat Point †	LOUB	-65.07	-63.93	145
Melchior Islands †	MELC	-64.32	-62.95	151
Mikkelsen Harbor	MIKK	-63.90	-60.78	153
Moot Point	MOOT	-65.20	-64.10	155



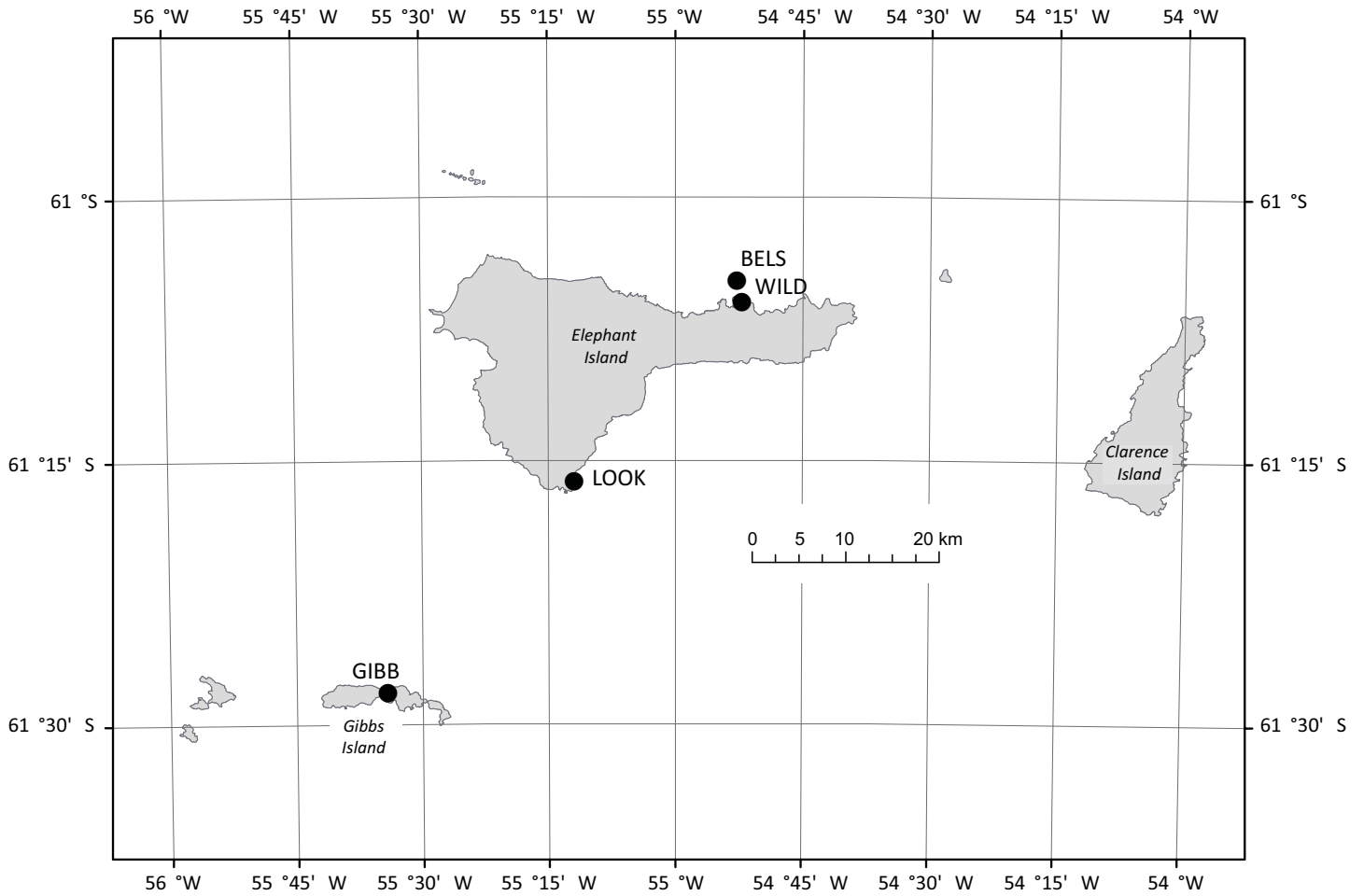
Neko Harbor *	NEKO	-64.83	-62.55	157
O'Neil Point	ONEI	-64.82	-63.10	160
Orne Islands	ORNE	-64.67	-62.67	163
Paradise Harbor Beacon	PABE	-64.85	-62.90	164
Petermann Island *	PETE	-65.17	-64.17	175
Pléneau Island *	PLEN	-65.10	-64.07	179
Portal Point	PORT	-64.50	-61.77	182
Priest Island	PRIE	-64.87	-63.52	185
Py Point	PYPT	-64.88	-63.62	187
Selvick Cove	SELV	-64.65	-62.57	193
Skottsberg Point	SKOT	-63.92	-60.82	200
Spigot Peak	SPIG	-64.63	-62.57	204
Sprightly Islands Vicinity	SPRI	-64.30	-61.05	206
Tetrad Islands	TETR	-63.92	-60.73	214
Torgersen Island * / Palmer Station	TORG	-64.77	-64.07	215
Useful Island	USEF	-64.72	-62.87	222
Vernadsky Station/Wordie House *	VERN	-65.25	-64.26	225
Waterboat Point / Gonz. Videla Station	WATE	-64.82	-62.85	230
Yalour Islands	YALO	-65.23	-64.17	237





## ELEPHANT ISLAND (EI) Region

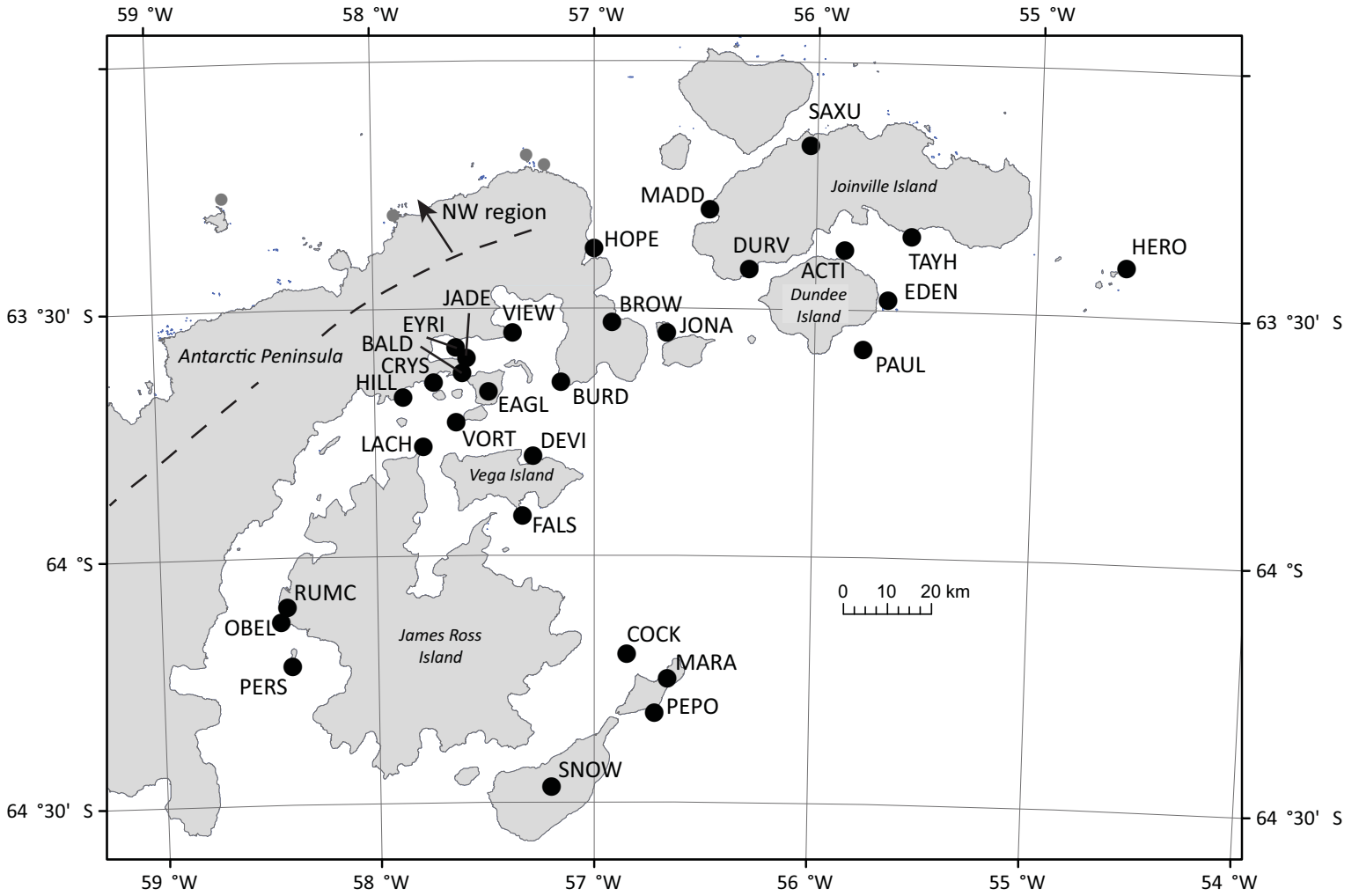
Sites (4)	ASI Code	Latitude (dd)	Longitude (dd)	page
Belsham, Cape	BELS	-61.08	-54.88	47
Gibbs Island	GIBB	-61.47	-55.57	104
Lookout, Cape	LOOK	-61.27	-55.20	144
Wild, Point	WILD	-61.10	-54.87	236



## NORTHEASTERN (NE) Region

From Saxum Nunatak (-63.17, -56.03) south to Snow Hill Island (-64.47, -57.20)

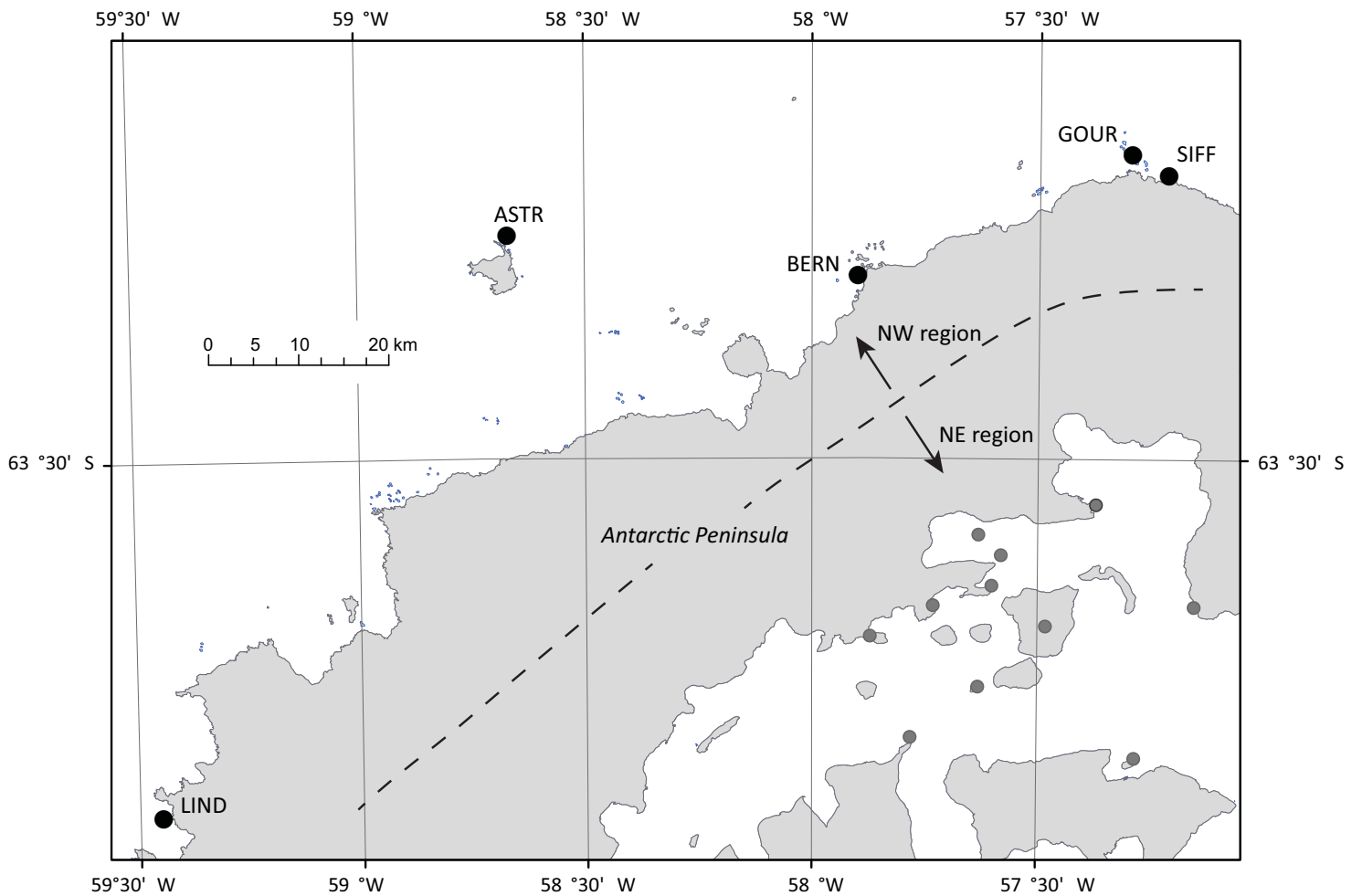
Sites (30)	ASI Code	Latitude (dd)	Longitude (dd)	page
Active Reef / Active Sound	ACTI	-63.38	-55.87	31
Bald Head	BALD	-63.63	-57.60	42
Brown Bluff *	BROW	-63.53	-56.92	55
Burd, Cape	BURD	-63.65	-57.15	60
Camp Hill	HILL	-63.68	-57.87	61
Cockburn Island	COCK	-64.20	-56.85	65
Crystal Hill	CRYS	-63.65	-57.73	66
d'Urville Monument	DURV	-63.42	-56.30	70
Devil Island *	DEVI	-63.80	-57.28	79
Eagle Island	EAGL	-63.67	-57.48	89
Eden Rocks	EDEN	-63.48	-55.67	91
Eyrie Bay	EYRI	-63.58	-57.63	94
False Island Point	FALS	-63.92	-57.33	95
Heroina Island	HERO	-63.40	-54.60	116
Hope Bay	HOPE	-63.38	-57.00	117
Jade Point	JADE	-63.60	-57.58	128
Jonassen Island	JONA	-63.55	-56.67	130
Lachman, Cape	LACH	-63.78	-57.78	136
Madder Cliffs	MADD	-63.30	-56.48	146
Marambio Station Vicinity	MARA	-64.25	-56.66	147
Obelisk, Cape	OBEL	-64.13	-58.45	161
Paulet Island *	PAUL	-63.58	-55.78	165
Penguin Point	PEPO	-64.32	-56.72	172
Persson Island	PERS	-64.22	-58.40	173
Rum Cove	RUMC	-64.10	-58.42	190
Saxum Nunatak	SAXU	-63.17	-56.03	192
Snow Hill Island *	SNOW	-64.47	-57.20	201
Tay Head	TAYH	-63.35	-55.57	210
View Point	VIEW	-63.55	-57.37	228
Vortex Island	VORT	-63.73	-57.63	229



## NORTHWESTERN (NW) Region

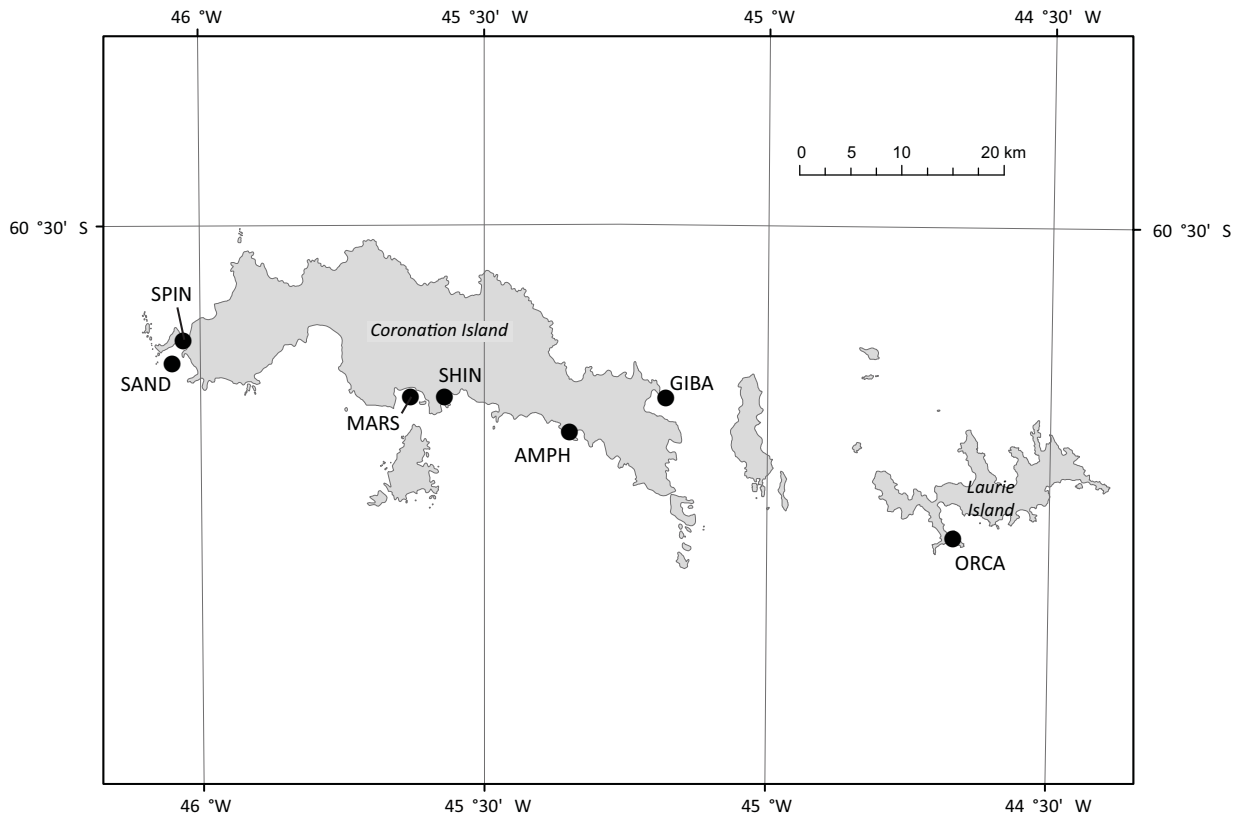
From Gourdin Island (-63.20, -57.30) south to Lindblad Cove (-63.85, -59.45)

Sites (5)	ASI Code	Latitude (dd)	Longitude (dd)	page
Astrolabe Island	ASTR	-63.28	-58.67	37
Bernardo O'Higgins Station	BERN	-63.32	-57.90	49
Gourdin Island	GOUR	-63.20	-57.30	106
Lindblad Cove †	LIND	-63.85	-59.45	140
Siffrey Point	SIFF	-63.22	-57.22	199



## SOUTH ORKNEY ISLANDS (SO) Region

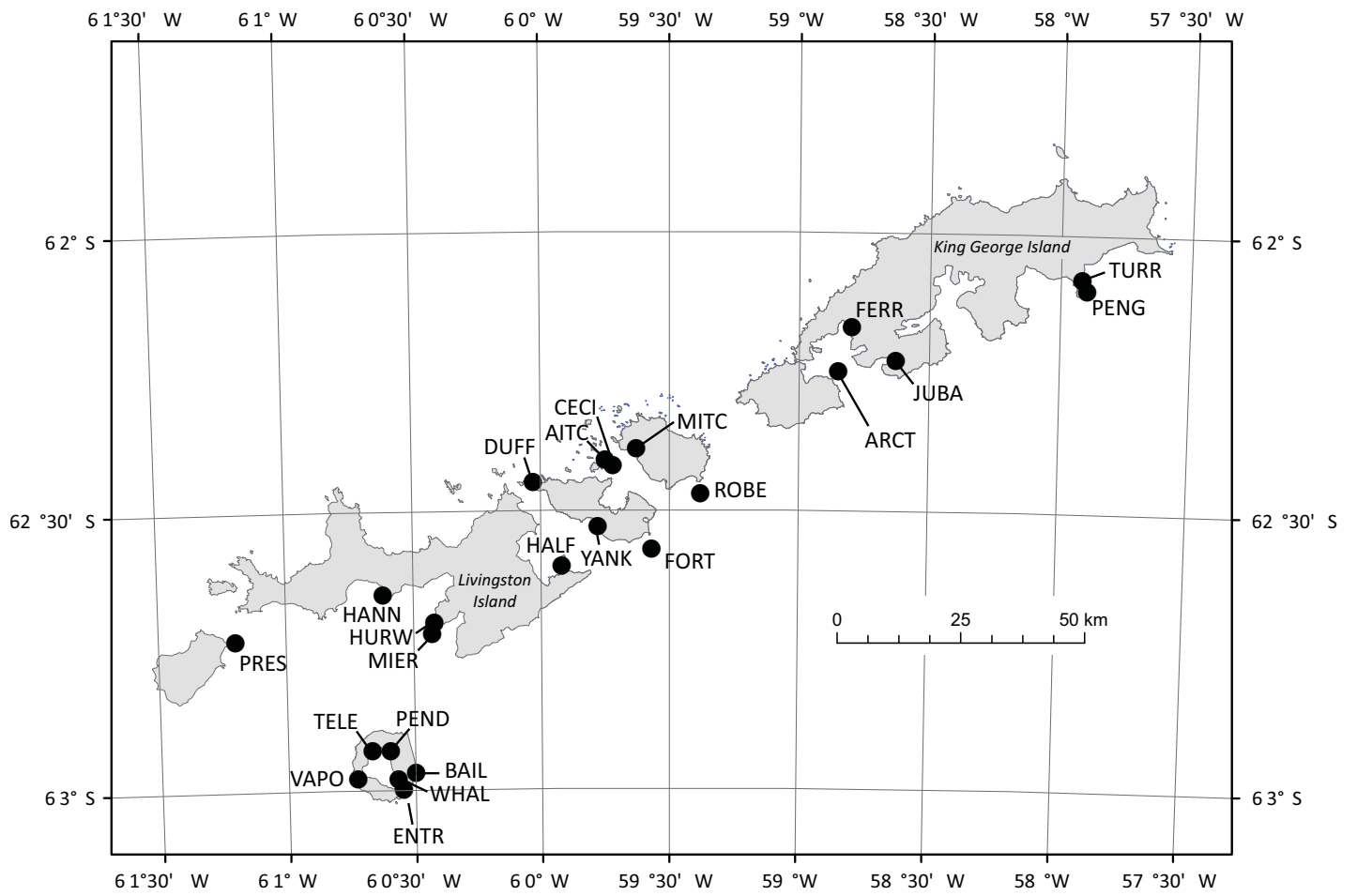
Sites (7)	ASI Code	Latitude (dd)	Longitude (dd)	page
Amphibolite Point	AMPH	-60.68	-45.35	33
Gibbon Bay	GIBA	-60.65	-45.18	103
Marshall Bay	MARS	-60.65	-45.63	148
Orcadas Station	ORCA	-60.77	-44.67	162
Sandefjord Bay	SAND	-60.62	-46.05	191
Shingle Cove *	SHIN	-60.65	-45.57	195
Spine Island	SPIN	-60.60	-46.03	205





## SOUTH SHETLAND ISLANDS (SH) Region

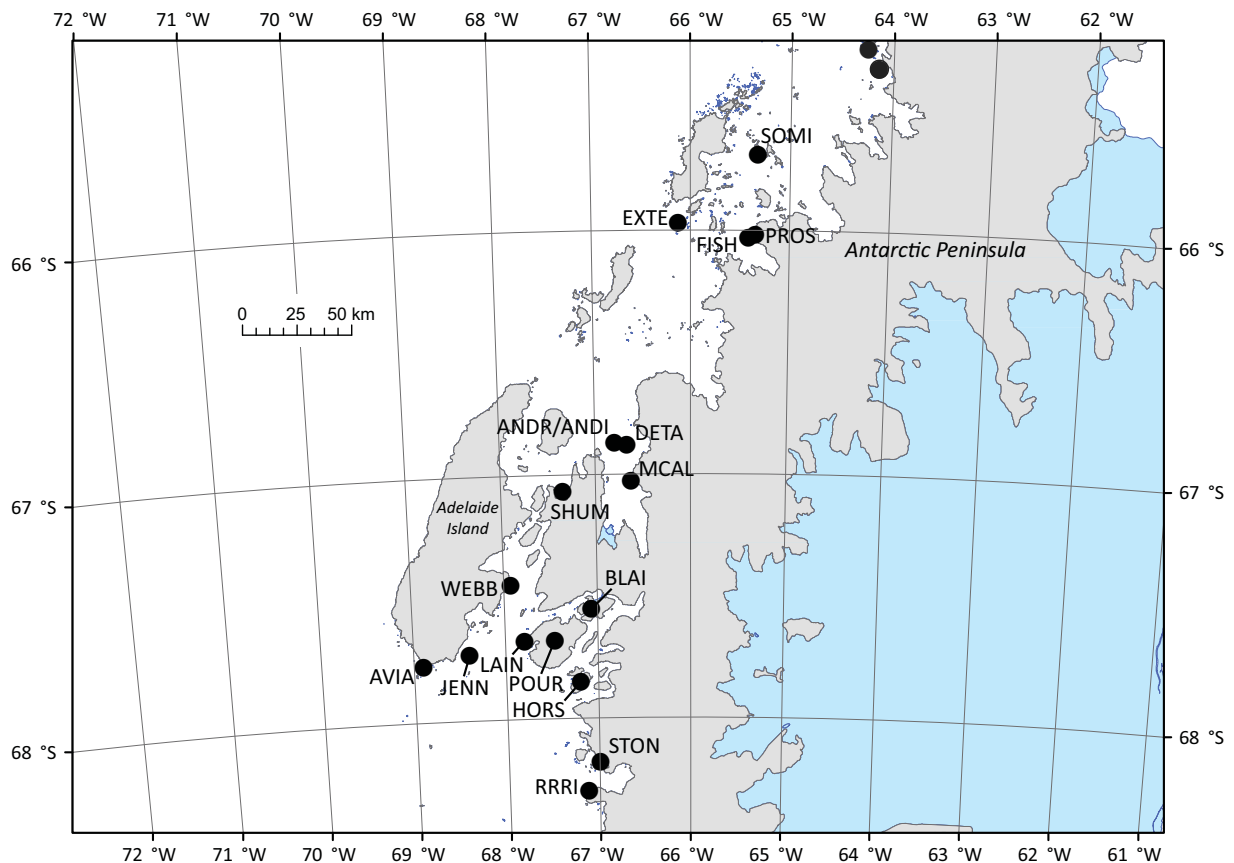
Sites (23)	ASI Code	Latitude (dd)	Longitude (dd)	page
Arctowski Station	ARCT	-62.25	-58.85	35
Baily Head *	BAIL	-62.97	-60.50	39
Barrientos Island *	AITC	-62.41	-59.75	43
Cecilia Island	CECI	-62.42	-59.72	62
Duff Point	DUFF	-62.45	-60.03	87
Entrance Point	ENTR	-63.00	-60.55	92
Ferraz Station	FERR	-62.17	-58.80	96
Fort Point	FORT	-62.57	-59.57	98
Half Moon Island *	HALF	-62.60	-59.92	109
Hannah Point *	HANN	-62.65	-60.62	113
Hurd Peninsula West	HURW	-62.70	-60.42	125
Jubany Station	JUBA	-62.23	-58.63	134
Miers Bluff	MIER	-62.72	-60.43	152
Mitchell Cove	MITC	-62.39	-59.63	154
Pendulum Cove	PEND	-62.93	-60.60	168
Penguin Island *	PENG	-62.10	-57.90	169
President Head	PRES	-62.73	-61.20	184
Robert Point	ROBE	-62.47	-59.38	189
Telefon Bay *	TELE	-62.93	-60.67	211
Turret Point *	TURR	-62.08	-57.92	219
Vapour Col	VAPO	-62.98	-60.73	223
Whaler's Bay *	WHAL	-62.98	-60.57	233
Yankee Harbor *	YANK	-62.53	-59.78	239



## SOUTHWESTERN (SW) Region

From Martin Islands South (-65.69, -65.33) south to Red Rock Ridge (-68.30, -67.13)

Sites (17)	ASI Code	Latitude (dd)	Longitude (dd)	page
Andresen Island	ANDR, ANDI	-66.88	-66.67	34
Avian Island	AVIA	-67.77	-68.90	38
Blaiklock Island	BLAI	-67.55	-67.07	52
Detaille Island *	DETA	-66.87	-66.80	75
Extension Reef †	EXTE	-65.97	-66.13	93
Fish Islands	FISH	-66.03	-65.42	97
Horseshoe Island *	HORS	-67.85	-67.20	119
Jenny Island	JENN	-67.73	-68.40	129
Lainez Point	LAIN	-67.68	-67.80	137
Martin Islands South	SOMI	-65.69	-65.33	149
McCall Point	MCAL	-67.03	-66.63	150
Pourquoi Pas Island	POUR	-67.68	-67.47	183
Prospect Point	PROS	-66.02	-65.35	186
Red Rock Ridge	RRRI	-68.30	-67.13	188
Shumskiy Cove	SHUM	-67.07	-67.35	198
Stonington Island *	STON	-68.18	-67.00	207
Webb Island	WEBB	-67.45	-67.93	211



**Active Reef / Active Sound (ACTI)**  
**NE region (-63.38, -55.87)**

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

Active Sound averages 2 mi wide and extends in an ENE direction from Antarctic Sound to join the Firth of Tay, with which it separates Joinville and Dundee Islands. Active Reef is an isolated reef lying in the Firth of Tay, just off the N coast of Dundee Island. Blue-eyed shags roost (and possibly breed) on the rocks associated with Active Reef.

*Landings.* There are no landing sites.

*Site Sensitivities.* None.

*Proximate visitor sites.* d’Urville Monument (DURV), Eden Rocks (EDEN), Paulet Island (PAUL), Tay Head (TAYH)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓				

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								SBr								

**Recent ASI Census Data**

BESH
20 A5 21 Dec 2006

**Alcock Island (ALCO)**

**CW region (-64.23, -61.13)**

Lies W of Charles Point in Hughes Bay, off the W coast of Graham Land.

*Landings.* Access is difficult and possible only via a steep, rocky, guano-covered slope also used actively by chinstrap penguins.

*Site Sensitivities.* None.

*Proximate visitor sites.* Charles Point (CHPT), Cierva Point (CIER), Sprightly Islands (SPRI)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br															

**Recent ASI Census Data**

CHPE
c. 1000 nests in 2010/11 (ASI, unpublished)

## Amphibolite Point (AMPH)

SO region (-60.68, -45.35)

Conspicuous, pyramidal point located 1.5 mi NW of Saunders Point on the S coast of Coronation Island. Named for considerable amount of the metamorphic rock, amphibolite, found on site.

*Landings.* Small cove at base of penguin colony provides narrow, rocky, uphill access to the site.

*Site Sensitivities.* Restricted visitor space among large colony of breeding chinstrap penguins. Fur seals on the rocky landing beach, and in coves along the shoreline. Walk slowly and carefully around nesting, crèching, or molting penguins, and avoid impeding penguins' access to and from the water. Avoid and stay clear of Antarctic fur seals, which should be given a wide berth and should not be approached.

*Proximate visitor sites.* Laurie Island (Cape Dundas), Gosling Islands, Signy Island, Coronation Island sites such as Gibbon Bay (GIBB) and Shingle Cove (SHIN).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓									

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Br	Oc		Oc					Br		Oc					

### Recent ASI and Other Census Data

CHPE	ADPE
c. 3,300 chicks in 2001-02 (ASI, unpublished)	4,000 N4 (W 93) 5,000 N4 (P&P 85)

**Andresen Island (ANDR)**  
**SW region (-66.88, -66.67)**

A 2-mi-long island rising to over 610 meters, lying in the middle of the entrance to Lallemand Fjord, off the W coast of Graham Land.

*Landings.* Access only by uphill scramble over shoreline rocks. Penguin nests are at elevation. ASI landings/census have occurred at two locations (-66.88, -66.67; and -66.88, -66.71).

*Site Sensitivities.* Walk slowly and carefully around nesting, crèching, or molting penguins, and avoid impeding penguins' access to and from the water.

*Proximate visitor sites.* Detaille Island (DETA)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓	✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc			Oc			Oc	Br		Br		Oc		OC	Br	

**Recent ASI Census Data**

ADPE
c. 1,500 nests between the two landing sites (ASI, unpublished)

**Arctowski Station Vicinity (ARCT)**  
**SH region (-62.25, -58.85)**

**ADVANCE NOTICE must be given before visiting the station**

Arctowski Station is the Polish research base located in Admiralty Bay, South Shetland Islands. The short, easily walked beach in “front” of the station is called Half Moon Beach, and it extends for 0.5 mi to the N boundary of the Point Thomas Antarctic Specially Protected Area (ASPAs). The station is named for Henryk Arctowski, the Polish geologist, oceanographer, and meteorologist of the Belgian Antarctic expedition (1897-99). The research station lies on a flat, shingle peninsula flanked to the S by a bay-mouth bar enclosing a small lagoon. The beach is largely cobble and littered with whale bones, with a black sand beach at lower water levels.

*Landings.* The Point Thomas Antarctic Specially Protected Area (ASPAs) is located at the end of the beach, marked by an elephant seal wallow.

*Site Sensitivities.* The ground around the station area is spongy and muddy, made up of rounded sand and pebbly material. Patches of the grass *Deschampsia Antarctica*, moss beds, and swards of lichens should be avoided.

Stay on the visitor trail and do not enter the ASPAs. All nesting penguins are within the boundary of the Antarctic Specially Protected Area, which is totally off limits. Late in each season, fur seals often are found on the *Deschampsia* and moss inland from the beach. The wallowing elephant seals are easily approached and disturbed.

*Proximate visitor sites.* Ferraz Station (FERR)



**Astrolabe Island (ASTR)**  
**NW region (-63.28, -58.67)**

3-mi-long island lying in the Bransfield Strait, 14 mi NW of Cape Ducorps, Trinity Peninsula. It was discovered the French Expedition of 1837-40, under Capt. Jules Dumont d’Urville, and named for his chief expedition ship. A rarely visited site near the N tip of the Antarctic Peninsula, which offers excellent zodiac cruising and — if the tides are right and the hauled-out seals few — a chance for some walking on Astrolabe’s rocky shores. The chinstraps occupy steep, uphill nesting locations. At 140 meters elevation, many Antarctic fulmars breed. There are a number of points from which chinstraps may be observed leaping in or out of the sea.

*Landings.* Uncharted water near shore. Hazardous rocks along the shoreline may be exposed, depending on the tide. Restricted visitor space on the cobble landing beach, which is strewn with boulders and slippery. Antarctic fur seals may be present. Steep slopes inland and considerable loose scree at higher elevations.

*Site Sensitivities.* Chinstrap penguins nesting on steep, uphill slopes are not easily accessed, but are easily disturbed. Antarctic fulmars breed on ledges at highest elevations and are easily disturbed. Skuas nest in scattered locations and are easily approached and disturbed. Avoid and stay clear of Antarctic fur seals, which should be given a wide berth and should not be approached.

Walk slowly and carefully around nesting, crèching, or molting penguins. Avoid and stay clear of skua territories, and do not approach fulmar nesting ledges. Stay clear of — and do not hike upon or wander over — scree slopes. If beach cannot be accessed because of tide, ice, seals, or numbers of penguins, zodiac tours are the best way to view the site.

Various crustiose and fruticose lichens (*Caloplaca*, spp., *Xanthoria candelaria*, *Buellia*, spp., *Usnea Antarctica*) and moss are presently, especially at elevaton.

*Proximate sites.* Chinstrap penguins breed at neighboring Jaquinot Rocks, Tupinier Island, and Cape Roquemaurel.

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓				✓											

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br				Br			Oc					Oc			

**Recent Census Data**

CHPE
3,400 N3/4, 1987 (W 93)

**Cape Astrup (ASTU)**

**CW region (-64.71, -63.21)**

A bluff on the N end of Wiencke Island.

*Landings.* Easy landing on slightly elevated rocks.

*Site Sensitivities.* The small size of the island makes it difficult to avoid disruption to nesting birds.

*Proximate visitor sites.* Bay Point (BAYP), Useful Island (USEF), O’Neill Point (ONEI), Lautaro Island (LAUT)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Br								

**Avian Island (AVIA)**  
**SW region (-67.77, -68.90)**

This site is an ASPA and off-limits to visitors

Please refer to AVIAN ISLAND MANAGEMENT PLAN in the Appendix

A 0.75-mi-long island, 40 meters high, lying close off the S tip of Adelaide Island, discovered by Charcot's 2<sup>nd</sup> French Antarctic Expedition, 1908-10.

*Landings.* Landings possible via beaches on the northern and eastern coasts as described in the Management Plan for Antarctic Specially Protected Area No. 117.

*Site Sensitivities.* See Management Plan for Antarctic Specially Protected Area No. 117.

*Proximate visitor sites.* Jenny Island (JENN)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br																

**Recent Census Data**

ADPE
35,600 breeding pairs on 11/11/78 (W93, see also the Management Plan for Antarctic Specially Protected Area No. 117)

**Baily Head (BAIL)**

**SH region (-62.97, -60.5)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

In addition, please refer to DECEPTION ISLAND MANAGEMENT PLAN in the Appendix

*Proximate visitor sites.* Other, regular visitor sites at Deception Island are Whaler’s Bay (WHAL), Telefon Bay (TELE), Pendulum Cove (PEND)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br	Oc	Oc	Oc	Oc	Br		Oc	Br	Br	Br	Br	Br	Br	Br	Oc

**Recent Census Data**

CHPE
W 93 reports a 100,000 N4/5 count from 1989, which is also noted in the ASMA No. 4 Management Plan; no precise counts exist, but recent estimates range from 40,000-60,000 nesting pairs



# Baily Head, Deception Island

62°58'S, 60°30'W

Natural amphitheatre with Antarctica's largest colony of Chinstrap penguins.

## Key features

- Chinstrap penguins
- Outstanding scenery

## Caution

- Large swell can make landings extremely hazardous



## Description

### TOPOGRAPHY

Baily Head is a rocky headland exposed to the Bransfield Strait on the south east coast of Deception Island. The site comprises the southern end of a long linear beach which runs along most of the eastern side of Deception Island, and a narrow valley that rises steeply inland to a semi-circular ridgeline, giving the impression of a natural 'amphitheatre'. It is bounded to the north by a large glacier and to the south by the cliffs of Baily Head. A substantial melt-stream runs through the centre of the valley during the austral summer.

### FAUNA

Confirmed breeders: chinstrap penguins (*Pygoscelis antarctica*), brown skuas (*Catharacta antarctica lonnbergi*), cape petrels (*Daption capensis*) and snowy sheathbills (*Chionis alba*). Giant petrels (*Macronectes giganteus*) may also be present at the site.

Regularly haul out: Antarctic fur seal (*Arctocephalus gazella*).

### FLORA

The green alga *Prasiola crispa* is abundant at Baily Head. Four species of lichen, six species of moss and the flowering Antarctic pearlwort (*Colobanthus quitensis*) have also been recorded.

### OTHER

Baily Head comprises part of the Deception Island Antarctic Specially Managed Area No 4.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife, in particular as visitor space is limited. Trampling of vegetation, and trail formation. The Spanish Antarctic Programme plans to establish a monitoring programme to determine the impact of visitation on this colony.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders, and no more than 350 visitors per day. 1 guide per 20 visitors.

No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

Beach immediately in front of penguin colony. Note that the landing beach is susceptible to heavy swell and surf that can make landings impossible much of the time.

### CLOSED AREAS

Closed Area A: the foot of the rock cliffs to avoid falling rock.

Closed Area B: the glacier front to avoid falling ice.

Closed Area C: the upper slopes on the steep southern side of Baily Head to avoid rock and soil disturbance and damage to vegetation.

### GUIDED WALKING AREAS

Visits to the colony should be in small closely supervised groups of no more than 20 visitors which are well spaced with at least one guide per group. Each group should follow the same route. Visitors need to be very closely supervised when passing through the narrow corridor that runs alongside the main melt stream between the colony and the beach. Visitors must remain outside the natural 'boundary' of discrete breeding groups.

### FREE ROAMING AREAS

Visitors may roam freely in the landing beach area between the cliffs and the edge of the penguin highway, taking care not to displace birds and give them the right of way.

\*A ship is defined as a vessel which carries more than 12 passengers.



# Baily Head, Deception Island

62°58'S, 60°30'W



## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way, particularly when walking between the landing site and the colony. Increase this distance if any change in behaviour is observed.

Take care not to displace penguins along the shoreline or impinge on the penguin highway.

Avoid stopping in the narrow passage in the penguin highway where it passes over rocks. Visitors remaining in this area for extended periods may block the passage of foraging penguins.

Beware of, and maintain an appropriate distance from fur seals in this area. In particular, late season landings may be inhibited by large numbers of fur seals hauled out onshore.

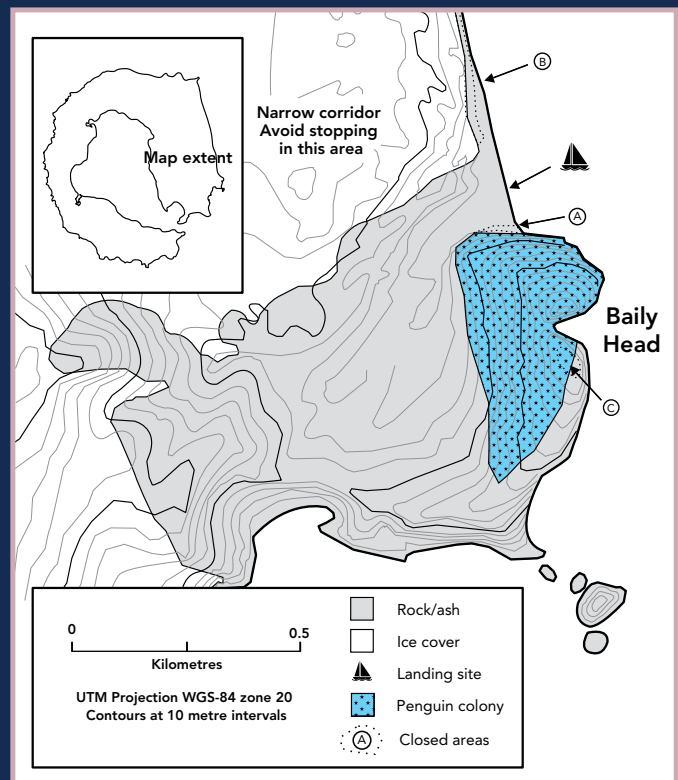
Walk carefully and do not tread on vegetated areas.

Important seismic monitoring or other scientific equipment may be deployed at Baily Head. Such equipment is highly sensitive to disturbance. At least 20 metres must be maintained from scientific equipment, which will usually be marked with a red flag.

Hiking between Baily Head and Whalers Bay is discouraged because of environmental and safety concerns. This south-east area of Deception Island has the largest recorded stand of Antarctic pearlwort (*Colobanthus quitensis*).

### CAUTIONARY NOTES

Large swell and strong winds can make landings and pick up of passengers extremely hazardous. Landings should only be undertaken when safe to do so. Once ashore, remain vigilant to changes in sea state and weather conditions at the landing site and safe return to vessels.



## Bald Head (BALD)

NE region (-63.63, -57.60)

Bare, ice-free headland located 8 mi SW of View Point on S side of the Trinity Peninsula. Probably first seen in 1902-3 by J. Gunnar Andersson's party from Nordenskjöld's Swedish Antarctic Expedition. Charted and named by Falklands Islands Dependencies Survey in 1945.

*Landings.* Easily accessed beach with volcanic rock and shale. Chilean *refugio* nearby. Offers a continental landing and elevated views of Prince Gustav Channel.

*Site Sensitivities.* None.

*Proximate visitor sites.* Jade Point (JADE), Crystal Hill (BRYS), Camp Hill (HILL), Eyrie Bay (EYRI), View Point (VIEW), Eagle Island (EAGL), Vortex Island (VORT)

### Landing Characteristics

#### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓										

### Presence / Absence

No breeding penguins or seabirds recorded.

**Barrientos Island / Aitcho Islands (AITC)**  
**SH region (-62.41, -59.75)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
OC	Br	Br	Oc	Br	Br	Br		Br	Br	Br	Br	Br	Br	Br	Br	Oc

**Recent ASI Census Data**

GEPE	CHPE	SOGP
1,236 C1 11 Jan 2002 1,486 N1 20 Dec 2003 1,998 N1 18 Nov 2005 2,483 C1/2 22 Jan 2006 1,639 N1 20 Dec 2006  Up 39% since N1 count of 1,177 in Dec 1999 (Naveen <i>et al.</i> 2000)	c. 5,500 nests in 2008/09 (ASI, unpublished)  Large interannual variation is seen in the size of this population.	153 C1 12 Dec 2001 156 N1 11 Jan 2002 142 N1 20 Dec 2003 164 N1 10 Jan 2005 143 N1 29 Nov 2005 144 N1 18 Nov 2006  N1 count of 144 is up 33% since N1 count of 108 in 1999





# Barrientos Island (Aitcho Islands)

62°24'S, 59°47'W - North entrance to English Strait  
between Robert and Greenwich Islands

## Key features

- Gentoo and Chinstrap Penguins
- Southern Elephant Seals
- Geological features
- Southern Giant Petrels
- Vegetation



## Description

### TOPOGRAPHY

This 1.5km island's north coast is dominated by steep cliffs, reaching a height of approximately 70 metres, with a gentle slope down to the south coast. The eastern and western ends of the island are black sand and cobbled beaches. Columnar basalt outcrops are a notable feature of the western end.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*), chinstrap penguins (*Pygoscelis antarctica*), southern giant petrels (*Macronectes giganteus*), kelp gulls (*Larus dominicanus*), and skuas (*Catharacta* spp.).

Suspected breeders: Blue-eyed shags (*Phalacrocorax atriceps*) and Wilson's storm-petrels (*Oceanites oceanicus*).

Regularly haul out: Weddell seals (*Leptonychotes weddellii*), southern elephant seals (*Mirounga leonina*), and from late December, Antarctic fur seals (*Arctocephalus gazella*).

### FLORA

The entire centre of the island is covered by a very extensive moss carpet. Lichens *Xanthoria* spp., *Caloplaca* spp. and other crustose lichen species are present. The green alga *Prasiola crispa* is widespread.

## Visitor Impact

### KNOWN IMPACTS

The erosion of multiple footpaths through vegetation between the eastern and western ends of the island.

### POTENTIAL IMPACTS

Further damage to the vegetation and disturbance of wildlife, particularly southern giant petrels.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time. Maximum 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

*Primary:* eastern end of the island; landing either on the sand beach to the north, or on the cobbled southern beach.

*Secondary:* northern shore of the western end of the island, with easiest access at high water.

### CLOSED AREAS

*Closed Area A:* Monitoring sites for chinstrap penguins above and southeast of the eastern landing area.

*Closed Area B:* Central part of the island covered by a very extensive moss carpet (with the exception of the designated walking route) and the northern cliffs where southern giant petrels nest.

*Closed Area C:* Knoll on the southwestern tip of the island where southern giant petrels nest.

### GUIDED WALKING AREAS

Only walk through Closed Area B if you can clearly recognise the designated route, which runs over the rocks along the shoreline at the eastern end, and along a narrow gravel stream bed through the vegetation. This route should only be used by closely guided groups of no more than 10 visitors. Only one group should follow the stream bed at a time, taking extreme care not to trample the edges of the vegetation.

### FREE ROAMING AREAS

Visitors can roam freely, but under supervision, anywhere except the closed or guided walking areas.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Barrientos Island (Aitcho Islands)

62°24'S, 59°47'W - North entrance to English Strait between Robert and Greenwich Islands

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed. When on the same level as, or higher than, nesting southern giant petrels maintain a precautionary distance of at least 50 metres. Increase this distance if any change in the birds' behaviour is observed. Be careful near Antarctic fur seals, they may be aggressive. Do not walk on any vegetation.

### CAUTIONARY NOTES

Stay clear of cliffs and vertical walls and stacks as these are prone to rock falls and slides.



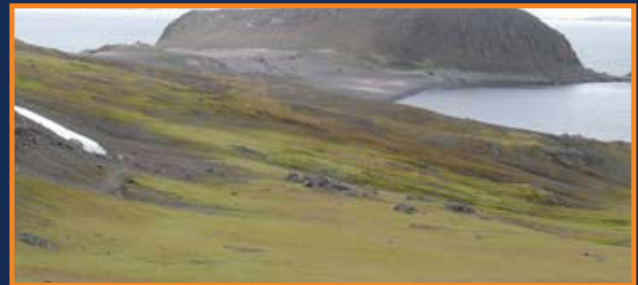
Barrientos Island western landing area



Barrientos Island eastern landing area

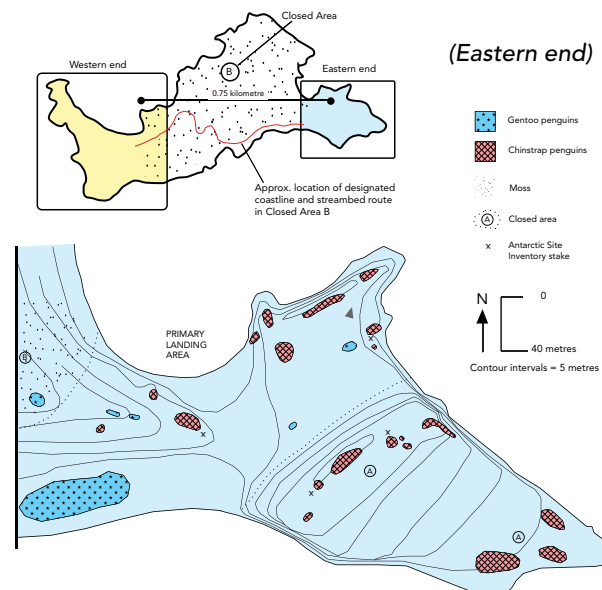
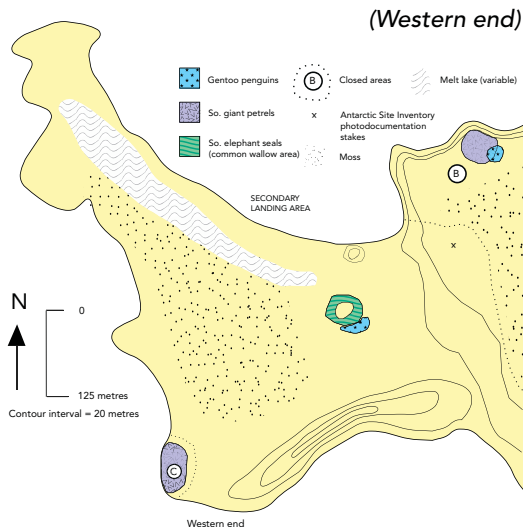


Only walk through Closed Area B if you can clearly recognise the route



The centre of Barrientos Island is covered by a very extensive moss carpet

## BARRIERITOS ISLAND



## Bay Point (BAYP)

CW region (-64.77, -63.33)

*Description.* This bay marks the E side of the entrance to Børgen Bay on the SE coast of Anvers Island, in the Palmer Archipelago.

*Landings.* Easy landing on slightly elevated rocks.

*Site Sensitivities.* The small size of the island makes it difficult to avoid disruption to nesting birds.

*Proximate visitor sites.* Cape Astrup (ASTU) to the N, Port Lockroy (LOCK), Jouglu Point (JOUG), Dorian Bay/Damoy Point (DAMO), and Dorian Bay Beacon (DOBE) to the S

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Br								

### Recent ASI Census Data

BESH
c. 10 nests in 2010/11 (ASI, unpublished)

## Cape Belsham (BELS)

EI region (-61.08, -54.88)

A prominent cape lying 0.5 mi W of Point Wild on the N coast of Elephant Island.

*Landings.* This is a very difficult landing due to the rocky beach and frequent swell.

*Site Sensitivities.* Chinstrap penguins nesting on rocky coastline may be easily disturbed.

*Proximate visitor sites.* Point Wild (WILD), Cape Valentine (VALE), Cape Lookout (LOOK)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓			✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br		Br	Oc		Br		Oc	Br		Br	Oc	Oc			

### Recent Census Data

MCPE	CHPE
100 N5 1970/71 (C&K 79)  The existence of breeding MCPE at this site has not been confirmed since 2005/06.	The chinstrap population at Cape Belsham is large but unestimated

**Beneden Head (BENE)**  
**CW region (-64.77, -62.70)**

A steep-sided headland forming the N side of the entrance to Andvord Bay, on the W coast of Graham Land.

*Landings.* Beneden Head is composed of three distinct penguin colonies located on steep rocky outcrops. Most of the accessible areas are covered in penguins so visitation is likely to cause disruption to breeding penguins. Although landing is possible, there is very little area for visitors to walk and colonies are best visited by zodiac.

*Site Sensitivities.* Penguin colonies are subject to disturbance by any landing at this site.

*Proximate visitor sites.* Georges Point (GEOR), Cuverville Island (CUVE), and Danco Island (DANC)

**Landing Characteristics**

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓	✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		BR		OC				Br	Br	Br	Br		Br	Br	Br	

**Recent ASI Census Data**

GEPE	BESH	
640 N3 13 Dec 2006	20 N3 22 Nov 2006	
No change since C1/3 count of 500 in 1986 (W 93)		

**Bernardo O'Higgins Station (BERN)**  
**NW region (-63.32, -57.9)**

**ADVANCE NOTICE must be given before visiting the station**

Site of Chilean research station near Cape Legoupil.

*Landings.* Easy landing on the station jetty.

*Site Sensitivities.* None.

*Proximate visitor sites.* None.

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
				✓														

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br												Oc		

**Berthelot Islands (BERT)**  
**CW region (-65.33, -64.15)**

Green Island is an ASPA and off-limits to visitors

Please refer to the GREEN ISLAND MANAGEMENT PLAN in the Appendix

A group of rocky islands lying 1.5 mi SW of Deliverance Point, off the W coast of Graham Land. Discovered by the Charcot's 1st French Antarctic Expedition (1903-05). Green Island in this group is an Antarctic Specially Protected Area and off-limits to visitors.

*Landings.* Ideal for zodiac cruising.

*Site Sensitivities.* Moss banks and Antarctic hair grass (*Deschampsia antarctica*).

*Proximate visitor sites.* Akademik Vernadsky station (VERN), Yalour Islands (YALO)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓				

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br										Br	Oc				Br	

**Recent ASI Census Data**

ADPE	BESH
402 N1 25 Dec 2006 548 C1 16 Jan 2007  N1 count of 402 is down 69% since N1 count of 1,300 in 1982 (W 93)	96 N1 25 Dec 2006

**Biscoe Point (BISC)**  
**CW region (-64.82, -63.82)**

This site is an ASPA and off-limits to visitors

Please refer to the BISCOE POINT MANAGEMENT PLAN in the Appendix

Biscoe Point on Anvers Island, Palmer Archipelago, Antarctic Peninsula, was originally designated as a Site of Special Scientific Interest and, now, has been designated as Antarctic Specially Protected Area No. 139. Biscoe Point is not visited by cruise ships. Antarctic Site Inventory researchers were permitted to visit the site in December 2010. Additional data from this site are derived from the Management Plan for ASPA No. 139.

*Site sensitivities.* Nesting penguins and seabirds are easily approached and disturbed. There is a large but discontinuous stand of the two native vascular plants, Antarctic hair grass (*Deschampsia antarctica*) and, less commonly, Antarctic pearlwort (*Colobanthus quitensis*). A relatively well developed loam occurs beneath closed swards of the grass and contains a rich biota, including the apterous midge *Belgica antarctica*. Long-term research programs could be jeopardized by interference from nearby Palmer Station and from tourist ships.

*Proximate visitor sites.* Torgersen Island (TORG), Py Point (PYPT)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br		Br								Br	Br	Br		Br	Br	Oc

**Recent ASI Census Data**

ADPE	GEPE
c. 500 nests in 2010/11 (ASI, unpublished)	c. 2,500 nests in 2010/11 (ASI, unpublished)
Per the ASPA No. 139 Management Plan, the Adélie population was 3,020 N3 in 1971-72 ,1,801 N1 in 1996-97, 1,025 N1 in 2002-03, and continues to decline.	Per the ASPA No. 139 Management Plan, gentoos bred for the first time in 1994-95 (14 N1) and the nesting population has continued to increase.



**Blaicklock Island (BLAI)**  
**SW region (-67.55, -67.07)**

High and irregularly shaped, 9-mi-long island, lying between Bigourdan and Bourgeois Flords. Separated from Pourquoi-pas Island by The Narrows and from Graham Land by Jones Channel.

*Landings.* Fine and very long shingle beach on W side of island. Old British hut on N end.

*Site Sensitivities.* South polar skuas defend territories fiercely, and these should be avoided. Watch footsteps carefully, to avoid trampling extensive beds of moss and patches of the grass *Deschampsia antarctica*.

*Proximate visitor sites.* Pourquoi-pas Island (POUR), Stonington Island (STON)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓										

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Oc				Br				

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2000/01 (ASI, unpublished).

## Booth Island (BOOT)

CW region (-65.08, -64.00)

Booth is Y-shaped, 5-mi-long island rising to an elevation of 980 meters that was discovered by Dallman's German Expedition of 1873-74, and where Jean-Baptiste Charcot and the 1<sup>st</sup> French Antarctic Expedition, aboard the schooner *Français*, spent the winter of 1904. The remnants of a well-constructed stone magnetic hut and other artifacts from Charcot's expedition may be observed. Port Charcot is the bay indenting the N shore of the island. One of the six Peninsula sites where all three *pygoscelid* penguins nest contiguously.

*Landings.* Ice-free conditions enable landings on the rocky beach along the S-SW end of the island, N of Pléneau Island.

*Site sensitivities.* Penguins, skuas, and shags are easily approached and disturbed. To avoid disruptions, walk slowly and carefully around nesting, crèching, or molting penguins; avoid and stay clear of skua territories; and avoid close approaches to the blue-eyed shags, which nest on the Port Charcot cliff edges. Artifacts should not be disturbed or removed.

*Proximate visitor sites.* Pléneau Island (PLEN), Petermann Island (PETE).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓	✓		✓		✓	✓	✓	✓	✓	✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Br	Br	Oc	Oc			Oc	Br	Br	Br	Oc	Br	Br	Br	Br	Oc

### Recent ASI Census Data

ADPE	CHPE	GEPE	BESH
18 N1 14 Jan 2001 34 N1 24 Dec 2001 17 N1 4 Jan 2006 23 C1 26 Jan 2006  Down >95% from historic estimate of >1,208 (A5, C1, C3, B) in 1903-9 (W 93)	17 C1 24 Jan 2001 24 N1 24 Dec 2001 9 N1 4 Jan 2006 12 C1 26 Jan 2006 13 C1 15 Feb 2007  Generally up since C1 count of 3 in 1983 and N1 count of 3 in 1990 (W 93)	1,200 N3 13 Jan 2001 1,151 N1/N3 4 Jan 2006  N3 count of 1,200 is up 300% since N1 count of 400 in 1983 (W 93)	c. 25 breeding pairs (ASI, unpublished)



**Brown Bluff (BROW)**  
**NE region (-63.53, -56.92)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br		Br		Oc	Oc	Br	Br	Br	Br	Br	Br	Br	Br	Br	Br	Oc

**Recent ASI Census Data**

GEPE	ADPE
756 N1 11 Dec 2000 511 C1 9 Jan 2001 450 N1 11 Dec 2001 409 C1 24 Jan 2002 490 N1 31 Dec 2002 764 C1 10 Jan 2003 200 N1 29 Nov 2003 370 N1 24 Dec 2004 589 C1 11 Jan 2005 247 N1 22 Dec 2005 118 C1 13 Jan 2006 444 N1 19 Nov 2006  N1 count of 444 is down 28% from N1 count of 617 in 1999 (Naveen <i>et al.</i> 2000)	The number of ADPE breeding on BROW is large (at least, and probably much more than, 20,000 breeding pairs)



# Brown Bluff

63°32'S, 56°55'W - East coast of Tabarin Peninsula on the south-western coast of Antarctic Sound.

## Key features

- Adélie and gentoo penguins
- Geological features
- Continental landing



## Description

### TOPOGRAPHY

1.5km long cobble and ash beach rising increasingly steeply towards towering red-brown tuff cliffs which are embedded with volcanic bombs. The cliffs are heavily eroded, resulting in loose scree and rock falls on higher slopes and large, wind eroded boulders on the beach. At high water the beach area can be restricted. Permanent ice and tidewater glaciers surround the site to the north and south occasionally filling the beach with brash ice.

### FAUNA

Confirmed breeders: gentoo penguin (*Pygoscelis papua*), Adélie penguin (*Pygoscelis adeliae*), pintado petrel (*Daption capense*), snow petrel (*Pagodroma nivea*), skua (*Catharacta*, spp.) and kelp gull (*Larus dominicanus*). Suspected breeders: southern giant petrel (*Macronectes giganteus*) southern fulmar (*Fulmarus glacialisoides*) and Wilson's storm-petrel (*Oceanites oceanicus*). Regularly haul out: Weddell seals (*Leptonychotes weddellii*). Leopard seals (*Hydrurga leptonyx*) often hunt offshore.

### FLORA

*Xanthoria*, spp. and *Caloplaca*, spp. observed on exposed boulders from shoreline to an elevation of 185m. Some moss, spp. exposed at higher elevations near glacial drainage.

### OTHER

Hazardous rocks and reefs lie immediately off shore.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife, especially kelp gulls.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers. One ship at a time. Maximum 3 ships per day (midnight to midnight), of which no more than 1 may be a vessel carrying more than 200 passengers.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

*Primary:* The southern end of the beach to the east of the three large boulders at the northern end of the snow slope - protected by two reefs.

### CLOSED AREAS

*Closed Area A:* Kelp gull colony in the boulder area behind the landing beach, extending from the three large boulders up the small gully running south-southeast behind the moraine ridge.  
*Closed Area B:* Area of densely packed breeding Adélie penguins at north end of beach.

### GUIDED WALKING AREAS

Elevated areas behind the landing beach:  
Visits to the snow petrel nests on the slopes behind the penguin rookeries should be done in closely guided groups with a ratio of 1 guide to 12 passengers – where the guide knows the location of the nests in advance. Care should be taken not to disturb loose rocks. Groups visiting the moraine ridge along the edge of the snow slope to the east of the landing beach should be closely guided to avoid disturbance to skua nests up on the high ground.

### FREE ROAMING AREAS

Visitors may roam freely along the main flat beach area between landing site to the south and the closed areas.

Note: the littoral zone up to the high tide mark is often used as an access route by Adélie penguins.

Visitors should be kept above the high water mark.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Brown Bluff

63°32'S, 56°55'W - East coast of Tabarin Peninsula on the south-western coast of Antarctic Sound.



Aerial view of Brown Bluff

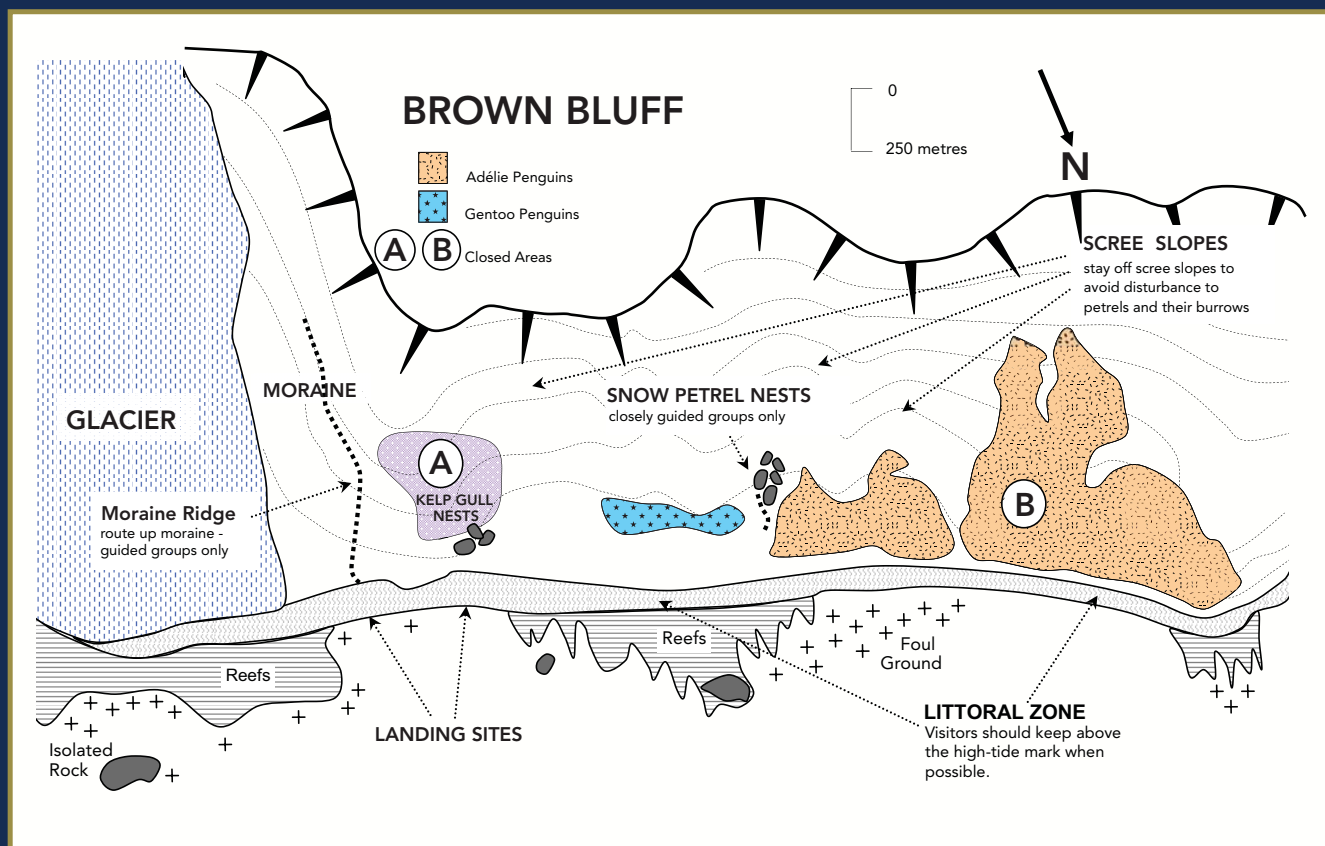
## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed. Take care not to disturb kelp gull nesting sites. Be careful around Antarctic fur seals, they may be aggressive. Take care not to displace penguins along the shoreline. Keep visitors above the high tide mark and at high water be aware it may be necessary to have visitors walk in small groups escorted by staff.

### CAUTIONARY NOTES

Strong and katabatic winds are a feature of this area, and pack and brash ice are frequently blown onto the beach area. Rock falls occur from the cliffs and steeper scree slopes. The primary landing beach may be crowded with wildlife. Landing beach is prone to swells from the north and the north-east.



## Brown Station Vicinity (ALMI)

### CW region (-64.88, -62.87)

This is the site of an burnt-out Argentine station in Paradise Bay, located on a point of land with steep sea-cliffs at least 100 meters high on one side (adjacent to Paradise Bay) and the sheer face of a tide-water glacier on the other side, to the E. There are gentoo penguin nests on the bedrock below the ruins of the main, derelict station building. The base is located on the Antarctic mainland and gives tourists an opportunity to set foot on the continent itself.

*Landings.* This is a favored location for zodiac tours into Paradise Bay, which is often full of ice with seals resting thereon. On the nearby cliffs overlooking the bay to the S of the station, blue-eyed shags can be easily viewed by zodiac. The only possible shore landing is at the station itself where space to walk is limited. Be advised that snow cover can mask metal oil drums and other station artifacts to produce hazardous walking conditions.

*Site Sensitivities.* Moss becomes exposed on the slopes and cliffs above the station as the summer progresses, as well as on the cliffs within and above the shag colonies S of the station. Crustose lichens *Xanthoria*, spp. and *Caloplaca*, spp. have been noted on the shag cliffs. The 30-50 meter slope behind the station is often snow-covered; hikes upward for spectacular views of Paradise Bay should be undertaken with care.

*Proximate visitor sites.* Bryde Island (BRYD), Gonzalez Videla [Chilean Station], Waterboat Point (WATE)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br			Oc	Br		Br	Br	Br	Oc	Oc	Br	Br	Br	

### Recent ASI Census Data

GEPE	BESH
111 N1 16 Jan 2006 121 C1 6 Feb 2006 128 N1 19 Nov 2006	45 N1 13 Dec 2001 63 N1 11 Dec 2002 114 C1 25 Jan 2003 73 N1 2 Dec 2003 78 N1 14 Dec 2004 104 C1 14 Jan 2005 71 N1 2 Dec 2005 75 N1 22 Nov 2006  N1 count of 75 is up 53% since N1 count of 49 in 2000 (Naveen <i>et al.</i> 2000); after declining for several years in the 1990s (Naveen <i>et al.</i> 2000); the N1 count of 45 in 2001 was the lowest point for this population and, since, has been generally increasing

## Bryde Island Vicinity (BRYC / BRYE / BRYs)

CW region (3 ASI census sites at: -64.87, -63.03; -64.88, -62.95; and -64.90, -62.95)

A 6-mi-long and 3-mi-wide island, lying immediately SW of Lemaire Island, off the W coast of Graham Land, on the W side of Paradise Bay.

*Landings.* BRYE is a very difficult landing with many shallow rocks around the beach. Nearby glaciers are very active with frequent calvings on warm days. BRYs is an easier landing with flat beaches, although at low tide these areas may be too shallow.

*Site Sensitivities.* All of the potential landing sites have very little space for walking, so disruption to breeding gentoos is likely.

*Proximate visitor sites.* Almirante Brown (ALMI) and Waterboat Point (WATE)

### Antarctic Site Inventory Effort

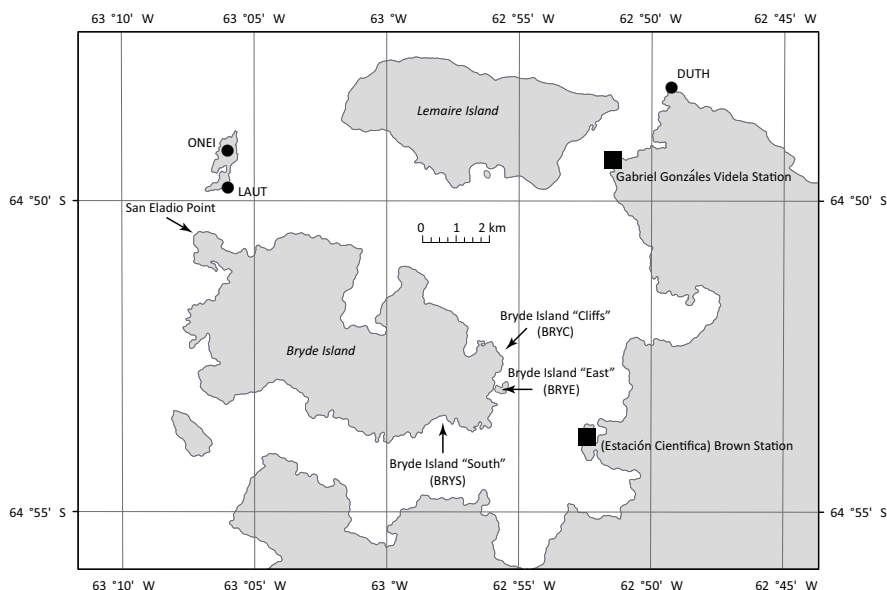
92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓	✓		✓		✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRsk	SKsp	WISP	KEGU	ANTE	ELPH
		Br						Oc	Oc	Oc	Oc	Br	Oc	Br	Br	Oc

### Recent ASI Census Data

GEPE
EAST: 486 N1/2 24 Dec 2006 small island off the coast, up 103% since N1 count of 240 in 1986 (W 93)
SOUTH: 818 N1 24 Dec 2006 possibly up from C1 count of 500 in 1987 (W 93)





## Cape Burd (BURD)

NE region (-63.65, -57.15)

Low rock cliff forming the SW extremity of the Tabarin Peninsula at the NE end of the Antarctic Peninsula.

*Landings.* Landing onto barren, rocky shore of volcanic ash mixed with pyroclasts of many sizes. Continental landing on the Tabarin Peninsula.

*Site Sensitivities.* None.

*Proximate visitor sites.* Jade Point (JADE), Crystal Hill (CRYS), Bald Head (BALD), Camp Hill (HILL), View Point (VIEW), Devil Island (DEVI), False Island Point (FALS)

### Landing Characteristics

#### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓										

#### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Oc		Oc								Oc				

#### Recent ASI Census Data

No penguins were breeding here as of the last census in 2000/01 (ASI, unpublished).

**Camp Hill (HILL)**

**NE region (-63.68, -57.87)**

Small, ice-free hill, 120 meters in elevation, located 2 mi E of Church Point on S side of the Trinity Peninsula.

*Landings.* Broad landing beach below this ice-free hill. All access inland is uphill, and often steep.

*Site Sensitivities.* None.

*Proximate visitor sites.* Jade Point (JADE), Crystal Hill (CRYS), Bald Head (BALD), View Point (VIEW), Cape Burd (BURD), Devil (DEVI) Island, False Island Point (FALS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓	✓								

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
										Oc		Oc		Oc	SBr	

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2002/03 (ASI, unpublished).

## Cecilia Island (CECI)

SH region (-62.42, -59.72)

The southernmost of the Aitcho Islands, lying in English Strait in the South Shetland Islands.

*Landings.* Easy landing possible on several cobblestone beaches.

*Site Sensitivities.* Avoid Southern Giant Petrels nesting on ridges near beach landings.

*Proximate visitor sites.* Barrientos Island (AITC); on Robert Island: Mitchell Cove (MITC) and Robert Point (ROBE)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓					

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
				Br				Oc		Br	Br		Br	Br	Br	

### Recent ASI Census Data

CHPE	SOGP
0 N1 7 Dec 2010  There are no longer any penguins breeding on CECI (ASI, unpublished), whereas in 1966 there had been 3500 CHPE nests (N4; W93)	c. 60 7 Dec 2010 (ASI, unpublished)

**Charles Point (CHPT)**  
**CW region (-64.22, -61.00)**

*Description.* This point forms the N side of the entrance to Brialmont Cove, on the W coast of Graham Land.

*Landings.* Easy landing on a cobblestone beach.

*Site Sensitivities.* None.

*Proximate visitor sites.* Alcock Island (ALCO), Cierva Point Vicinity (CIER), Sprightly Islands Vicinity (SPRI)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br						Br								

**Recent ASI Census Data**

CHPE	GEPE	BESH
c. 10 nests in 2010/11 (ASI, unpublished)	c. 750 nests in 2010/11 (ASI, unpublished)	c. 30 nests in 2010/11 (ASI, unpublished)

**Cierva Point Vicinity (CIER)  
CW region (-64.15, -60.97)**

This site is an ASPA and off-limits to visitors;

Please refer to the CIERVA POINT MANAGEMENT PLAN in the Appendix

A cove lying 6 mi SE of Cape Sterneck in Hughes Bay, along the W coast of Graham Land (USBGN). The site is designated as ASPA No. 134 and off limits to visitors. There are four ASI census locations in the vicinity: Sterneck Island East, Sterneck Island West, Midas Island East, and Midas Island Saddle. The Argentine Primavera Base is located on the slopes above Cierva Cove.

*Proximate visitor sites.* Charles Point (CHPT), Alcock Island (ALCO), Sprightly Islands (SPRI)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br				Br		Oc	Br	Br		Br		Br	Oc	

**Recent ASI Census Data**

GEPE, CHPE
There are c. 4,000 gentoos and c. 700 chinstraps at the four ASI sites listed above

**Cockburn Island (COCK)**  
**NE region (-64.20, -56.85)**

A circular island, 1 mi in diameter, consisting of a high plateau with steep slopes, lying in the NE entrance to Admiralty Sound.

*Landings.* This site has only been surveyed by ship, so possible landing sites have not been assessed.

*Site Sensitivities.* None.

*Proximate visitor sites.* On Seymour Island: Marambio Station (MARA) and Penguin Point (PEPO)

**Landing Characteristics**

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓				

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Y	Y	Y	Y	Y	Y	Y	Br								

**Recent ASI Census Data**

BESH
800 N5 19 Nov 2006

## Crystal Hill (CRYS)

NE region (-63.65, -57.73)

Ice-free hill, 150 meters in elevation, forming the summit of a headland between Bald Head and Camp Hill on the S side of the Trinity Peninsula. Named because crystals were collected at the foot of the hill by Falklands Island Dependencies Survey researchers.

*Landings.* Broad landing beach below this ice-free hill. All access inland is uphill, and often steep.

*Site Sensitivities.* None.

*Proximate visitor sites.* Jade Point (JADE), Camp Hill (HILL), Bald Head (BALD), View Point (VIEW), Cape Burd (BURD), Devil Island (DEVI), and False Island Point (FALS)

### Landing Characteristics

#### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓					

#### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc										Br				Br	Oc	

#### Recent ASI Census Data

No penguins were breeding here as of the last census in 2005/06 (ASI, unpublished).

**Cuverville Island (CUVE)**  
**CW region (-64.68, -62.63)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br		Oc	Oc	Oc	Oc	Br	Br	Br	Br	Br	Br	Br	Br	Oc

**Recent ASI Census Data**

GEPE	BESH
<p>c. 6500 nests in 2009/10 (ASI, unpublished)</p> <p>Population is variable but most recent estimates of breeding population up 35% since N1 count of 4,818 in 1994 (W&amp;C 97)</p>	<p>13 N1 23 Jan 2001</p> <p>33 C1 23 Jan 2001</p> <p>12 N1 13 Dec 2001</p> <p>28 N1 2 Jan 2003</p> <p>40 C1 14 Feb 2003</p> <p>26 N1 21 Dec 2003</p> <p>21 N1 13 Dec 2004</p> <p>30 C1 14 Jan 2005</p> <p>23 N1 26 Dec 2005</p> <p>29 N1 22 Nov 2006</p> <p>N1 count of 29 in Nov 2006 is up 141% from N1 count of 12 in Dec 2001</p>





# Cuverville Island

64°41'S, 62°38'W - North Errera Channel

## Key features

- Extensive colony of gentoo penguins in the Antarctic Peninsula
- Glacial and ice scenery



## Description

### TOPOGRAPHY

This 2km by 2.5km island is a steep-sided dome, two-thirds of which is covered by a permanent ice-cap. The northern shore is a beach of cobbles and boulders, approx 1.5km long, backed by steep vegetation-covered cliffs toward the east and gentler slopes to the west.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*), kelp gulls (*Larus dominicanus*), Antarctic terns (*Sterna vittata*), snowy sheathbills (*Chionis alba*), blue-eyed shags (*Phalacrocorax atriceps*), Wilson's storm-petrels (*Oceanites oceanicus*), skuas (*Catharacta* spp.), snow petrels (*Pagodroma nivea*), pintado petrels (*Daption capense*).

Weddell seals (*Leptonychotes weddellii*) and Antarctic fur seals (*Arctocephalus gazella*) regularly haul out. Leopard seals (*Hydrurga leptonyx*) often hunt near-shore.

### FLORA

*Deschampsia antarctica*, *Colobanthus quitensis*; swards of moss species; and lichen species including *Xanthoria* spp., *Buellia* spp., *Caloplaca* spp., *Usnea* spp.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife and trampling of vegetation.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers. One ship at a time. No more than 3 ships carrying more than 200 passengers per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time), except for those engaged in organised overnight stays. This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

Primary: The wide cobble beach on the northern end of the island. Avoid landing in the immediate vicinity of the gentoo colonies on the western end.

Note: The small beaches on the eastern end of the site should not be used for landing, as they provide major access routes to the sea for penguins.

### CLOSED AREAS

Closed Area A: Small beaches where gentoo penguins access the sea.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely, but under supervision, except in the closed areas. Visitors should always remain within the sight of guides.

Note: the eastern end of the island contains the same wildlife (gentoo penguins) as the west, but has less room for visitors, and a higher likelihood of disrupting routes to and from the sea. Therefore, guides should discourage visits to the eastern end.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Cuverville Island

64°41'S, 62°38'W - North Errera Channel

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed. Be careful near Antarctic fur seals and skuas, they may be aggressive. Do not walk on any vegetation.



### CAUTIONARY NOTES

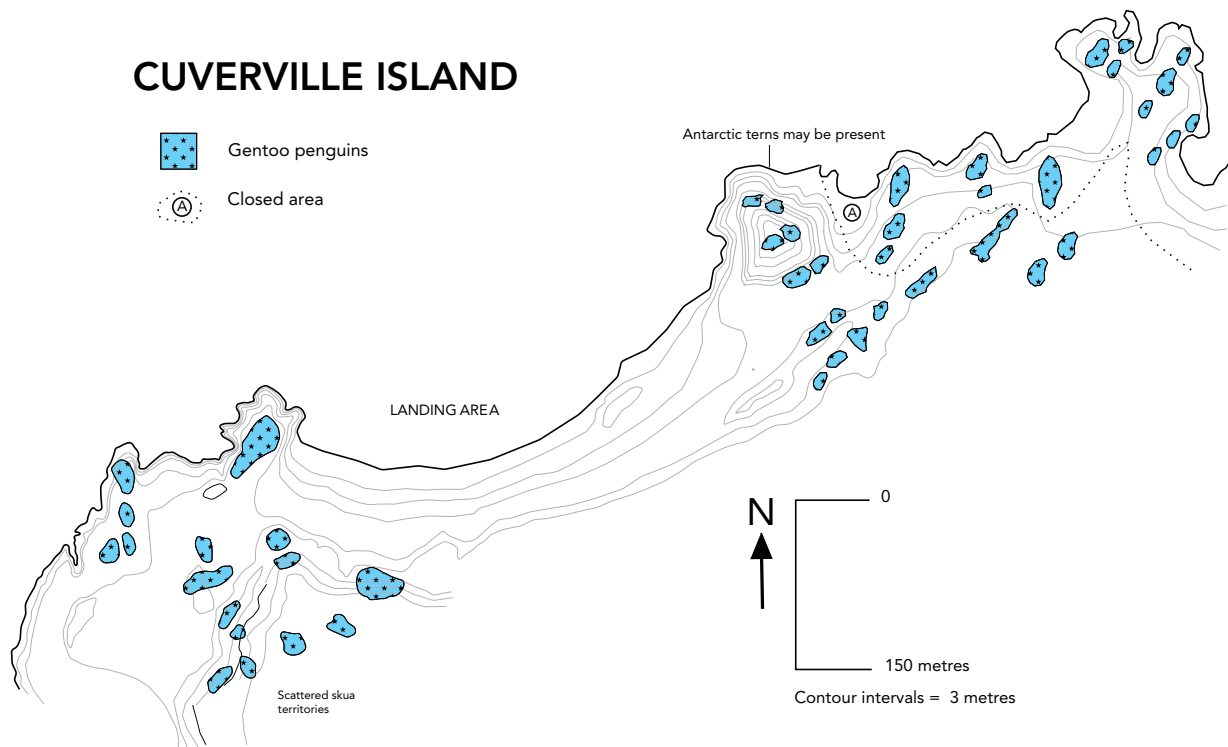
In the late season (moult time), the density of penguins will probably confine visits to the immediate vicinity of the landing beach.



Cuverville Island landing beach

## CUVERVILLE ISLAND

-  Gentoo penguins
-  Closed area



## d'Urville Monument (DURV)

NE region (-63.42, -56.30)

A conspicuous conical summit of 575 meters, at the SW end of Joinville Island, off the NE end of the Antarctic Peninsula. It was discovered by the British expedition led by Ross, 1839-43, and named by Ross for Capt. Jacques Dumont D'Urville, the French explorer who led his own Antarctic expedition (1837-40), and who first discovered land in the Joinville Island group.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* On Joinville Island: Madder Cliffs (MADD) and Tay Head (TAYH), Paulet Island (PAUL) is located on the southeast side of Dundee Island.

### Landing Characteristics

An alternative and very rarely visited site in the NE Peninsula region. The monument faces toward Petrel Cove on Dundee Island. The site involves steep hiking. Offshore rocks and islets also appear to have breeding penguins.

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓										✓					

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Br						Oc	Br			Br		Br	Br	

### Recent ASI Census Data

ADPE	GEPE
10,000 N4 24 Jan 2006	671 C1/2 24 Jan 2006

**Danco Island (DANC)**  
**CW region (-64.73, -62.62)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
							✓		✓					✓	✓	✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc		Br						Oc	Br	Oc		Br	Oc	Br	Oc	

**Recent ASI Census Data**

GEPE
2,506 N1 8 Dec 2006
No change since N2 count of 2,300 in Nov 1999 (Naveen <i>et al.</i> 2000)



# Danco Island, Errera Channel

64°44'S, 62°37'W

## Key features

- Gentoo penguin colony
- Glacial scenery



## Description

<b>TOPOGRAPHY</b>	Danco Island is a one mile long island in the southern part of the Errera Channel. Its north shore is characterised by a wide flat cobbled beach with a long snow-free slope behind it which rises up to the island's ice-covered summit. Permanent ice dominates the top and south side of the island.
<b>FAUNA</b>	Confirmed breeders: Gentoo penguins ( <i>Pygoscelis papua</i> ), snowy sheathbills ( <i>Chionis alba</i> ). Unconfirmed breeders include: Dominican gulls ( <i>Larus dominicanus</i> ), Subantarctic skuas ( <i>Catharacta skua</i> ), Antarctic terns ( <i>Sterna vittata</i> ) and blue-eyed shags ( <i>Phalacrocorax atriceps</i> ). Weddell seals ( <i>Leptonychotes weddellii</i> ) frequently haul out and crabeater seals ( <i>Lobodon carcinophagus</i> ) are regularly sighted in the vicinity.
<b>FLORA</b>	Snow algae may be extensive in late summer. Two species of moss have been recorded on the island, and lichen may be present.
<b>OTHER</b>	Previously the site of Base 'O' (UK) which was occupied from Feb 1956 to Feb 1959. Subsequently abandoned, the hut was demolished and cleaned up in March-April 2004 but concrete foundation blocks remain.

## Visitor Impact

<b>KNOWN IMPACTS</b>	None known.
<b>POTENTIAL IMPACTS</b>	Disturbance of wildlife.

## Landing Requirements

<b>SHIPS*</b>	Ships* carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 3 ships per day (midnight to midnight), of which no more than 2 can carry over 200 passengers.
<b>VISITORS</b>	No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders.

## Visitor Area

<b>LANDING AREA</b>	The preferred landing site is on the western end of the north shore, near the site of the former British base.
<b>CLOSED AREAS</b>	None but the permanent ice slopes are crevassed and dangerous, particularly to the south of the island's peak.
<b>GUIDED WALKING AREAS</b>	None.
<b>FREE ROAMING AREAS</b>	Visitors may roam freely under close supervision.

## Visitor code of conduct

<b>BEHAVIOUR ASHORE</b>	Walk slowly and carefully around the penguin colony. Give animals the right-of-way and maintain a precautionary minimum distance of 5m from wildlife. Increase this distance if any change in behaviour is observed.
	Avoid walking in the deep snow pathways created by penguins.
<b>CAUTIONARY NOTES</b>	Boat drivers should be aware of shallow, rocky approaches to the landing beach. The permanent ice slopes are crevassed and dangerous, particularly to the south of the island's peak. They should only be accessed by those with suitable alpine experience and training and using suitable equipment (eg, roped access). Beware of wash from calving icebergs in beach area, particularly on the beach to the south of the site of the former Base 'O'.

\*A ship is defined as a vessel which carries more than 12 passengers.





# Danco Island, Errera Channel

64°44'S, 62°37'W



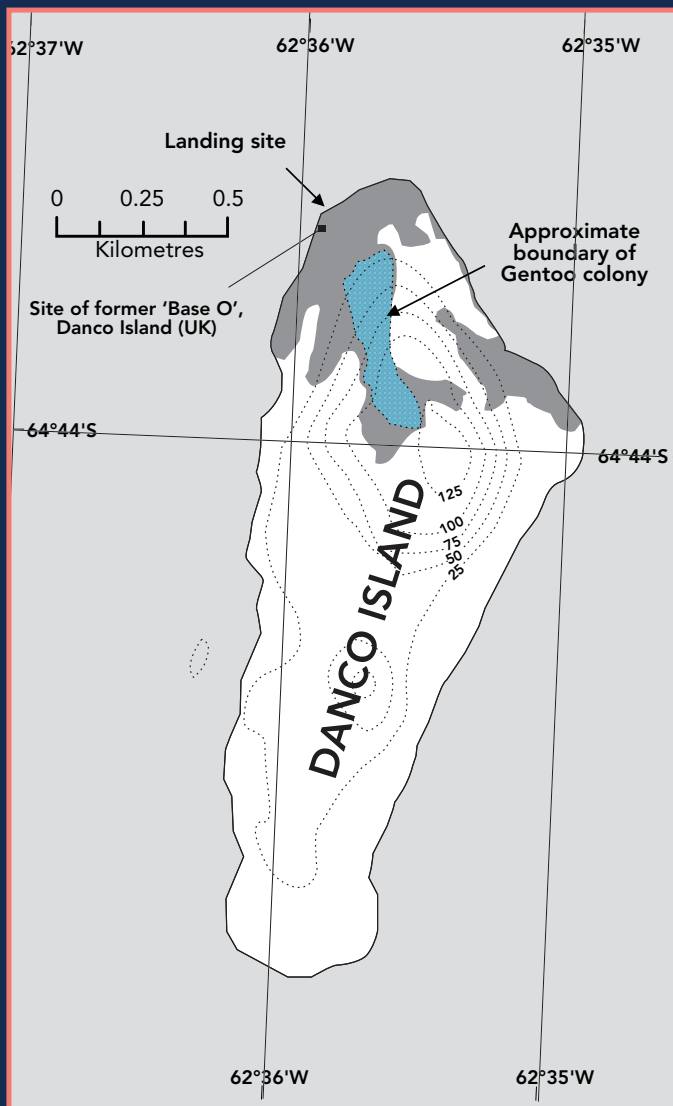
Landing site, be aware of shallow rocky areas off the beach.



The site of the former British base is marked with concrete foundation blocks.



Exposed rock is located at the island's peak.  
The ice slopes to the south are crevassed and can be dangerous.



## Delaite Island (DELA)

CW region (-64.55, -62.18)

One-mi-long island lying 3 mi NE of Emma Island in the north-central portion of Wilhelmina Bay (USBGN).

*Landings.* Easy landing on rocky ledges.

*Site Sensitivities.* None.

*Proximate visitor sites.* Foyen Hrbor (FOYN), Gouvernøren Harbor (GOUV), Enterprise Island (ENTE)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br							Br								

### Recent ASI Census Data

CHPE	BESH
c. 100 nests in 2010/11 (ASI, unpublished)	c. 100 nests in 2010/11 (ASI, unpublished)

**Detaille Island (DETA)**  
**SW region (-66.87, -66.80)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
										✓	✓				✓	✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Br					Oc	Br		Br		Br		Br	Br	

**Recent ASI Census Data**

ADPE	BESH
925 C3 13 Jan 2003  No change between C3 count of 925 and C1 count of 900 in 1986 (W 93)	3 C1 13 Jan 2003 3 N1 3 Jan 2004



# Detaille Island

66°52'S, 66°48'W



## Key features

- Historic British Base 'W', Detaille Island



## Description

<b>TOPOGRAPHY</b>	Detaille is a small island set in the Lallemand Fjord off the Loubet coast. The ground is predominantly rocky with areas of gravel.
<b>FAUNA</b>	There are no records of any breeding fauna on Detaille Island.
<b>FLORA</b>	In the absence of any detailed floristic survey, only one species of lichen has been recorded at Detaille Island.
<b>OTHER</b>	Base 'W' is designated as Historic Site and Monument No. 83. It is sited at the northern end of the island. It is noteworthy as a relatively unaltered British scientific base of the late 1950s, providing an evocative insight into the way the bases were occupied during this period. It was built in 1956 and closed in 1959 due to the difficulty of accessing the base. It was subsequently reoccupied for six months in 1965/66. During its short history as an occupied base it contributed towards the geophysical programme of the International Geophysical Year (IGY). In addition to the base building, there are also dog kennels, an emergency store, fuel drum and cargo depots, an anemometer tower and wireless masts.

## Visitor Impact

<b>KNOWN IMPACTS</b>	None known.
<b>POTENTIAL IMPACTS</b>	Fire. Minor fuel spills. Disturbance of historic artefacts.

## Landing Requirements

<b>SHIPS*</b>	Ships* carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 2 ships per day (midnight to midnight), of which no more than 1 can carry over 200 passengers.
<b>VISITORS</b>	No more than 50 visitors ashore at any time, exclusive of expedition guides and leaders. No more than 12 visitors are allowed inside the base at any one time **. Visitors must be closely supervised. Base 'W' was proposed as HSM No. 83 by the UK. Visits to the hut may only take place with prior permission given by a Party. The Party undertaking management of the site should also be informed prior to the visit.

## Visitor Area

<b>LANDING AREA</b>	The preferred landing site is in the small bay to the south of the hut.
<b>CLOSED AREAS</b>	Visitors should not access any of the secondary huts or other structures.
<b>GUIDED WALKING AREAS</b>	None.
<b>FREE ROAMING AREAS</b>	Visitors may roam freely under close supervision.

## Visitor Code of Conduct

<b>BEHAVIOUR ASHORE</b>	No overnight stays in the hut are allowed. The hut is available for educational visits and, except in emergency circumstances, should not be used for any other purpose. The hut windows are all covered with fixed shutters and so electric torches will be needed to see anything of the interior. Artefacts should not be handled or removed from the site. Do not sit on chairs or other furniture, or lay objects down on tables or work surfaces.
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\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* Visitors enter the base at their own risk and the UK authorities will not be liable for any personal injury or damage to property that may be sustained.

# Detaille Island

66°52'S, 66°48'W



All boots and outdoor clothing should be cleaned of snow and grit before entering the building.  
 All back-packs and large bags should be left outside the hut.  
 Loose gravel, mud and snow should be swept up after each visit.  
 Smoking and the use of candles, matches or stoves are prohibited in and around the hut.  
 Base 'W' has a large amount of material inside and around the outside of the main hut, including hazardous materials. This makes the base extremely interesting from a historical point of view. Visitors should not touch or disturb any of the material even where it appears to have been discarded as rubbish. Visitors are also asked to be aware of broken glass and protruding nails around the buildings.  
 A record of each visit should be left in the Visitors Book, located in the base. Expedition Leaders should provide the UK Antarctic Heritage Trust with a report on the condition of Base 'W'.  
 Visitors are to leave the base safe and fully closed up on departure.

## CAUTIONARY NOTES

Boat drivers should be aware of submerged rocks on approaching the landing site.  
 The rocks at the landing site can be slippery when wet.



Used hydrogen cylinders (for filling weather balloons) dumped outside the hut



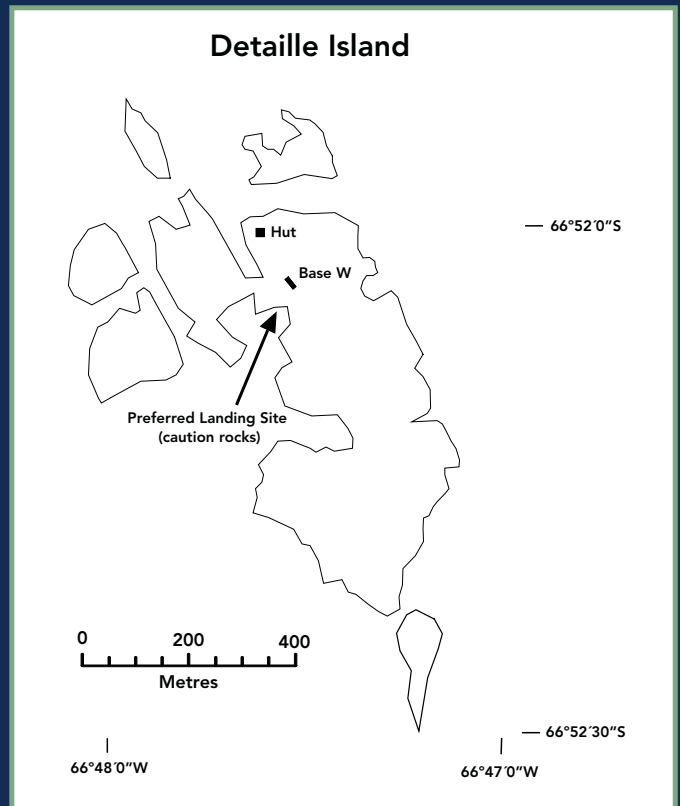
The Aga cooker in the kitchen



The Generator still in place in the Generator shed



The main hut seen from the air with the emergency store in the foreground and a kennel to the rear





## Devil Island (DEVI)

NE region (-63.80, -57.28)

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓			✓	✓	✓	✓		✓	✓	✓		✓	✓	✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc			Oc		Oc	Oc		Oc	Br	Br	Br	Oc	Br	Br	

### Recent ASI Census Data

ADPE
5,880 C3 12 Jan 2002
8,500 C3 20 Jan 2003
8,802 N1/N2/N3 31 Dec 2004
18,000 C3 13 Jan 2007
No clear trend since C3 count of 10,320 in 1996 (ASI, W&C 97)



# Devil Island – Vega Island

63°48'S, 57°17'W - Narrow Island lying in centre of a bay on the north coast of Vega Island. 1 NM east-south-east of Cape Well-met.

## Key features

- Adélie penguins
- Vegetation
- Twin summits
- Fur seals in late season



## Description

<b>TOPOGRAPHY</b>	This narrow 1 mile long island is so named for the two peaks located at either end of the island separated by a low lying valley. The peaks are fringed by cliffs on their north facing side creating an amphitheatre effect on the north shore where the penguin colony is located. The peaks slope off to the south. The site consists primarily of loose tuff gravel with a distinct raised beach along the northern shore.
<b>FAUNA</b>	Confirmed breeders: Adélie penguin ( <i>Pygoscelis adeliae</i> ) and skuas ( <i>Catharacta</i> , spp.). Suspected breeders: kelp gull ( <i>Larus dominicanus</i> ), snowy sheathbill ( <i>Chionis alba</i> ) and Wilson's storm-petrel ( <i>Oceanites oceanicus</i> ). Regularly haul out: Antarctic fur seal ( <i>Arctocephalus gazella</i> ).
<b>FLORA</b>	<i>Usnea Antarctica</i> , <i>Xanthoria</i> , spp. and <i>Caloplaca</i> , spp. observed on higher slopes of north eastern peak. Large area of moss spp. situated on flat area behind penguin colony.
<b>OTHER</b>	Hazardous rocks and band of reef lie immediately off shore the northern shore. Bergy bits, growlers and brash regularly get stranded on the reef.

## Visitor Impact

<b>KNOWN IMPACTS</b>	None.
<b>POTENTIAL IMPACTS</b>	Disturbance of wildlife, trampling of vegetation, erosion of footpaths.

## Landing Requirements

<b>SHIPS*</b>	Ships carrying 200 or fewer passengers. One ship at a time. Maximum 2 ships per day (midnight to midnight).
<b>VISITORS</b>	No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. At high water this number may need to be reduced. No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a resting period for the wildlife.

## Visitor Area

<b>LANDING AREA</b>	Primary: beach area below Adélie colony on northern coast of island. A semi submerged reef runs from the western end of the north shore out at a diagonal to the shore. Care must be taken on the approach.
<b>CLOSED AREAS</b>	<i>Closed Area A</i> : vegetation patch situated behind the Adélie colony.
<b>GUIDED WALKING AREAS</b>	The short steep route from the landing beach to the raised beach area behind the Adélie penguin colony should be flagged and closely guided with no more than 20 people in the area at one time. Walks to the top of the south-western peak should be flagged. A single track should be followed to prevent creation of ribbon paths.
<b>FREE ROAMING AREAS</b>	Visitors may roam freely in the immediate landing area at low tide and the extensive flat area behind the penguin colony. Note: the littoral zone up to the high tide mark is often used as an access route by Adélie penguins.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Devil Island – Vega Island

63°48'S, 57°17'W - Narrow Island lying in centre of a bay on the north coast of Vega Island. 1 NM east-south-east of Cape-Well-Met.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Take care not to displace penguins along the shoreline.

### CAUTIONARY NOTES

Landing may be difficult at high water or if extensive ice present on shore.

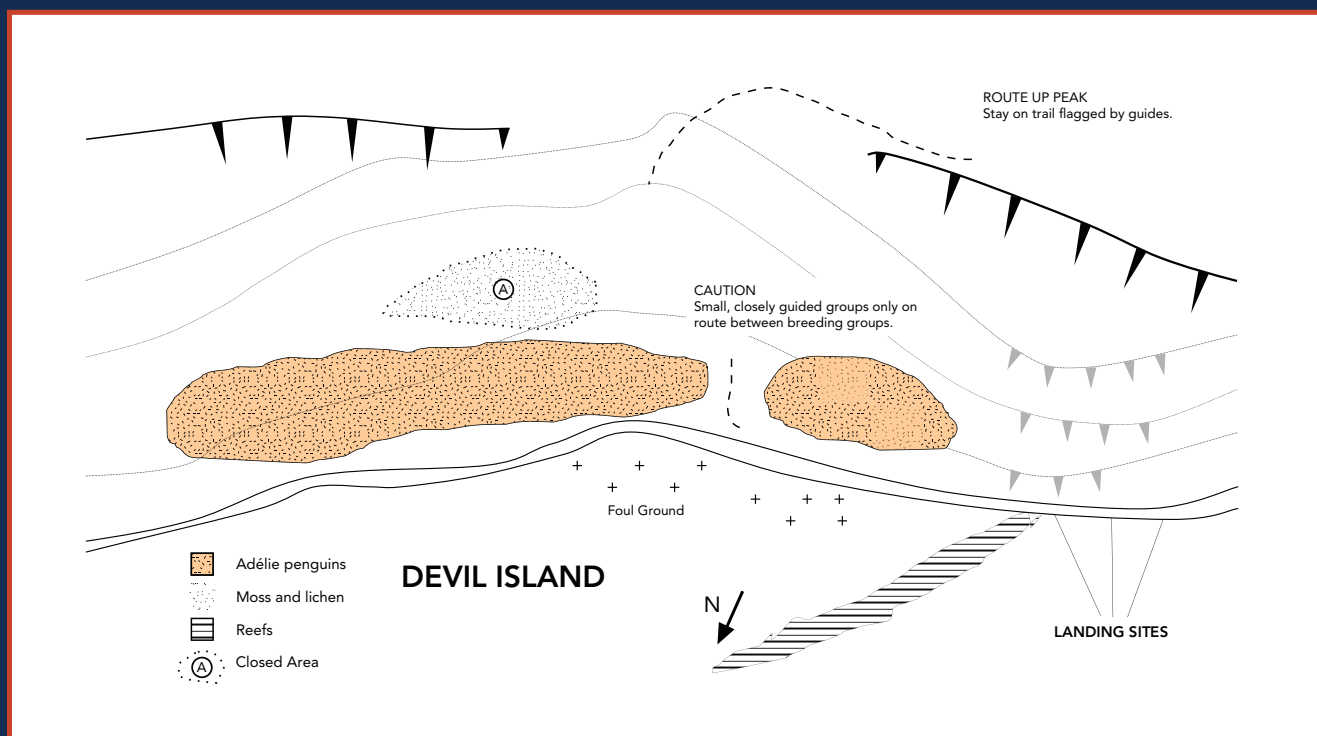
Strong winds and tidal variation can bring pack and brash ice quickly onto the beach area. Tidal variation can also result in small growlers and bergy bits being stranded in the shallow area offshore. These can fracture suddenly during stranding or subsequent re-floating.



Landing beach at low water



Devil Island Adélie colony and landing beach





**Damoy Point / Dorian Bay (DAMO)**  
**CW region (-64.82, -63.53)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓							✓		✓	✓		✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br		Oc		Oc	Oc	Oc	Oc	Br	Br	Br	Oc	Br	Br	Oc

**Recent ASI Census Data**

GEPE
1,928 N1 12 Dec 2002 2,022 N1 4 Jan 2005 2,273 N1 26 Dec 2005 2,990 C1 5 Feb 2006  N1 count of 2,273 is up 37% since N1 count of 1,658 in 1990 (W 93)





# Damoy Point Dorian Bay, Wiencke Island

64°48'S, 63°30'W

## Key features

- Historic British and Argentine Field Huts
- Gentoo penguin colony
- Glacial scenery



## Description

### TOPOGRAPHY

Damoy Point is a rocky isthmus off the west coast of Wiencke Island, Antarctic Peninsula.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*), Dominican gulls (*Larus dominicanus*), Subantarctic skuas (*Catharacta skua*) and Antarctic terns (*Sterna vittata*). Crabeater seals (*Lobodon carcinophagus*) breed locally and Weddell seals regularly haul out.

### FLORA

5 species of lichen and 3 species of moss have been reported from Damoy Point.

### OTHER

Damoy Hut is designated as Historic Site and Monument No. 84. It sits approximately 100 metres from the shoreline of Dorian Bay. The hut was established by the British Antarctic Survey (BAS) in November 1975 and was used as a transit station for BAS staff and stores to be flown south from the skiway on the glacier above the hut to Rothera Research Station when sea ice prevented access by ship. It was last occupied by BAS in 1993.

The Bahía Dorian hut was established by the Argentine Navy on February 23rd, 1953. It sits in very close proximity to the British Hut and covers an area of c. 12 square metres. The hut has been used as an emergency refuge.

## Visitor Impact

### KNOWN IMPACTS

None known.

### POTENTIAL IMPACTS

Fire. Minor fuel spills. Disturbance of wildlife.

## Landing Requirements

### SHIPS\*

Ships\* carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 2 ships per day (midnight to midnight), of which no more than 1 can carry over 200 passengers.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. No more than 10 visitors are allowed inside Damoy hut at any one time\*\*.

Damoy Hut was proposed as HSM by the UK. Visits to this hut may only take place with prior permission given by a Party. The Party undertaking management of the site should also be informed prior to the visit. The Argentine hut should only be accessed by visitors in cases of emergency.

## Visitor Area

### LANDING AREA

The preferred landing site is in Dorian Bay, immediately adjacent to the field huts.

### CLOSED AREAS

None but the glacier between Jabet Peak and Damoy Point is crevassed and dangerous.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely under close supervision (but see precautionary notes below).

## Visitor code of conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully around the penguin colony. Give animals the right-of-way and maintain a precautionary minimum distance of 5m from wild life. Increase this distance if any change in behaviour is observed.

No overnight stays in the huts are allowed. The UK hut is available for educational visits and, except in emergency circumstances, should not be used for any other purpose.

Most of the hut windows are covered with shutters (three are permanently fixed down). If shutters are removed during visits, they should be replaced securely on departure.

Artefacts or other items should not be handled or removed from the site. Do not sit on chairs or other furniture, or lay objects down on tables or work surfaces.

All boots and outdoor clothing should be cleaned of snow and grit before entering the building. All backpacks and large bags should be left outside the hut.

\*A ship is defined as a vessel which carries more than 12 passengers.

\*\* Visitors enter the base at their own risk and the UK authorities will not be liable for any personal injury or damage to property that may be sustained.



# Damoy Point Dorian Bay, Wiencke Island

64°48'S, 63°30'W

Loose gravel, mud and snow should be swept up after each visit.  
Smoking and the use of candles, matches or stoves are prohibited in and around the hut.  
A record of each visit should be left in the Visitors Book, located in the British hut. Expedition Leaders should report any damage to the hut to the UK, as the Party undertaking management of the site. Any damage to the Argentine hut should be informed to Argentina.  
Visitors are to leave the base safe and fully closed up on departure.

## CAUTIONARY NOTES

Boat drivers should be aware of rocks on the entrance to Dorian Bay.  
Brash ice can collect rapidly within Dorian Bay, preventing access to or from the site. If overnight camping is planned, the shore party should maintain an ice watch throughout the time spent ashore.  
The rocks at the landing site can be slippery when wet.  
The glacier between Jabet Peak and Damoy Point is crevassed and dangerous. It should only be accessed by those with suitable experience and training and with suitable equipment (eg, roped access).  
Materials containing asbestos may be present in the hut.



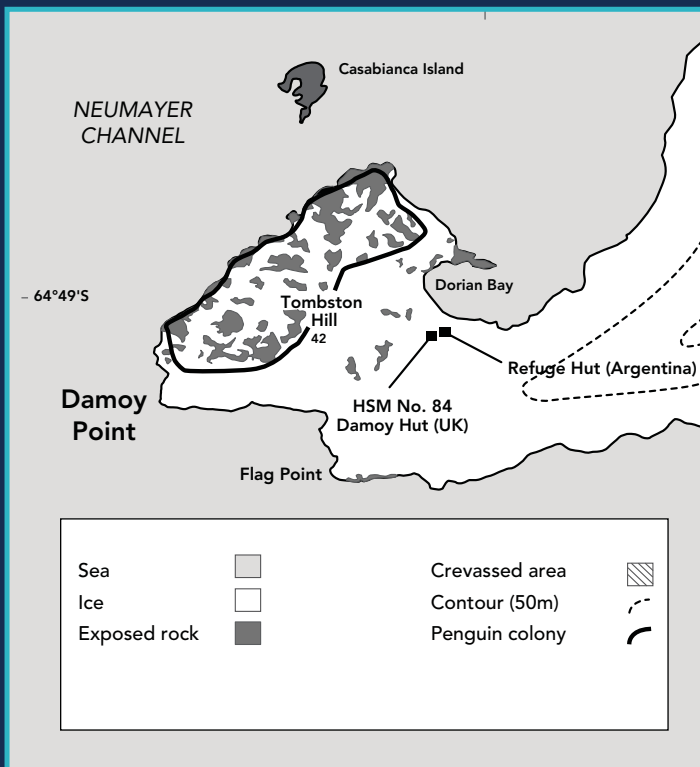
Damoy Hut (UK), Historic Site and Monument No 84



Shoreline of Dorian Bay showing the preferred landing site and the Argentine and UK huts in the background



Interior of Damoy Hut Historic Site and Monument No 84



**Dorian Bay Beacon (DOBE)**  
**CW region (-64.82, -63.53)**

Dorian Bay Beacon is a small (1.5 ha) island located 250 m offshore from the penguin colony at Damoy Point. There is a beacon tower on the island along with a small gentoo penguin colony.

*Landings.* Although visitors may land via the rocky coastline, the small size of the island precludes more than just a few visitors at a time.

*Site Sensitivities.* None.

*Proximate visitor sites.* Dorian Bay/Damoy Point (DAMO), Jougla Point (JOUG) and Port Lockroy (LOCK) are located on the south side of Damoy Point.

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
												✓	✓		✓	✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc	Br						Oc	Oc	Oc		Oc		Oc	Oc	Oc

**Recent ASI Census Data**

GEPE
132 N1 15 Jan 2005
181 N1 26 Dec 2005
257 C1 5 Feb 2006

## Duff Point (DUFF)

SH region (-62.45, -60.03)

A point on the W extremity of Greenwich Island, which was known to the early sealers.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* Half Moon Island (HALF), Yankee Harbor (YANK)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓							

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc									Oc	Oc			Br		Oc

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2003/04 (ASI, unpublished).

**Duthiers Point (DUPT)**  
**CW region (-64.21, -62.82)**

This point forms the S side of the entrance to Andvord Bay on the W coast of Graham Land.

*Landings.* Easy landing on rocky ledges.

*Site Sensitivities.* GPS and seismic stations on site as well as historic cement platforms, all of which should be avoided.

*Proximate visitor sites.* Melchior Islands (MELC)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br														

**Recent ASI Census Data**

GEPE	CHPE
c. 500 nests in 2010/11 (ASI, unpublished)	c. 20 nests in 2010/11 (ASI, unpublished)
This colony appears new.	This population has declined about 80% since N1 count of 97 (W93)

## Eagle Island (EAGL)

NE region (-63.67, -57.48)

A 5-mi-long, 4-mi-wide island rising to 560 meters on its NE side, the largest island in that lies between Trinity Peninsula and Vega Island. Its beach has many mummified seals and this appears to be a major tidal feeding area for kelp gulls, skuas, and Antarctic terns.

*Landings.* The landing beach on the E side is a cobble and shingle beach intermixed with sand. Many granitic boulders lie on site. The first shelf above the beach is covered with *Caloplaca* spp., with *Usnea* spp. at higher elevations. Above the beach are mesa formations of tuff, similar to the geology at Brown Bluff. Volcanic bombs are present in the tuff.

*Site Sensitivities.* None.

*Proximate visitor sites.* Bald Head (BALD), Jade Point (JADE), Crystal Hill (HILL), and Vortex Island (VORT)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
										✓				✓				

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc		Oc		Oc						Br		Br		Br	Br	

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2006/07 (ASI, unpublished).

## Eckener Point (ECKE)

CW region (-64.43, -61.60)

This point marks the NE side of the entrance to Charlotte Bay, on the W coast of Graham Land. Named after Hugo Eckener (1868-1954), German pioneer of airship aviation, whose Graf Zeppelin made more than 600 flights, including a major Arctic flight in 1931.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* Woehler et al. 2010 report a high diversity of moss and lichen.

*Proximate visitor sites.* Portal Point (POPT) lies southeast on the Antarctic Peninsula.

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓				

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Oc						Br	Br			Br	SBr	Br	Br	

### Recent ASI Census Data

CHPE
30 N1 13 Dec 2006
No change since N3/N4 count of 40 in 1987 (W 93)
See also Woehler et al. 2010. Polar Record 46:279-281.

## Eden Rocks (EDEN)

NE region (-63.48, -55.67)

Located off the E end of Dundee Island, and N of Paulet Island.

*Landings.* Visitor landings are unlikely because of ice conditions and uncharted waters. Zodiac tours may be possible.

*Site Sensitivities.* Adélie penguins are easily approached and disturbed; walk slowly and carefully around them and avoid impeding their access to and from the water.

*Proximate visitor sites.* Paulet Island (PAUL), Active Reef (ACTI), Tay Head (TAYH)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
				✓														

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br				Oc		Br			Oc			Br	Oc	Oc		

### Recent ASI Census Data

ADPE
44,249-49,460 nests (N3) in 1996/97 (Naveen et al. 2000)



**Entrance Point (ENTR)**  
**SH region (-63.00, -60.55)**

Please refer to DECEPTION ISLAND MANAGEMENT PLAN in the Appendix

A point marking the S side of Neptunes Bellows, the entrance to Port Foster, Deception Island

*Landings.* There is a small flat beach on which landings can be made, although significant swell can make landing difficult. The hike up to the ridgeline where penguins nest is very steep, and walking along the ridge is unsafe when visibility is reduced by fog or snow.

*Site Sensitivities.* Nesting penguins are easily avoided.

*Proximate visitor sites.* Baily Head (BAIL), Inside Deception Island: Whaler’s Bay (WHAL), Pendulum Cove (PEND), Telefon Bay (TELE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓	✓		✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Oc	Oc	Oc		Br					Br	Oc		Br	Br	Oc

**Recent ASI Census Data**

CHPE
566 N1 23 Dec 2005 736 C1 25 Jan 2006 902 N1 21 Nov 2006  N1 count of 902 is down 55% since N3 count of 2010 in 1967 (W 93)

**Extension Reef (EXTE)**  
**SW region (-65.97, -66.13)**

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

A reef encompassing a large number of small, low-lying islands extending 10 mi SW from the S end of Rabot Island in the Biscoe Islands (USBGN).

*Landings.* This site has only been surveyed by zodiac..

*Site Sensitivities.* None.

*Proximate visitor sites.* Fish Islands (FISH), Prospect Point (PROS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
OC		Oc						Br				Br		Oc		

## Eyrie Bay (EYRI)

NE region (-63.58, -57.63)

A bay, 2.5 mi wide at its mouth and extending 3 mi inland, lying N of Jade Point, Trinity Peninsula.

*Landings.* On shoreline rocks.

*Site Sensitivities.* None.

*Proximate visitor sites.* Jade Point (JADE), Bald Head (BALD), Eagle Island (EAGL)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓				

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
				Oc							Oc			Oc	Oc	

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2006/07 (ASI, unpublished).

## False Island Point (FALS)

NE region (-63.92, -57.33)

One mi long, 0.5 mi wide headland, connected by a low, almost unnoticeable isthmus to the S side of Vega Island. First sighted in 1902 and charted as an island by Nordenskjöld's Swedish Antarctic Expedition. Determined to be part of Vega Island by the Falklands Islands Dependencies Survey in 1945. Scattered, occasionally dense moss patches in snow melt gullies. *Usnea*, spp. and *Xanthoria*, spp. also noted

*Landings.* Rocky beach with large cobble. Access inland is uphill.

*Site Sensitivities.* None.

*Proximate visitor sites.* Devil Island (DEVI), Vortex Island (VORT), and Eagle Island (EAGL).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓	✓			✓					

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
							Br			Br			Br	Br	Br	

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2005/06 (ASI, unpublished).

**Ferraz Station Vicinity (FERR)**  
**SH region (-62.17, -58.80)**

**ADVANCE NOTICE must be given before visiting the station**

This site is located in Martel Inlet, Admiralty Bay, and is the location of the Brazilian research station, Commandante Ferraz, which is built upon a large lateral moraine.

*Landings.* Easy landings by zodiac on the cobble beach in front of the station.

*Site Sensitivities.* Avoid trampling easily accessed moss beds behind and near the station. Antarctic terns nest near the station, are easily disturbed, and a close approach should be avoided.

*Proximate visitor sites.* The Polish Arctowski Base is located to the south across Admiralty Bay from Martel Inlet.

## Fish Islands (FISH)

SW region (-66.03, -65.42)

This low-lying island group is located off the W coast of Graham Land. The small islands and rocks lying E of Flounder Island are called The Minnows.

*Landings.* A location for zodiac touring and possible landings at one of the small islets in The Minnows. The very slippery rocks present less than ideal visiting conditions.

*Site Sensitivities.* There is little visitor space. Walk carefully around nesting, crèching, or molting penguins and shags.

*Proximate visitor sites.* Prospect Point (PROS)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓								✓					✓	✓		

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br		Oc						Br	Oc	Br		Br	Oc	Br	Oc	Oc

### Recent ASI Census Data

ADPE	BESH
1,634 C1/C2 13 Jan 2003  Down 59% from C3/C4 count of 4,000 in 1984 (W 93)	31 N1 13 Jan 2003

## Fort Point (FORT)

SH region (-62.57, -59.57)

Rocky point, 85 meters high, forming the SE extremity of Greenwich Island.

*Landings.* Uncharted water near shore. Hazardous rocks along the shoreline may be exposed, depending on the tide. Landing on narrow, elevated, rocky beach that forms SE extremity of Greenwich Island and is totally exposed to the elements. Extensive glacier inland. Loose scree slopes above the penguin colonies. Many kelp gulls, Antarctic terns, blue-eyed shags, Antarctic fulmars, snowy sheathbills, and Wilson's storm-petrels swirling above and around the high, seaward stacks and cliffs, which cannot be accessed safely. Large numbers of fur seals, high swell, or both, may prevent landings, in which case the site is best viewed by zodiac. There are patches of lichens (*Xanthoria*, spp., *Haematomma*, spp., *Caloplaca*, spp.,) and moss.

*Site Sensitivities.* Nesting chinstrap, gentoo, and a few macaroni penguins (many on uphill slopes) are easily approached and disturbed; walk slowly and carefully around them. Avoid and stay clear of Antarctic fur seals, which should be given a wide berth and should not be approached. Stay clear of — and do not allow any hiking or free wandering over — scree slopes and seaward stacks and cliffs.

*Proximate visitor sites.* Yankee Harbor (YANK), On Robert Island: Robert Point (ROBE) and Mitchell Cove (MITC), the Aitcho Islands (e.g., AITC), and Half Moon Island (HALF)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
							✓	✓										

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br	Br	Br	Oc	Br	Br		Br	Br			Oc	Br	Br	Br	Oc

### Recent ASI Census Data

CHPE	GEPE
853 N1 in 1999/2000 (Naveen et al. 2000)	282 N1 in 1999/2000 (Naveen et al. 2000)

## Foyn Harbor (FOYN)

CW region (-64.55, -62.02)

An anchorage between Nansen and Enterprise Islands off the W coast of the Antarctic Peninsula. Surveyed by T. W. Bagshawe and M. C. Lester in 1921-22. Named by whalers after the whaling factory ship Svend Foyn, which was moored here during 1921-22.

*Landings.* Scattered rocky areas where zodiacs may land, but mostly, a site for zodiac touring.

*Site Sensitivities.* None.

*Proximate visitor sites.* Gouvernøren Harbor (GOUV) and Portal Point (POPT)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
							✓											

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Oc							Oc	

### Recent ASI Census Data

No penguins were breeding here as of the last census in 1999/2000 (ASI, unpublished)



**Gaston Islands (GAST)**  
**CW region (-64.49, -61.83)**

*Description.* Islands and rocks 1 mi NW of the tip of Reclus Peninsula, off the W coast of Antarctic Peninsula.

*Landings.* Easy scramble onto a rocky beach.

*Site Sensitivities.* Nesting birds are well spaced and easily avoided.

*Proximate visitor sites.* Jacques Peak (JACQ), Portal Point (PORT)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br							Br								

**Recent ASI Census Data**

CHPE	BESH
c. 350 nests in 2010/11 (ASI, unpublished)	c. 75 nests in 2010/11 (ASI, unpublished)

## Georges Point (GEOR) / Rongé Island East (RONE)

CW region (-64.67, -62.67 / , -64.69, -62.64)

GEOR is on the N tip of Rongé Island off the W coast of Graham Land and RONE is a small rocky slope 2.5 km to the southeast, easily visible from the beach at Cuverville Island (CUVE).

*Landings.* GEOR: Uncharted water near the rocky shoreline, which requires careful zodiacs maneuvering. Hazardous rocks along the shoreline may be exposed, depending on the tide. Landing on slippery, cobble shoreline. Snow cover may be extensive, making uphill hiking difficult. Nesting penguins are found upslope and inland. Snow cornices on the shoreline are unstable and treacherous. Fur seals can make landing difficult in January and February.

RONE: Accessible via a small flat beach. A steep rocky ridge which rises quickly from the landing beach, which would be inaccessible to most visitors.

*Site Sensitivities.* GEOR: Walk slowly and carefully around nesting, crèching, or molting penguins, which are easily approached and disturbed; avoid impeding their access to and from the water. Walk slowly and carefully around nesting sheathbills, which nest in rock caves and crevices and are easily approached and disturbed. Stay clear of — and do not hike upon or wander over — snow cornices.

RONE: Because gentoo penguins are breeding all along the ridge, disturbance to the penguins is unavoidable. This site is best visited by zodiac cruise.

*Proximate visitor sites.* Orne Islands (ORNE), Danco Island (DANC), and Cuverville Island (CUVE)

### Landing Characteristics

#### Antarctic Site Inventory Effort (GEOR)

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	

#### Presence / Absence (GEOR)

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br	Br		Oc		Oc		Oc	Br	Br	Br		Br	Br	Br	Oc

#### Recent ASI Census Data (GEOR)

GEPE	CHPE
1,995 N1 20 Dec 2004 2,464 N1 26 Dec 2005  N1 count of 2,464 is up 41% since N2 count 1,752 in 1994 (W&C 97)	356 N1 12 Jan 2001 269 N1 20 Dec 2004 246 N1 26 Dec 2005 399 C1 5 Feb 2006 260 N1 22 Nov 2006 354 C1 26 Jan 2007  N1 count of 260 is down 20% since N1 count of 327 in 1998 (Naveen <i>et al.</i> 2000)

**Antarctic Site Inventory Effort (RONE)**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓	✓	✓	

**Presence / Absence (RONE)**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br							Oc	Oc	Br	Oc		Br		

**Recent ASI Census Data (RONE)**

GEPE
c. 300 nests, 2007/08 (ASI, unpublished)

## Gibbon Bay (GIBA)

SO region (-60.65, -45.18)

A one-mi-long and wide bay along the E coast of Coronation Island.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* Amphibolite Point (AMPH), Shingle Cove (SHIN), Marshall Bay (MARS)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
										✓								

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Oc		Oc		Oc		Oc	Oc			Oc	Oc	Oc		

**Gibbs Island (GIBB)**

**EI region (-61.47, -55.57)**

Island found 14 mi SW of Elephant Island.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* No information available.

*Proximate visitor sites.* Cape Lookout (LOOK), Point Wild (WILD), and Cape Belsham (BELS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓							

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br															

**Recent ASI Census Data**

CHPE
80,000 nests 2003/04 (ASI, unpublished)

**Glandaz Point (GLAN)**  
**CW region (-65.08, -63.98)**

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

A point that forms the SW entrance point of Deloncle Bay, Lemaire Channel.

Along with Humphries Heights and Loubat Point, Glandaz Point is one of three gentoo penguin breeding sites in the Lemaire Channel that are extremely hard-to-reach and, because of rockfalls, crevasses, and avalanches, dangerous.

*Site Sensitivities.* Extremely unstable snow and rock access. The penguin “highways” that enable their access to and from the Lemaire Channel, should be avoided.

*Proximate visitor sites.* Humphries Heights (HUMP), Loubat Point (LOUB), Pléneau Island (PLEN), Booth Island (BOOT), Petermann Island (PETE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓	✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc		Br							Oc							

**Recent ASI Census Data**

GEPE
. 100 nests in 2008/09 (ASI, unpublished)

**Gourdin Island (GOUR)**  
**NW region (-63.20, -57.30)**

Largest of group of islands and rocks located one mi N of Prime Head on the N tip of the Antarctic Peninsula, which was discovered by Jules Dumont d'Urville's French Expedition of 1837-40.

*Landings.* Substantial ice may rim the island in spring, impeding access to the rocky landing beach on the NW end. Access is uphill, and may be difficult because of heavy early spring snowfall or, later in the season, slippery guano and mud. There is restricted visitor space.

*Site Sensitivities.* Walk slowly and carefully around nesting, crèching, or molting penguins, which are very easily approached and readily disturbed; avoid impeding their access to and from the water.

*Proximate visitor sites.* Siffrey Point (SIFF)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
					✓	✓				✓		✓						

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Br	Br							Oc		Oc			Oc		

**Recent ASI Census Data**

ADPE	CHPE	GEPE
14,334 N2 1997/98 (Naveen et al. 2000)	c. 1,000 nests in 1997/98 (ASI, unpublished)	568 N2 1997/98 (Naveen et al. 2000)

**Gouvernøren Harbor (GOUV), Enterprise Island (ENTE)**  
**CW region (-64.53, -62.00)**

Small harbor indenting the E side of Enterprise Island in Wilhelmina Bay, off the W coast of the Antarctic Peninsula. Still visible are the remains of a whaling vessel that sank here in 1916.

*Landings.* Site best explored by zodiac.

*Site Sensitivities.* None

*Proximate visitor sites.* Foyn Harbor (FOYN), Portal Point (POPT)

**Antarctic Site Inventory Effort (GOUV + ENTE)**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓			✓		✓	✓	✓		

**Presence / Absence (GOUV)**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Br				Oc		Br	Oc	

**Presence / Absence (ENTE)**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Br				Oc		Br	Oc	





**Half Moon Island (HALF)**  
**SH region (-62.60, -59.92)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓		✓	✓								✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br	Oc	Oc	Oc				Br	Br		Br		Br	Br	Br	Oc

**Recent ASI Census Data**

CHPE
c. 2000 nests in 2008/09 (ASI, unpublished)



# Half Moon Island

60°36'S, 59°55'W - 2km long crescent shaped island between Greenwich and Livingston Islands. Guidelines refer to the eastern end of the island as defined in the accompanying map.

## Key features

- Chinstrap penguins
- Vegetation
- Wilson's storm-petrels
- Weddell & fur seal haul-out



## Description

<b>TOPOGRAPHY</b>	Half Moon island has a series of raised cobbled beaches along the centre and the south-eastern end of the island, which is characterised by a small hill and series of igneous rock outcrops. The north side of the hill comprises steep scree slopes with cliffs to the south and east.
<b>FAUNA</b>	Confirmed breeders: Chinstrap penguins ( <i>Pygoscelis antarctica</i> ), Wilson's storm petrels ( <i>Oceanites oceanicus</i> ) blue-eyed shags ( <i>Phalacrocorax atriceps</i> ) kelp gulls ( <i>Larus dominicanus</i> ), snowy sheathbills ( <i>Chionis alba</i> ) skuas ( <i>Catharacta</i> spp.) and Antarctic terns ( <i>Sterna vittata</i> ).  Regularly haul out: Weddell seals ( <i>Leptonychotes weddellii</i> ) and fur seals ( <i>Arctocephalus gazella</i> ).
<b>FLORA</b>	<i>Usnea Antarctica</i> and crustose lichen spp. can be found on rock outcrops near penguin colonies. Patches of <i>Deschampsia antarctica</i> and small moss growths of moss spp. can be found on the raised beaches and amongst the rocky outcrops.
<b>OTHER</b>	Small rotting dory on the primary landing area.  Towards the west of the site lies the Argentine Antarctic summer station Cámara. The station and its associated structures are excluded from these guidelines. In summer, scientists from Cámara station work in different locations of the island.

## Visitor Impacts

<b>KNOWN IMPACTS</b>	Track erosion, trampling of vegetation.
<b>POTENTIAL IMPACTS</b>	Disturbance of wildlife, further trampling of vegetation, damage to breeding burrows, enhanced track erosion.

## Landing Requirements

<b>SHIPS*</b>	Ships carrying 500 or fewer passengers. One ship at a time.  Maximum 3 ships per day (midnight to midnight) of which no more than two may be vessels carrying more than 200 passengers.
<b>VISITORS</b>	No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors.  No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a resting period for the wildlife.

## Visitor Area

<b>LANDING AREA</b>	Primary: small beach area on the north shore of the south-eastern tip of the island, marked by small rotting dory. (The dory may be covered by snow in the early season).  Secondary: cobbled beach immediately to west of the primary landing site.
<b>CLOSED AREAS</b>	<i>Closed Area A</i> : small coastal beach point immediately to the east of primary landing site where terns and kelp gulls regularly nest. <i>Closed Area B</i> : small hill crowned by a navigation tower, where chinstrap penguins breed, and in whose scree slopes Wilson's storm-petrels burrow.  Walking around closed area B is discouraged, given the restricted space available on the narrow beach, especially during high tide.
<b>GUIDED WALKING AREAS</b>	Walks to the eastern tip should be guided with careful attention to give right-of-way when crossing the penguin access route above closed area A and between the rock outcrops when crossing towards the eastern shore.  Carefully evaluate access to the eastern tip during certain periods in the summer, given the high level of wildlife activity in this area.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Half Moon Island

60°36'S, 59°55'W - 2 Km long crescent shaped island between Greenwich and Livingston Islands. Guidelines refer to the eastern end of the island as defined in the accompanying map.

## FREE ROAMING AREAS

Visitors may roam freely in the immediate primary landing beach area.

They also can roam freely on the southern shore, all along a raised beach, towards the west, taking special care to the likely presence of vegetation and fur seals. Fur seals camouflage themselves in the surrounding landscape.

Deploying a guide between these two areas is recommended.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary minimum distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Take care not to displace penguins along the shoreline at the landing beaches.

Be aware that the terns can shift their breeding location inter-seasonally. Be alert to their presence and keep an appropriate distance.

Walk carefully and do not tread on vegetated areas which are susceptible to trampling.

Respect conduct of scientific activities, if any.

Do not touch, or climb into the dory.

Take particular care with fur seals, they may be aggressive.

### CAUTIONARY NOTES

The landing site is susceptible to swells from the east.

Strong winds and tidal variation can bring pack and brash ice quickly onto the beach area.

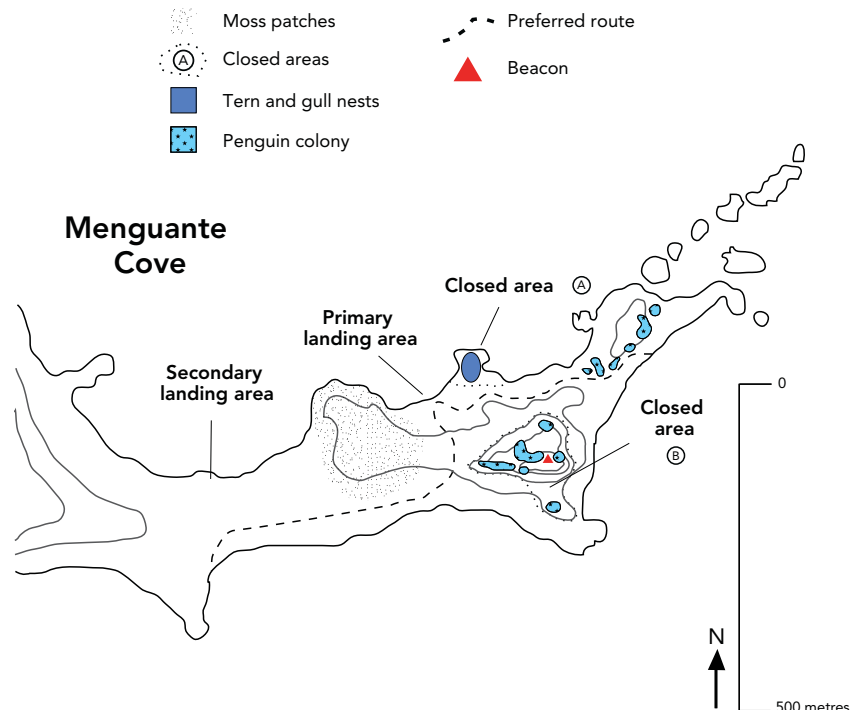


View of the southeast end of Half Moon Island and landing site



Overview of the south coast of Half Moon Island

## Half Moon Island - Eastern end





**Hannah Point (HANN)**  
**SH region (-62.65, -60.62)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓	✓	✓	✓	✓	✓				✓						✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br	Br	Br		Br		Br	Br		Br	Br	Br	Br	Br	Wa

**Recent ASI Census Data**

GEPE	CHPE	MCPE	SOGP	BESH
1,885 N1 23 Dec 2004  Up 40% since N1 count of 1,350 in Dec 1997 (Naveen <i>et al.</i> 2000)	759 N1 23 Dec 2004  Down 49% since N3 count of 1,500 in 1987 (W 93)	2 nests on 10 Jan 2011 (ASI unpublished)	123 N1 15 Dec 2000 142 N1 2 Jan 2005  N1 count of 142 is up 28% since N1 count of 111 in 2000 (Naveen <i>et al.</i> 2000)	3 N1 15 Dec 2000 4 N1 23 Dec 2004

# Hannah Point

62°39'S, 60°37'W - South coast of Livingston Island

## ANTARCTIC TREATY

visitor site guide



### Key features

- High concentration of diverse wildlife: nesting gentoo, chinstrap, and a small number of macaroni penguins; nesting southern giant petrels; southern elephant seals
- Diverse vegetation
- Geological features



## Description

### TOPOGRAPHY

Hannah Point (the Point) is a narrow peninsula undulating upward to knife-edged ridges and vertical cliff edges 30-50 metres above sea level. There is loose scree on higher slopes and ridges, evidence of rock falls, and a Jasper mineral vein. Ash-covered slopes link the Point to the flat open beach area of Walker Bay.

### FAUNA

Confirmed breeders: Chinstrap (*Pygoscelis antarctica*), gentoo (*Pygoscelis papua*), and macaroni penguins (*Eudyptes chrysolophus*), blue-eyed shags (*Phalacrocorax atriceps*), snowy sheathbills (*Chionis alba*), kelp gulls (*Larus dominicanus*), Antarctic terns (*Sterna vittata*), Wilson's storm-petrels (*Oceanites oceanicus*), Black-bellied storm-petrels (*Fregatta tropica*), pintado petrels (*Daption capense*), skuas (*Catharacta, spp.*), and southern giant petrels (*Macronectes giganteus*).

Regularly haul out: southern elephant seals (*Mirounga leonina*), Weddell seals (*Leptonychotes weddellii*) and Antarctic fur seals (*Arctocephalus gazella*).

### FLORA

Vegetation covers the upper slopes of the Point. *Deschampsia antarctica*, *Colobanthus quitensis*, *Xanthoria, spp.* and other crustose lichens are present. The green alga *Prasiola crispa* is widespread. Large moss patches cover Walker Bay.

### OTHER

Some fossil and rock specimens may be observed towards the eastern end of the flat open beach area of Walker Bay.

## Visitor Impact

### KNOWN IMPACTS

The erosion of a footpath between the Point and Walker Bay.

### POTENTIAL IMPACTS

Erosion and disturbance of vegetation and wildlife, especially as visitor space is limited on the Point.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time. The Point: Given the limited space at this site, visits are strongly discouraged from the start of the breeding season (October) until after early penguin incubation phase (mid-January). After then, maximum 1 ship per day (midnight to midnight). Visits to last no longer than 6 hours. Walker Bay: a maximum of 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors at any time, exclusive of expedition guides and leaders, with not more than 50 on the Point. 1 guide per 20 visitors. No visitors on the Point between 22:00hrs and 04:00hrs (local time).

## Visitor Area

### LANDING AREA

**Primary:** The small cobble beach on the northern coast of Hannah Point.

**Secondary:** If conditions permit, an alternative landing area is the flat open area of Walker Bay, to the north of the Point.

### CLOSED AREAS

**Closed Area A:** Cliff area with nesting southern giant petrels.

**Closed Area B:** Rocky outcrops with nesting southern giant petrels, including a 50 metre buffer zone.

### GUIDED WALKING AREAS

Because of restricted visitor space, all walks around the Point should be strictly controlled in guided groups of no more than 15-20 visitors, which are well spaced and which follow the same path. Visitors walking between the Point and Walker Bay should proceed in single file in small groups, avoiding wildlife and other sensitive features.

### FREE ROAMING AREAS

Visitors may roam freely, but under supervision, on the beach in Walker Bay, avoiding Closed Area B.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Hannah Point

62°39'S, 60°37'W - South coast of Livingston Island

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed. When on the same level as, or higher than, nesting southern giant petrels maintain a precautionary distance of at least 50 metres. Increase this distance if any change in the birds' behaviour is observed. Be careful near Antarctic fur seals, they may be aggressive. Do not walk on any vegetation.

### CAUTIONARY NOTES

The primary landing beach may be crowded with wildlife – under such circumstances it would be not possible to make a landing and maintain the required precautionary distances. Both landing beaches are prone to swells. Be careful near the jasper dyke. It is brittle and may crumble. Exercise particular caution not to disturb animals near cliff edges. If they are disturbed, they may retreat and fall.



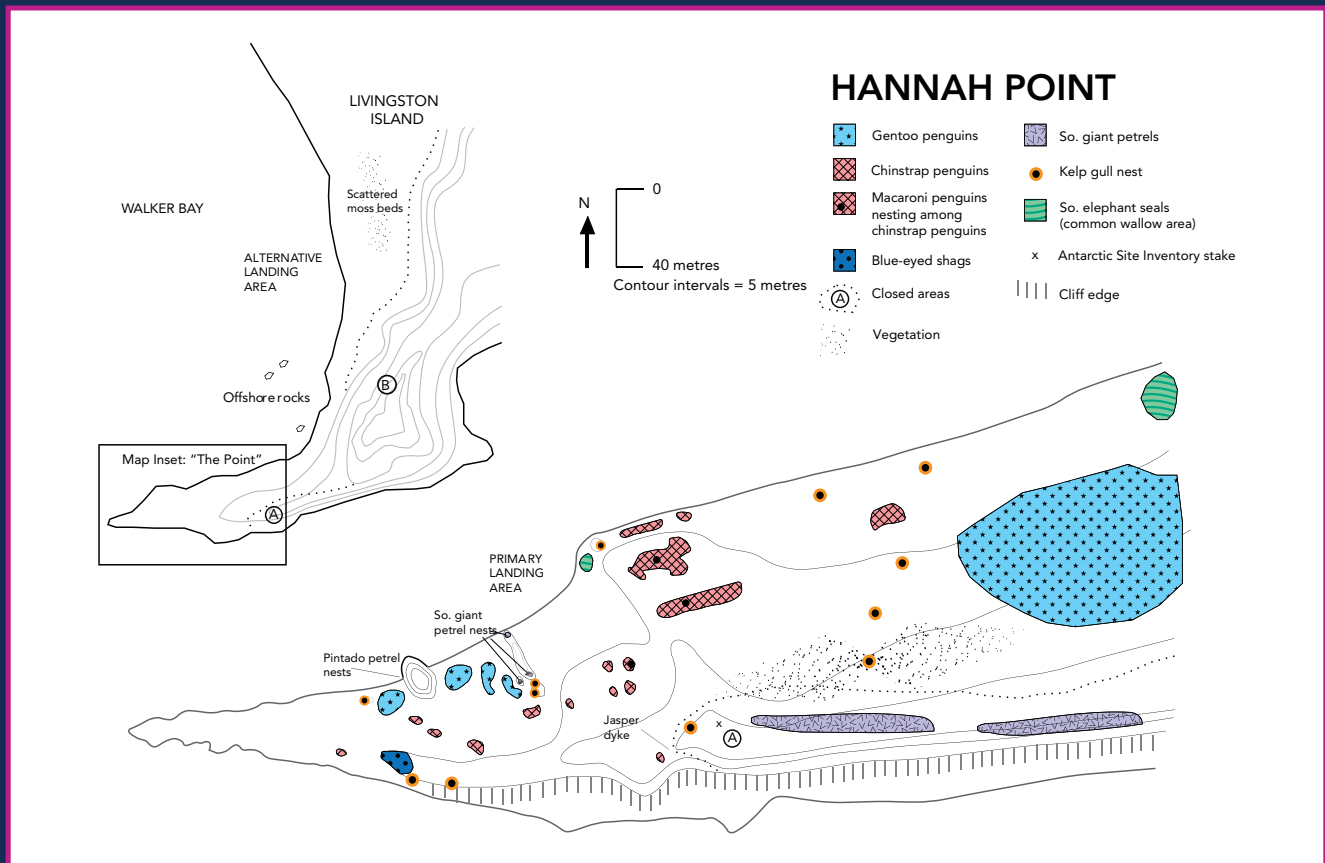
Hannah Point from above



Hannah Point landing beach



Caution - restricted visitor space and dense concentrations of wildlife





**Heroína Island (HERO)**  
**NE region (-63.40, -54.60)**

This small island marks the NE end of the Danger Islands group, located SE of Joinville Island and ENE of Eden Rocks, in the northern Weddell Sea.

*Landings.* Uncharted water offshore and near shore. Passage may be totally blocked by ice. Hazardous rocks along the shoreline may be exposed, depending on tide. Landing on rocks along W side of the island; coast may be packed with ice, depending on wind and swell, and snow cover may be extensive. Very restricted visitor space because of difficult terrain, slippery conditions, and extremely high density of penguins.

*Site Sensitivities.* Adélie penguins nest in enormous numbers, are easily approached, and occupy much of the available space on slopes and ridges leading to the flat top of the island. Walk slowly around them, ensuring at all times that their access up and down the slopes, and to and from the water, is not impeded. Gentoo penguins nest on the flat top of the island and are easily approached and disturbed; walk slowly around them. Antarctic fur seals may be present, and should be avoided and given a wide berth.

*Proximate visitor sites.* Eden Rocks (EDEN)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
				✓			✓						✓	✓		✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Br		Oc		Br	Oc	Oc	Br	Oc	Br		Br	Br	Br	

**Recent ASI Census Data**

ADPE	GEPE
285,115-305,165 nests (N2) in 1996/97 (Naveen et al. 2000)	142 C1 3 Feb 2006  Probably down from N1 count of 215 in 1996 (Naveen et al. 2000)

**Hope Bay / Esperanza Station (HOPE)**  
**NE region (-63.38, -57.00)**

**ADVANCE NOTICE must be given before visiting the station**

This 3-mi-long, 2-mi-wide bay on the NE tip of the Antarctic Peninsula was discovered by Nordenskjöld and the Swedish Antarctic expedition in 1902, and named in honor of the winter spent here by expedition members Andersson, Duse, and Grunden. The site of an Argentine research station.

*Site Sensitivities.* The penguins are easily approached and disturbed; walk slowly around them.

*Proximate visitor sites.* Brown Bluff (BROW), Jonassen Island (JONA)

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br							Oc									

**Recent Census Data**

ADPE
123,850 N2 1985/86 (W 93)



**Horseshoe Island (HORS)**  
**SW region (-67.85, -67.20)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
											Br			Br		



# Horseshoe Island

67° 49'S, 67°18'W

## Key features

- Historic British Base 'Y', Horseshoe Island



## Description

### TOPOGRAPHY

Horseshoe Island is a small rocky island in Bourgeois Fjord, Marguerite Bay.

### FAUNA

Confirmed breeders: kelp gulls (*Larus dominicanus*) and brown skuas (*Catharacta antarctica lonnbergi*) (occasional).

### FLORA

29 species of lichen and 15 species of moss have been reported from Horseshoe Island.

### OTHER

Base 'Y' is designated as Historic Site and Monument No. 63. It sits on a small peninsula at the north-western end of the island overlooking Sally Cove. It is noteworthy as a relatively unaltered and well equipped British scientific base of the late 1950s, providing a time capsule of life and science of the time. It was occupied continuously from March 1955 to August 1960, and re-opened for a 4 month period in 1969. In addition to the base building, there is also a balloon shed, pup pens, an emergency store, two pram dinghies and a winch. 'Blaiklock', the refuge hut located several miles away, is considered an integral part of the base.

## Visitor Impact

### KNOWN IMPACTS

None known.

### POTENTIAL IMPACTS

Fire. Minor fuel spills.

## Landing Requirements

### SHIPS\*

Ships\* carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 2 ships per day (midnight to midnight), of which no more than 1 can carry over 200 passengers.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. No more than 12 visitors are allowed inside the base at any one time \*\*.

Base 'Y' was proposed as HSM No. 63 by the UK. Visits to the hut may only take place with prior permission given by a Party. The Party undertaking management of the site should also be informed prior to the visit.

## Visitor Area

### LANDING AREA

The preferred landing site is in Sally Cove to the south of the hut.

### CLOSED AREAS

Visitors should not access any of the secondary huts or other structures.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely under close supervision.

\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* Visitors enter the base at their own risk and the UK authorities will not be liable for any personal injury or damage to property that may be sustained.



# Horseshoe Island

67° 49'S, 67°18'W

visitor site guide

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

No overnight stays in the hut are allowed. The hut is available for educational visits and, except in emergency circumstances, should not be used for any other purpose.

The hut windows are all covered with fixed shutters and so electric torches will be needed to see anything of the interior.

Artefacts should not be handled or removed from the site. Do not sit on chairs or other furniture, or lay objects down on tables or work surfaces.

All boots and outdoor clothing should be cleaned of snow and grit before entering the building. All back-packs and large bags should be left outside the hut.

Loose gravel, mud and snow should be swept up after each visit.

Smoking and the use of candles, matches or stoves are prohibited in and around the hut.

A record of each visit should be left in the Visitors Book, located in the base. Expedition Leaders should provide the UK Antarctic Heritage Trust with a report on the condition of Base 'Y'.

Visitors are to leave the base safe and fully closed up on departure.

### CAUTIONARY NOTES

Boat drivers should be aware of rocks on the entrance to Sally Cove.

The rocks at the landing site can be slippery when wet.



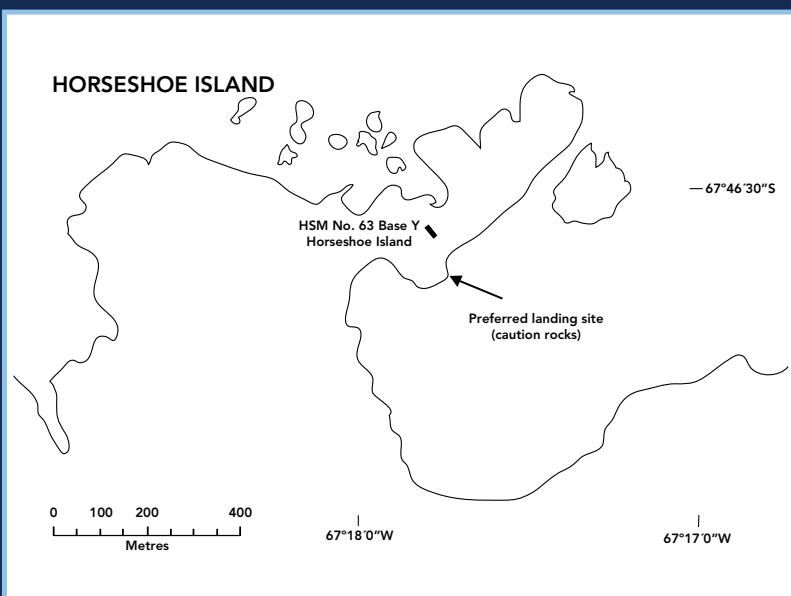
A view of the Hut from the North East with a kennel in the foreground



Pram dinghies on the shore of the cove



One of several sets of original fire extinguishers



Bicycle wheels used to make sledge meters to measure the distance run

**Hovgaard Island (HOVG)**  
**CW region (-65.13, -64.13)**

A 3-mi-long island lying 1.5 mi SW of Booth Island and the Lemaire Channel.

*Landings.* Along the rocky coastline.

*Site Sensitivities.* The penguins are easily approached and disturbed; walk slowly around them.

*Proximate visitor sites.* Petermann Island (PETE), Pléneau Island (PLEN).

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓							

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br														

**Recent ASI Census Data**

GEPE
c. 150 nests in 2003/04 (ASI, unpublished)

**Humphries Heights (HUMP)**  
**CW region (-65.05, -63.87)**

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

Series of elevations extending SW from False Cape Renard to Deloncle Bay, Lemaire Channel.

Along with Glandaz Point and Loubat Point, Humphries Heights is one of three gentoo penguin breeding sites in the Lemaire Channel that are extremely hard-to-reach and, because of rockfalls, crevasses, and avalanches, dangerous.

*Site Sensitivities.* Extremely unstable snow and rock access. The penguin “highways” that enable their access to and from the Lemaire Channel, should be avoided.

*Proximate visitor sites.* Glandaz Point (GLAN), Loubat Point (LOUB), Pléneau Island (PLEN), Booth Island (BOOT), Petermann Island (PETE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓	✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br														

**Recent ASI Census Data**

GEPE
c. 50 nests in 2006/07, but population appears to be highly variable between years



## Hunt Island (HUNT)

CW region (-64.33, -62.10)

This is a 370 ha (914 acre) island located 4 km east of Brabant Island and 6 km south of Lecointe Island.

*Landings.* The landing is very difficult and would require a steep, and possibly dangerous, climb up a steep snow bank.

*Site Sensitivities.* If a landing is attempted, care must be exercised to avoid disturbing nesting blue-eyed shags.

*Proximate visitor sites.* Lecointe Island (LECO)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br				Oc			Br								

### Recent Census Data

CHPE
400 N4 estimate in P&P 87

**Hurd Peninsula West (HURW)**  
**SH region (-62.70, -60.42)**

The Hurd Peninsula lies between South Bay and False Bay on the S coast of Livingston Island. This particular site lies between Miers Bluff and Juan Carlos I Station

*Landings.* No information available.

*Site Sensitivities.* None.

*Proximate visitor sites.* Miers Bluff (MIER), Hannah Point (HANN)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH

This site once had a small gentoo penguin colony, but, as of 2010/11, this colony was no longer present.

**Hydrurga Rocks (HYDR)**  
**CW region (-64.13, -61.62)**

Low-lying, rocky islands located E of Two Hummock Island in the Palmer Archipelago, and named after the leopard seal, *Hydrurga leptonyx*. Snow cover may totally cover the area in November. The narrow shingle beach is made up largely of pebbles and cobbles of angular to subrounded blocks, with some minor sand and granules. Several of the smaller rocks surrounding the main island are connected by causeways of this shingle material. Glacially polished rock surfaces are extensive.

*Landings.* Rock-strewn island, which approaching zodiacs must negotiate carefully to avoid shallow rocks. Visitors must climb uphill from the regular landing rocks, sometimes through deep early-season snow, to reach numerous, discrete groups of chinstrap penguins. An additional set of chinstrap colonies to the N are more difficult to access. Shag nests are relatively inaccessible in heavy snow cover, but may be more accessible in mid- to late-summer. Concentrations of fur seals can make access difficult in late-summer.

*Site Sensitivities.* Restricted visitor space and upward climb (often, through snow) to reach the penguins, whose nests are readily approached. Steep cliff edges. Walk slowly and carefully around the penguins; avoid impeding their access to and from the water. If extensive snow cover, avoid “highways” penguins have made through the snow. Stay clear of — and do not hike upon or wander over — cliff edges.

*Proximate visitor sites.* Sprightly Islands (SPRI), Portal Point (POPT), Eckener Point (ECKE), Mikkesen Harbor (MIKK), Skottsberg Point (SKOT), and Tetrad Islands (TETR)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓			✓	✓	✓	✓					✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br	Oc		Oc		Oc		Br	Br			Br	Br	Br	Oc	

**Recent ASI Census Data**

CHPE	BESH
c. 700 nests in 2008/09 (ASI, unpublished)	11 N1 3 Jan 2002 13 C1 3 Jan 2002 12 N1 11 Jan 2003

## Jacques Peaks (JACP)

CW region (-64.51, -61.85)

Peaks rising to 385 m at the NW end of Reclus Peninsula on the W coast of Graham Land.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* Possible, but specific details unavailable.

*Proximate visitor sites.* Gaston Island (GAST), Portal Point (PORT)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br							Br								

### Recent ASI Census Data

CHPE	BESH
c. 20 nests in 2010/11 (ASI, unpublished)	c. 40 nests in 2010/11 (ASI, unpublished)

**Jade Point (JADE)**

**NE region (-63.60, -57.58)**

A gently sloping, rocky point that forms the S limit of Eyrie Bay in the Trinity Peninsula.

*Landings.* Rocky, morainal landing beach. Continental landing on the Trinity Peninsula.

*Site Sensitivities.* None.

*Proximate visitor sites.* Crystal Hill (CRYS), Bald Head (BALD), Camp Hill (HILL), View Point (VIEW), Cape Burd (BURD), and False Island Point (FALS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓									

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc		Br								Oc			Oc	Oc	Oc	

**Recent ASI Census Data**

GEPE
1 N1 2001/02 (ASI, unpublished)

## Jenny Island (JENN)

SW region (-67.73, -68.40)

A rocky, 2-mi-long island that rises to 500 meters, lying 3 mi E of Cape Alexandra, at the SE extremity of Adelaide Island in northern Marguerite Bay. Discovered by Charcot's 2nd French Antarctic Expedition (1908-10) and named by him for the wife of Sub-Lieutenant Maurice Bongrain, French Navy, second officer of the expedition (USBGN).

*Landings.* Landing possible at beach on northern shore.

*Site Sensitivities.* Avoid elephant seals, which congregate along the shore by the hundreds.

*Proximate visitor sites.* Webb Island (WEBB)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc				Oc				Br		Br		Br	Oc	Br		Wa

### Recent ASI Census Data

BESH
1 N1 7 Jan 2008 (ASI, unpublished)

## Jonassen Island (JONA)

NE region (-63.55, -56.67)

A 2.5-mi-long island, lying N of Andersson Island in the S entrance to Antarctic Sound, off the NE tip of the Antarctic Peninsula. Originally called Irizar Island by Nordenskjöld, who named it for the Argentine captain whose ship, the *Uruguay*, rescued the shipwrecked Swedish Antarctic expedition in 1903. However, in 1904, Charcot gave the name Irizar to an island of the W coast of the Antarctic Peninsula, being totally unaware of the Swedish naming. Because the name of the latter island received wider use, the small island at the entrance to Antarctic Sound was renamed in honor of Ole Jonassen, who accompanied Nordenskjöld on his two major sledge journeys in 1902-3 (USBGN).

*Landings.* More suitable for zodiac touring than for shore landings. The cobble shoreline is slippery and there are few access points that avoid the gentoos nesting on this steep hillside. There are patches of lichens (*Xanthoria*, spp., *Caloplaca*, spp., and *Usnea*, spp.). At higher elevations, there is an excellent view of the strait between Jonassen Island and the Tabarin Peninsula.

*Site Sensitivities.* Difficult walking over cobble, and many of the penguins located upslope and in hard-to-reach places. Walk slowly around all nesting penguins; avoid impeding their access to and from the water.

*Proximate visitor sites.* Brown Bluff (BROW)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓						✓							✓		

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br		Oc		Br								Br		

### Recent ASI Census Data

GEPE
120 N3 2001/02 (ASI, unpublished)

**Jougla Point (JOUG)**  
**CW region (-64.83, -63.50)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br		Oc			Oc	Br	Br	Br	Br	Br	Br	Br	Br	Oc

**Recent ASI Census Data**

GEPE	BESH
1,556 N1 9 Dec 2002	26 N1 13 Dec 2000
1,621 C1 25 Jan 2003	43 C1 4 Feb 2001
1,540 N1 5 Jan 2004	23 N1 25 Dec 2001
2,043 C1 16 Feb 2004	26 C1 28 Jan 2002
1,306 N1 20 Dec 2004	32 N1 9 Dec 2002
1,409 N1 26 Dec 2005	62 C1 25 Jan 2003
1,925 C1 27 Jan 2006	28 N1 1 Dec 2003
1,282 N1 22 Nov 2006	46 C1 16 Feb 2004
1,684 C1 28 Jan 2007	29 N1 13 Dec 2004
	43 C1 16 Jan 2005
N1 count of 1,282 is down	20 N1 26 Dec 2005
24% since N1 count of 1681	46 C1 27 Jan 2006
in 1999 (Naveen <i>et al.</i> 2000)	26 N1 28 Jan 2007
	44 C1 28 Jan 2007
	No change between N1 count
	of 26 in Jan. 2007 and N1
	count of 26 in Jan. 2000





# Jougla Point

64°49'S, 63°30'W - Located in Port Lockroy at the western end of Wiencke Island

## Key features

- Gentoo Penguins
- Blue-eyed Shags
- Glacial scenery
- Whale bones



## Description

### TOPOGRAPHY

Jougla Point is a rocky peninsula indented with small coves. At the beginning of the season fast ice is likely to surround the Point. Snow cornices, glaciers and extensive, steep, and highly crevassed snowfields surround the harbour.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*) blue-eyed shags (*Phalacrocorax atriceps*), kelp gulls (*Larus dominicanus*), Antarctic terns (*Sterna vittata*) and skuas (*Catharacta*, spp.).

Regularly haul out: Weddell seals (*Leptonychotes weddellii*)

### FLORA

*Xanthoria* spp., *Caloplaca* spp., *Buellia* spp., other crustose lichen species, and the green alga *Prasiola crispa* are present but not widespread.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers. One ship at a time. Maximum 3 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors at any time, exclusive of expedition guides and leaders. 1 guide to 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time), except for those engaged in organised overnight stays. This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

Primary area on boulders and rocks at the northeastern end of the Point. Alternative beaches on west side of the Point or in Alice Creek on the east side of the Point (particularly suitable for small yachts).

### CLOSED AREAS

*Closed Area A:* Gentoo penguin and blue-eyed shag nesting area at the northwestern tip of Jougla Point behind the concrete blocks.

*Closed Area B:* Higher rocky slope to the south of Alice Creek which includes a kelp gull colony.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely, but under close supervision, except in the closed areas. Given the irregular topography at this site, guides should be aware that it is more difficult to ensure the necessary supervision of visitors.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife, and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Be careful near Antarctic fur seals and skuas. They may be aggressive. Do not walk on any vegetation.

### CAUTIONARY NOTES

Be aware that this site can be particularly muddy, wet and slippery.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Jougla Point

64°49'S, 63°30'W - Located in Port Lockroy at the western end of Wiencke Island



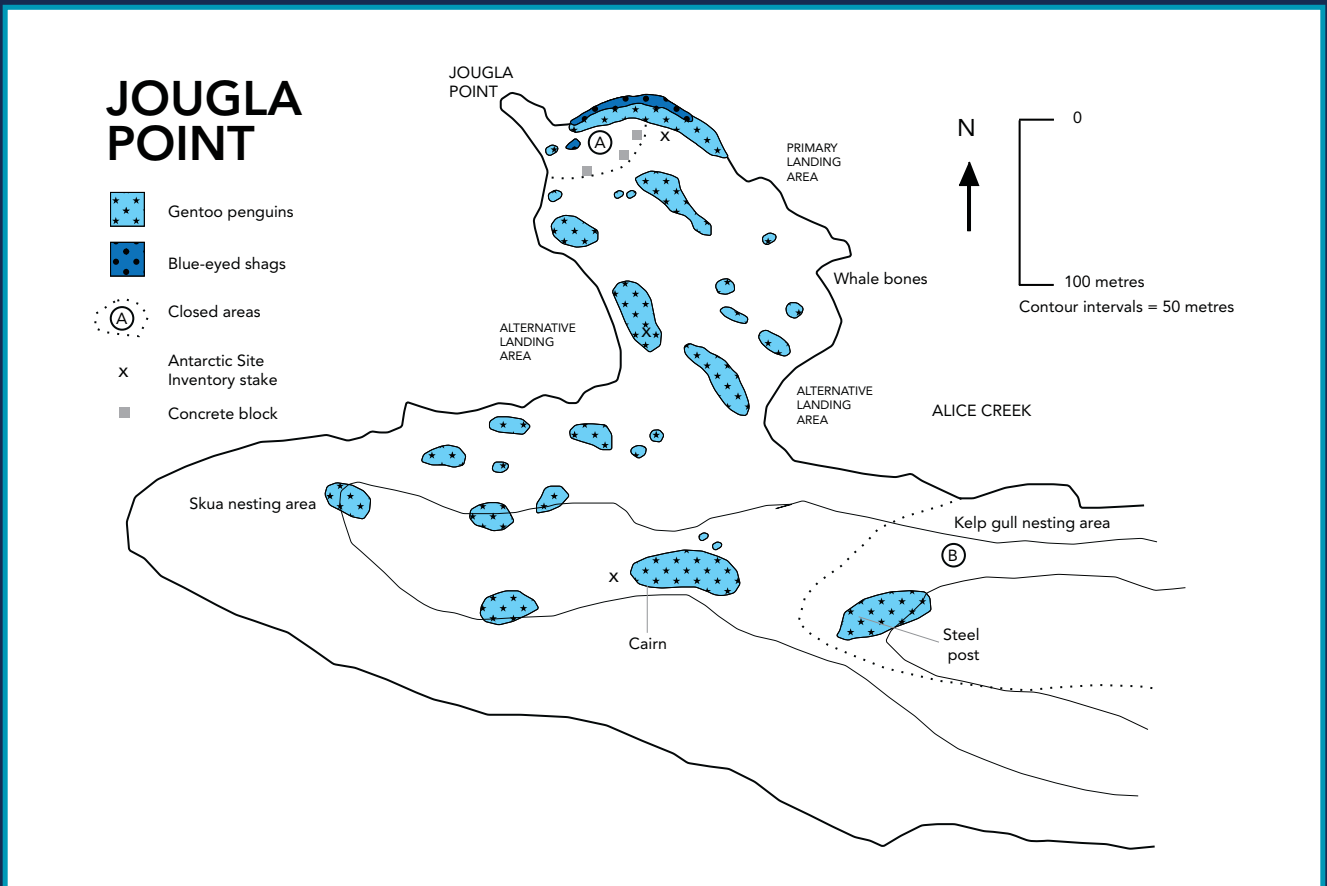
Jougla Point with Goudier Island in the background



Closed area begins at the line of concrete blocks on the NW end



Primary landing area



**Jubany Station Vicinity (JUBA)**  
**SH region (-62.23, -58.63)**

**ADVANCE NOTICE must be given before visiting the station**

This Argentine Research Station is located in Potter Cove, which was known to sealers as early as 1821 and which indents the NW side of King George Island to the E of Barton Peninsula. A prominent geological feature in the vicinity is Three Brothers Hill, 210 meters tall, which is very conspicuous and is the remaining portion of an extinct volcano that once existed on the E side of Potter Cove (USBGN).

*Site Sensitivities.* Close proximity to nearby, Potter Cove Antarctic Specially Protected Area (ASPA), the boundary of which should not be encroached.

*Proximate visitor sites.* Jubany Station is close to Maxwell Bay, where many other science stations are located.

## Ketley Point (KETL)

CW region (-64.70, -62.77)

A point forming the W end of Ronge Island, off the W coast of Graham Land.

*Landings.* Easy access possible via the point.

*Site Sensitivities.* Avoid nesting birds.

*Proximate visitor sites.* Georges Point (GEOR), Useful Island (USEF)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br		Oc				Br	Oc					Oc		

### Recent ASI Census Data

CHPE
>100 breeding pairs in 2007/08 (ASI, unpublished)

**Cape Lachman (LACH)**  
**NE region (-63.78, -57.78)**

A cape marking the N tip of James Ross Island, which lies S of Trinity Peninsula (NSF 1995). At low tide, the beach is wide and contains extensive tidepools which may contain interesting amphipods and other aquatic biota. Various crustose lichens are growing on the boulder field.

*Landings.* The landing at Cape Lachman is along a wide shallow beach. Visitors can hike from the beach up along the rocky ridge to a plateau which overlooks the surrounding areas.

*Site Sensitivities.* None.

*Proximate visitor sites.* Camp Hill (HILL), Crystal Hill (BRYs), and Vortex Island (VORT)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
																✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Oc		Oc			Oc					Oc	Oc	Oc	Oc	

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2008/09 (ASI, unpublished)

**Lainez Point (LAIN)**

**SW region (-67.68, -67.80)**

A point that forms the N side of the entrance to Dalglish Bay, across from Bongrain Point, on the W side of Pourquoi Pas Island, off the W coast of Graham Land (USBGN).

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* Avoid nesting South Polar Skuas which breed in high numbers all around the site.

*Proximate visitor sites.* Pourquoi Pas Island (POUR), Webb Island (WEBB), Jenny Island (JENN)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
				Br						Br		Br		Br		

**Lautaro Neck, Lautaro Island (LAUT)**  
**CW region (-64.83, -63.10)**

On a 1-mi-long island lying immediately N of San Eliado Point on Bryde Island in Paradise Harbor.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* O’Neil Point (ONEI), the Bryde Island Vicinity sites (BRYS, BRYC, BRYE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br														

**Recent ASI Census Data**

GEPE
c. 200 nests in 2010/11 (ASI, unpublished)

**Lecointe Island (LECO)**  
**CW region (-64.27, -62.05)**

An elongated 4-mi-long island, 700 meters in elevation, separated from the E coast of Brabant Island by Pampa Passage.

*Landings.* Rocky coast with no known locations for landings. ASI censuses achieved from ship.

*Site Sensitivities.* None

*Proximate visitor sites.* Hydruga Rocks (HYDR), Gouvernoren harbor (GOUR), Enterprise Island (ENTE), Foyen Harbor (FOYN)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓	✓	✓							✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Br								

**Recent ASI Census Data**

BESH
7 N1 23 Dec 2001
4 N1 12 Dec 2002



## Lindblad Cove (LIND)

NW region (-63.85, -59.45)

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

A 5-kilometer-wide cove between Almond Point and Auster Point in Charcot Bay, named in commemoration of Lars-Eric Lindblad (1927-94), a pioneer in Antarctic tourism who operated the first cruise to Antarctica in 1966 and was a leader in the concept of expedition tourism as a means of environmental awareness.

*Landings.* No landing is possible and the cove is best explored by zodiac cruise.

*Site Sensitivities.* None.

*Proximate visitor sites.* None.

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
																✓		✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc				Oc		Oc				Oc		Oc	Oc	Oc	

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2003/04 (ASI, unpublished).

**Port Lockroy, Goudier Island (LOCK)**  
**CW region**

**Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages**

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br						Oc	Br			Br		Oc		



# Goudier Island

64°49'S, 63°29'W - Located in Port Lockroy on the western side of Wiencke Island

## Key features

- Historic British Base A, Port Lockroy
- Gentoo Penguins
- Glacial Scenery



## Description

### TOPOGRAPHY

Goudier Island is a small low-lying rocky island. At the beginning of the season, fast ice is likely to surround much of it. Snow cover melts back during the summer.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*) and Snowy sheathbills (*Chionis alba*). Dominican gulls (*Larus dominicanus*) and Subantarctic skuas (*Catharacta skua*) nest on the nearby Bills Island. Crabeater seals (*Lobodon carcinophagus*) also breed locally in Port Lockroy. Regularly haul out: Weddell seals (*Leptonychotes weddelli*).

### FLORA

*Buellia* spp., and *Verrucaria* spp. are present. *Verrucaria serpuloides* (the only known marine lichen in the world) is restricted to this area, occurring from the low tide mark to ca. 10 metres depth. The green alga *Prasiola crispa* is frequent.

### OTHER

"Base A" is designated as Historic Site and Monument No. 61 under the Antarctic Treaty. It is operated by the United Kingdom as a living museum. In addition to Bransfield House (the main base building), there is a boat shed, building foundations and a number of associated artifacts on Goudier Island.

## Visitor Impact

### KNOWN IMPACTS

The base staff monitor the population and breeding success of the gentoo penguins on the island. Despite high numbers of visitors, there has been no discernible impact on the breeding success of this colony.

### POTENTIAL IMPACTS

Fire. Minor fuel spills. Disturbance of wildlife and the monitoring programme.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 3 ships per day (midnight to midnight).

### VISITORS

No more than 60 visitors to the island at any time, exclusive of expedition guides and leaders. No more than 350 visitors per day. 1 guide to 20 visitors. "Base A" and the associated artifacts on the island are owned and managed by the United Kingdom. Visits to the base may only take place with the prior agreement of the Base Leader\*\*. No more than 35 visitors are allowed inside the base at any one time. Please respect the privacy of the occupants of the Base and do not land visitors ashore between 18:00hrs and 07:00hrs (local time), without express agreement from the Base Leader. Where practicable, Expedition Leaders are requested to invite at least one member of the Port Lockroy staff to come aboard the vessel to brief passengers and staff prior to any visit taking place.

## Visitor Area

### LANDING AREA

The preferred site is on the west side of the island next to the whalers' mooring chains. When this is not accessible, an alternative is located on the north side of Goudier Island opposite the boat shed.

### CLOSED AREAS

The eastern side of the island is roped off and marked as an undisturbed area.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors should use the two paths (shown on the map) which are maintained for access to and from the base. With the permission of the Base Leader, visitors may also roam freely, but under close supervision, except in the closed areas. However, given the irregular topography at this site, guides should be aware that it is more difficult to ensure the necessary supervision of visitors.

\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* It is the UK's policy to only allow visits from Government or IAATO Member vessels. Visitors enter the base at their own risk and neither the British Antarctic Survey, the United Kingdom Heritage Trust, nor the UK authorities will be liable for any personal injury or damage to property that may be sustained.



# Goudier Island

64°49'S, 63°29'W - Located in Port Lockroy on the western side of Wiencke Island



"Base A", Goudier Island, Port Lockroy

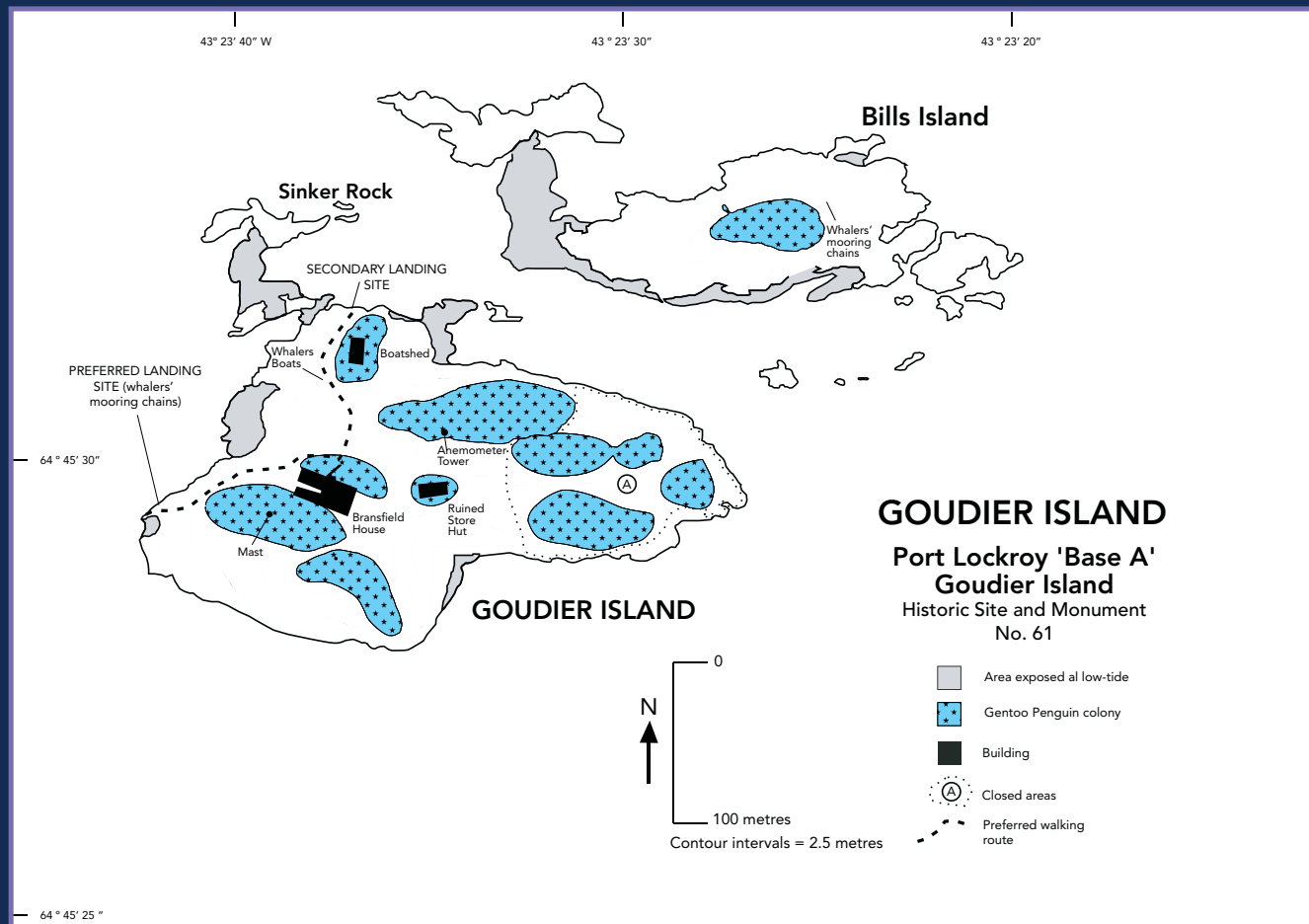
## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Give animals the right-of-way. Be aware that there is restricted visitor space on the island and particular caution should be exercised to avoid disturbing the wildlife. Be careful around the base buildings, structures and remains. Do not move or damage the whaling artefacts on the island. Before entering the base, all boots should be cleaned. As far as practicable, any snow or moisture from clothes and backpacks should be brushed off. Do not touch any artifacts on display, or any personal possessions of the staff who live at the base. Smoking is strictly prohibited.

### CAUTIONARY NOTES

Be aware that this site can be particularly muddy, wet and slippery.



**Cape Lookout (LOOK)**  
**EI region (-61.27, -55.20)**

This steep, 240-meter-high bluff marks the S end of Elephant Island.

*Landings.* The narrow spit W of the bluff may be used for zodiac landings, but only in the best of sea state and weather conditions, and if the rocky beach is not overrun by fur seals. Zodiac operations are likely to encounter high swell and spray.

*Site Sensitivities.* Uncharted water near shore. Hazardous rocks along the shoreline may be exposed, depending on the tide. Landing on exposed, rocky beach, surrounded by water on three sides, and often subjected to high swell and wind; beyond the beach, difficult hiking and walking because of the very rocky terrain and steep scree slopes. Very restricted visitor space because of topography, tide, swell, density of nesting penguins, and hauled-out seals.

Walk slowly and carefully around nesting, crèching, or molting penguins; avoid impeding their access to and from the water. Avoid and stay clear of wallowing elephant seals. Avoid and stay clear of Antarctic fur seals, which should be given a wide berth and should not be approached.

*Proximate visitor sites.* Point Wild (WILD), Cape Belsham (BELS), Gibbs Island (GIBB)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓						✓				✓	✓		✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br	Br	Oc	Oc	Br		Br	Br		Oc	Oc	Oc	Oc	Oc	Wa

**Recent ASI Census Data**

GEPE	CHPE	MCPE
313 C1 22 Jan 2007	No counts available	No recent counts 273 N2 6 Dec 1971 (C&K 79)

## Loubat Point (LOUB)

CW region (-65.07, -63.93)

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

Along with Glandaz Point and Humphries Heights, Loubat Point is one of three gentoo penguin breeding sites in the Lemaire Channel that are extremely hard-to-reach and, because of rockfalls, crevasses, and avalanches, dangerous.

*Site Sensitivities.* Extremely unstable snow and rock access. The penguin “highways” that enable their access to and from the Lemaire Channel, should be avoided.

*Proximate visitor sites.* Glandaz Point (GLAN), Humphries Heights (HUMP), Pléneau Island (PLEN), Booth Island (BOOT), Petermann Island (PETE)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓	✓	✓		

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br							Oc			Oc				

### Recent ASI Census Data

GEPE
c. 150 nests in 2008/09 (ASI, unpublished)

**Madder Cliffs (MADD)**  
**NE region (-63.30, -56.48)**

Reddish rock cliffs rising steeply from the sea to >300 meters and forming the N side of the entrance to Suspiros Bay, at the W edge of Kinens Cove and the W end of Joinville Island. The name reflects the red color of the rocks, madder being a red vegetable dye. Adelie penguin colony along exposed, scree and tuff ridges above the rocky beach.

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* Walk slowly and carefully around the breeding penguins.

*Proximate visitor sites.* d’Urville Monument (DURV), Brown Bluff (BROW), Jonassen Island (JONA)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓							✓		✓						

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br		Br		Oc		Oc	Oc	Oc	Br		Oc		Oc	Br	Oc	

**Recent ASI Census Data**

GEPE	ADPE
304 N1 12 Jan 2005 455 C1 12 Jan 2005	Very rough estimate of 20,000-25,000 nests in 2002/03

**Marambio Station Vicinity (MARA)**  
**NE region (-64.25, -56.66)**

**ADVANCE NOTICE must be given before visiting the station**

Argentine research station found on the NE end of Seymour Island, a barren, 10-mi-long and 5-mi-wide island lying one mi NE of Snow Hill Island.

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓															

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
															Oc	



**Marshall Bay (MARS)**  
**SO region (-60.65, -45.63)**

Marshall Bay is two mi wide and lies between Capes Vik and Hansen on the southern side of Coronation Island (USBGN).

*Landings.* Landing site in small cove, either on small cobble beach or smooth rocks along the side.

*Site Sensitivities.* Walk slowly and carefully around the breeding penguins.

*Proximate visitor sites.* Sandefjord Bay (SAND), Shingle Cove (SHIN), Amphibolite Point (AMPH), Gibbon Bay (GIBA)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓							

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br											Br					

**Recent ASI Census Data**

ADPE
13,381 N3 17 Dec 2003

**Martin Islands South (SOMI)**  
**SW region (-65.69, -65.33)**

Group of islands and rocks 5 mi in extent and lying 5 mi E of the N part of Renaud Island and 1 mi W of Vieugue Island in Grandidier Channel (USBGN).

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* Fish Islands (FISH) and Prospect Point (PROS).

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Oc						Br				Oc				

**Recent ASI Census Data**

ADPE	BESH
c. 500 nests in 2007/08 (ASI, unpublished)	c. 25 nests in 2007/08 (ASI, unpublished)

**McCall Point (MCAL)**  
**SW region (-67.03, -66.63)**

A point on the E side of the Lallemand Fjord, 4 mi NW of Salmon Cove, in Graham Land; a continental landing site that is barren, rocky, and with minimal vegetation (moss, spp., crustose lichens, spp., and snow algae).

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* Detaile Island (DETA), Andresen Island (ANDR)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
										✓								

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc										Oc		Oc			Oc	

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2002/03 (ASI, unpublished).

**Melchior Islands (MELC)**  
**CW region (-64.32, -62.95)**

Site is dangerous, difficult, or impossible to access; appropriately visited *only* by zodiac cruising

A group of many low, ice-covered islands lying near the center of Dallman Bay in the Palmer Archipelago (USBGN). A paucity of wildlife. There is an Argentine research facility. Deeper offshore waters of Dallman Bay attract humpback whales, and there may be spectacular, grounded icebergs.

*Landings.* No details available because this site has only been surveyed by zodiac.

*Site Sensitivities.* None.

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc	Oc						Oc				Oc		Oc		

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2006/07 (ASI, unpublished).

## Miers Bluff (MIER)

SH region (-62.72, -60.43)

Bluff marking the S end of Hurd Peninsula which separates False and South Bays on the S coast of Livingston Island, in the South Shetland Islands (USBGN).

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* Avoid nesting chinstrap penguins.

*Proximate visitor sites.* Hurd Peninsula West (HURW), Hannah Point (HANN)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br															

### Recent ASI Census Data

CHPE
c. 2500 nests in 2010/11 (ASI, unpublished)

**Mikklesen Harbor (MIKK)**  
**CW region (-63.90, -60.78)**

A small bay indenting the S side of Trinity Island between Skottsberg and Borge points, in the Palmer Archipelago. It was discovered by the Swedish Antarctic Expedition, 1901-4 (USBGN).

*Landings.* The landing site is a small islet in the harbor, which is marked by a navigation tower and some unmanned huts. Rocky islet that may be snow-covered well into the austral summer. Approaching zodiacs must beware of rocks in shallow waters surrounding the islet. Landings have taken place at both the N and SE ends of the islet.

*Site Sensitivities.* Gentoo penguins are easily approached and disturbed; walk slowly around them and avoid impeding their access to and from the water.

*Proximate visitor sites.* Skottsberg Point (SKOT), Tetrad Islands (TETR), Cierva Point (CIER)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓					✓							✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc	Br		Oc		Br		Oc	Br	Oc	Oc	Oc		Br	Br	

**Recent ASI Census Data**

GEPE
c. 900 nests in 2007/08 (ASI, unpublished)

**Mitchell Cove (MITC)**  
**SH region (-62.39, -59.63)**

Cove the NW end of Robert Island.

*Landings.* Cobble landing beach, with fragile substrate and glacial silt moraine.

*Site Sensitivities.* Substrate is fragile, requiring walking and hiking in melt streams. Dense beds of moss, spp. both on lower slopes and higher elevations. Watch footsteps carefully, especially when snow cover is absent, to avoid trampling moss and lichens. Stay clear of areas where terns are nesting.

*Proximate visitor sites.* Cecilia Island (CECI), Yankee Harbor (YANK), Fort Point (FORT), Robert Point (ROBE), Barrientos Island (AITC)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓	✓	✓							

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Oc								Br	Br	Br	Br	Oc	Br	Oc

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2003/04 (ASI, unpublished).

## Moot Point (MOOT)

CW region (-65.20, -64.10)

A small point just W of Blanchard Ridge on the W coast of Graham Land, SE of and across Penola Strait from Petermann Island. Named Moot Point because, from 1909, it had remained a moot point whether access to the plateau could be gained from this landing place (USBGN 95).

*Landings.* Access to Moot Point is via a rocky shoreline that is likely too steep for most visitors except under the most tranquil conditions.

*Site Sensitivities.* There is a small gentoo penguin colony that is easily disturbed because of the limited available walking space.

*Proximate visitor sites.* Petermann Island (PETE), Yalour Islands (YALO).

### Landing Characteristics

#### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓	✓	✓	✓	✓	✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc		Br							Oc	Oc		Oc		Br	Oc	

### Recent ASI Census Data

GEPE
74 N1 24 Nov 2005 101 N1 25 Dec 2006
First reported breeding of gentoos at this site. This colony has been increasingly rapidly in size since its establishment.





**Neko Harbor (NEKO)**  
**CW region (-64.83, -62.55)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br		Oc		Oc	Oc	Oc	Oc	Br	Br	Br	Oc	Br	Br	Oc

**Recent ASI Census Data**

GEPE
1,072 N1 11 Dec 2002
1,088 N1 21 Dec 2003
1,096 N1 14 Dec 2004
1,301 N1 3 Dec 2005
1,726 C1 28 Jan 2006
1,153 N1/N2/N3 13 Dec 2006
N1/N2/N3 count of 1,153 is up 37% since N1 count of 844 in 1999 (Naveen <i>et al.</i> 2000)

# Neko Harbour

64°50'S, 62°33'W - Located in Andvord Bay

## ANTARCTIC TREATY

visitor site guide



### Key features

- Glacial scenery
- Gentoo Penguins



## Description

### TOPOGRAPHY

Neko Harbour is a small bay, with a cobble beach extending approx 500 metres at the southwestern end. Behind the beach a rocky outcrop leads up to the foot of a permanent snowslope. The glaciers around the site are highly crevassed and those surrounding the bay regularly calve.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*), kelp gulls (*Larus dominicanus*), and skuas (*Catharacta, spp.*).

Regularly haul out: Weddell seals (*Leptonychotes weddellii*)

### FLORA

Swards of moss species, the green alga *Prasiola crispa* and snow algae.

### OTHER

There is an Argentine refuge hut on the site.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers. One ship at a time. Maximum 3 ships per day (midnight to midnight), of which no more than two may be vessels carrying more than 200 passengers.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time), except for those engaged in organised overnight stays. This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

On the cobble beach southwest of the refuge hut.

### CLOSED AREAS

None.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors can roam freely, but under supervision.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Be careful near skuas, they may be aggressive.

Do not walk on any vegetation.

### CAUTIONARY NOTES

Be aware that glacier calving may produce dangerous waves. Avoid the beach or be prepared to evacuate quickly up the hill. Do not enter the refuge hut.

\* A ship is defined as a vessel which carries more than 12 passengers.

# Neko Harbour

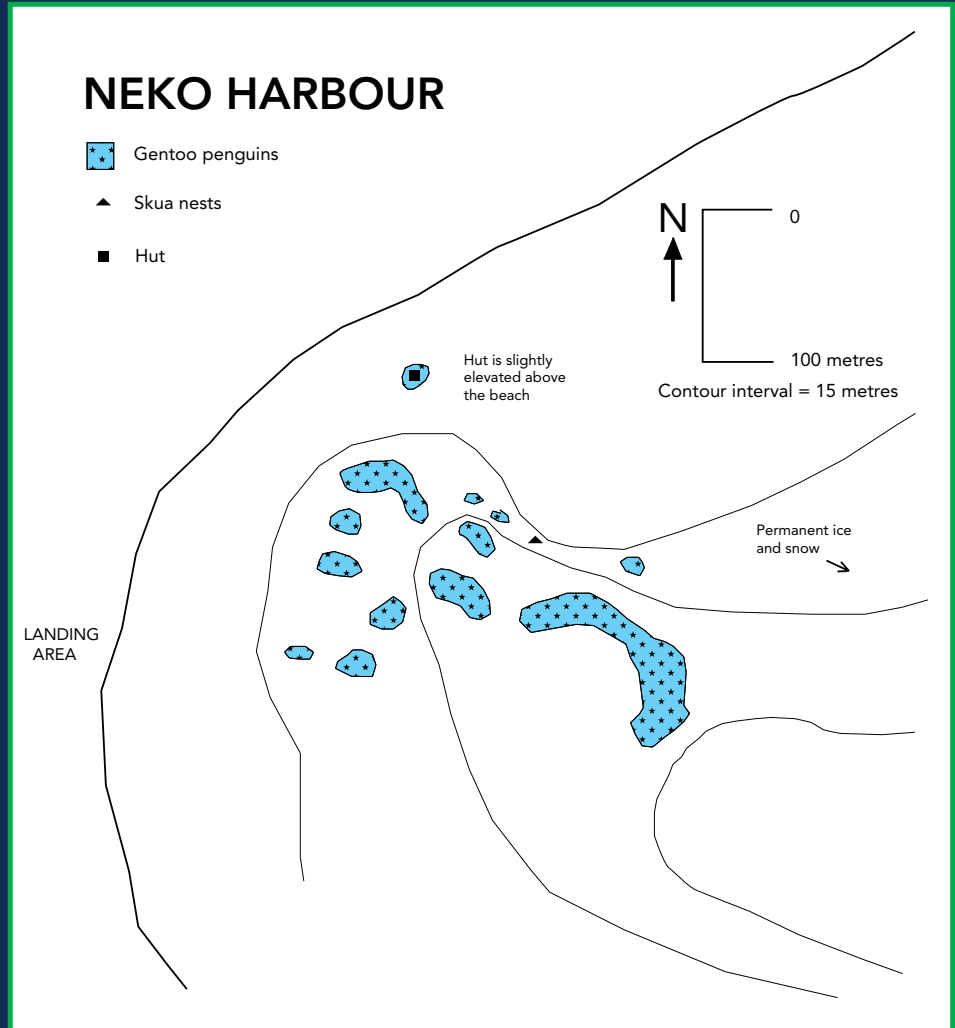
64°50'S, 62°33'W - Located in Andvord Bay



Neko Harbour landing beach



The refuge hut is slightly elevated above the beach, and often surrounded by nesting penguins



**O'Neil Point (ONEI)**

**CW region (-64.82, -63.10)**

The N point of Lautaro Island, lying 1.5 mi WSW of Lemaire Island in Gerlache Strait (USBGN).

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* None.

*Proximate visitor sites.* Lautaro Neck, Lautaro Island (LAUT), Bryde Island Vicinity sites (BRYE, BRYC, BRYS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	
																			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br														

**Recent ASI Census Data**

GEPE
c. 200 nests in 2010/11 (ASI, unpublished)

## Cape Obelisk (OBEL)

NE region (-64.13, -58.45)

Located at the N end of the entrance to Röhss Bay on the W side of James Ross Island. Discovered by Nordenskjöld's Swedish Antarctic Expedition and named for a conspicuous rock pinnacle two mi within the headland, visible from the NW and S (USBGN). Moss, spp., crustose lichens (*Xanthoria* spp., *Caloplaca* spp.) and fruticose lichens (*Usnea* spp.) have been recorded.

*Landings.* Barren landing beach.

*Site Sensitivities.* None.

*Proximate visitor sites.* Persson Island (PERS), Rum Cove (RUMC)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓									

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
												Oc		Oc		

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2001/02 (ASI, unpublished).

**Orcadas Station Vicinity (ORCA)**  
**SO region (-60.77, -44.67)**

**ADVANCE NOTICE must be given before visiting the station**

Orcadas Station is the Argentine Research Station in the South Orkneys. The station is located on a gravel bar of cobbles and pebbles that connects the high peaks on the E end of Laurie Island. Uruguay Bay is to the N, Scotia Bay to the S. Scree slopes are developed along the base of the cliffs around Scotia Bay and at both ends of the gravel bar where the station is located. E of the station a large glacier comes down to the shore and calves into Scotia Bay. Another large glacier comes to the shore of Uruguay Bay W of the station.

*Landings.* Visitors may reach Orcadas by zodiac, with advance permission required, as with all station visits, under the terms of the Antarctic Treaty. Visitors are prohibited from landing at Port Martin, where large Adélie and chinstrap penguin colonies are being studied. Punta Cormorán, located between the base and Port Martin has an Adélie penguin colony and visitors may land here with advance permission from base personnel.

*Site Sensitivities.* Take care to avoid disturbing scientific or station activities.

*Proximate visitor sites.* Gibboin Bay (GIBA), Shingle Cove (SHIN)

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	BBSP	KEGU	ANTE	ELPH
Br		Br	Oc	Br		Br	Br		Br			Oc	Br	Br	Br	Br	

**Census Data**

ADPE
N4/5 count of 24,600 in 1983 (W 93)

## Orne Islands (ORNE)

CW region (-64.67, -62.67)

A group of small islands lying close to Rongé Island, off the W coast of the Antarctic Peninsula (USBGN). The largest island, where ASI censuses of chinstrap penguins take place, has a rocky dome up to 75 m high. The areas occupied by chinstrap penguins consist of a cryoturbated (i.e. broken and churned by freezing and thawing) rock covered with thin, angular plates of rock and some pebbly material. Gentoo penguins have recently established themselves on a small islet 3 m off the south side of the largest island. The islands are coated with abundant guano. ASI floral records include: snow algae; *Xanthoria*, spp. and other crustose lichens, and moss, spp.

**Landings.** Uncharted water near shore. Hazardous rocks along the shoreline may be exposed, depending on the tide. Landings on slippery cobble at N end of the largest in a small group of islands, which extends for one mi N to S, with slopes rising moderately to a domed summit. This landing site had no beach, with bare rock extending directly down into the water.

**Site Sensitivities.** Stay clear of — and do not hike upon or wander over — crevassed snowfields, cliff edges, or snow cornices. Snow cover may be extensive and hiking difficult. Chinstrap penguins nest in widely scattered, small colonies on W side, the first located just uphill from the N landing beach; they are easily approached and disturbed; walk slowly around them. Blue-eyed shags formerly nested on ridges at the S end, which are not easy to access; last recorded nesting in 1998. Avoid of skua nesting territories.

**Proximate visitor sites.** Cuverville Island (CUVE), Georges Point (GEOR), Rongé Island East (RONE)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br		Oc		Oc		Br	Br	Br	Br	Br	Oc	Br	Br	Oc

### Recent ASI Census Data

CHPE	GEPE	BESH
396 N1 14 Dec 2000 634 C1 23 Jan 2001 106 N1 24 Dec 2001 111 C1 15 Feb 2002 338 N1 9 Dec 2002 472 C1 14 Feb 2003 350 N1 22 Nov 2005 489 C1 5 Feb 2006 447 C1 26 Jan 2007  N1 count of 350 in Nov 2005 is down 17% since N1 count of 421 in Nov 1999 (Naveen <i>et al.</i> 2000)	c. 60 nests in 2008/09, which is a new population of breeding gentoos	0 N1 14 Dec 2000 0 C1 23 Jan 2001 0 N1 15 Feb 2002 0 C1 15 Feb 2002 0 N1 22 Nov 2005 0 N1 22 Nov 2006  Although there were 15 active nests in Dec 1994 (Naveen <i>et al.</i> 2000), this population went extinct in 1999 and has not reestablished



**Paradise Harbor Beacon (PABE)**  
**CW region (-64.85, -62.90)**

Small rocky islet with navigational beacon near the S end of Paradise Harbor.

*Landings.* Due to limited space for walking, this site is best viewed by zodiac.

*Site Sensitivities.* None.

*Proximate visitor sites.* Waterboat Point (WATE), Almirante Brown (ALMI), Bryde Island (BRYD)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
														✓				

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br		Oc												

**Recent ASI Census Data**

GEPE
3 N1 24 Dec 2006

**Paulet Island (PAUL)**  
**NE region (-63.58, -55.78)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Oc		Oc		Br	Br	Br	Br	Br	Br	Br	Br	Br	Br	Oc

**Recent ASI Census Data**

ADPE	BESH
N2/3 estimate of c. 100,000 (Naveen, 2000)	291 N1 25 Dec 2000 279 C1 9 Jan 2001 321 N1 21 Dec 2001 273 N1 10 Jan 2003 524 C2 20 Jan 2003 534 N1 24 Dec 2004 413 N1 20 Nov 2005 327 A1 13 Jan 2006 804 N1/N2 19 Nov 2006 465 C2 18 Feb 2007  N1/N2 count of 804 in Nov. 2006 is up 113% since N2 count of 377 in Nov. 1999 (Naveen <i>et al.</i> 2000)



# Paulet Island

63°35'S, 55°47'W - Northwestern Weddell Sea,  
southeast of Dundee Island

## Key features

- Extensive Adélie Penguin colony
- Stone hut, grave and cairn  
(Historic Site and Monument No.41)



## Description

### TOPOGRAPHY

This circular island is 1.6 km in diameter. It has a distinct volcanic cone that rises to a height of 350 metres. A flat terrace forms an apron around the north and northeast side of the island. At high tide, this terrace is largely submerged, severely restricting visitor space.

### FAUNA

Confirmed breeders: Adélie penguins (*Pygoscelis adeliae*), blue-eyed shags (*Phalacrocorax atriceps*), kelp gulls (*Larus dominicanus*) and snowy sheathbills (*Chionis alba*);

Likely breeders: Snow petrels (*Pagodroma nivea*) and Wilson's storm-petrels (*Oceanites oceanicus*);

Regularly haul out: Weddell seals (*Leptonychotes weddellii*) and Antarctic fur seals (*Arctocephalus gazella*) (the latter potentially in large numbers from February onwards). Leopard seals (*Hydrurga leptonyx*) often hunt offshore.

### OTHER

Stone hut, grave and cairn (Historic Site and Monument No. 41).

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife, particularly Adélie penguins, and damage to the historic site.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time. Maximum 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors at any time. However, at high tide, no more than 50 visitors at any time in the area around the northern coast landing site. Maximum visitor numbers are exclusive of expedition guides and leaders, maintaining a minimum ratio of 1 guide to 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a rest period for wildlife.

## Visitor Area

### LANDING AREA

Cobble landing beaches on either the northern or northeastern coast. Landing may be impossible late in the season, if Antarctic fur seals are present in large numbers.

### CLOSED AREAS

*Closed Area A:* Loose steep scree slopes which are densely packed with breeding Adélie penguins. Snow petrels and Wilson's storm-petrels strongly suspected of breeding in the scree.

*Closed Area B:* Densely packed area to the northeast of the island, with breeding Adélie penguins and blue-eyed shags, including Adélie penguin control colonies.

### GUIDED WALKING AREAS

Because of restricted visitor space, all walks at this site should be carefully controlled in guided groups of no more than 15-20 visitors. Groups should be well-spaced and follow the designated paths along the northern coast, or towards the historic hut and the volcanic, ovoid lake.

### FREE ROAMING AREAS

None.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Paulet Island

63°35'S, 55°47'W - Northwestern Weddell Sea,  
southeast of Dundee Island

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife, and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Be careful near Antarctic fur seals. They may be aggressive.

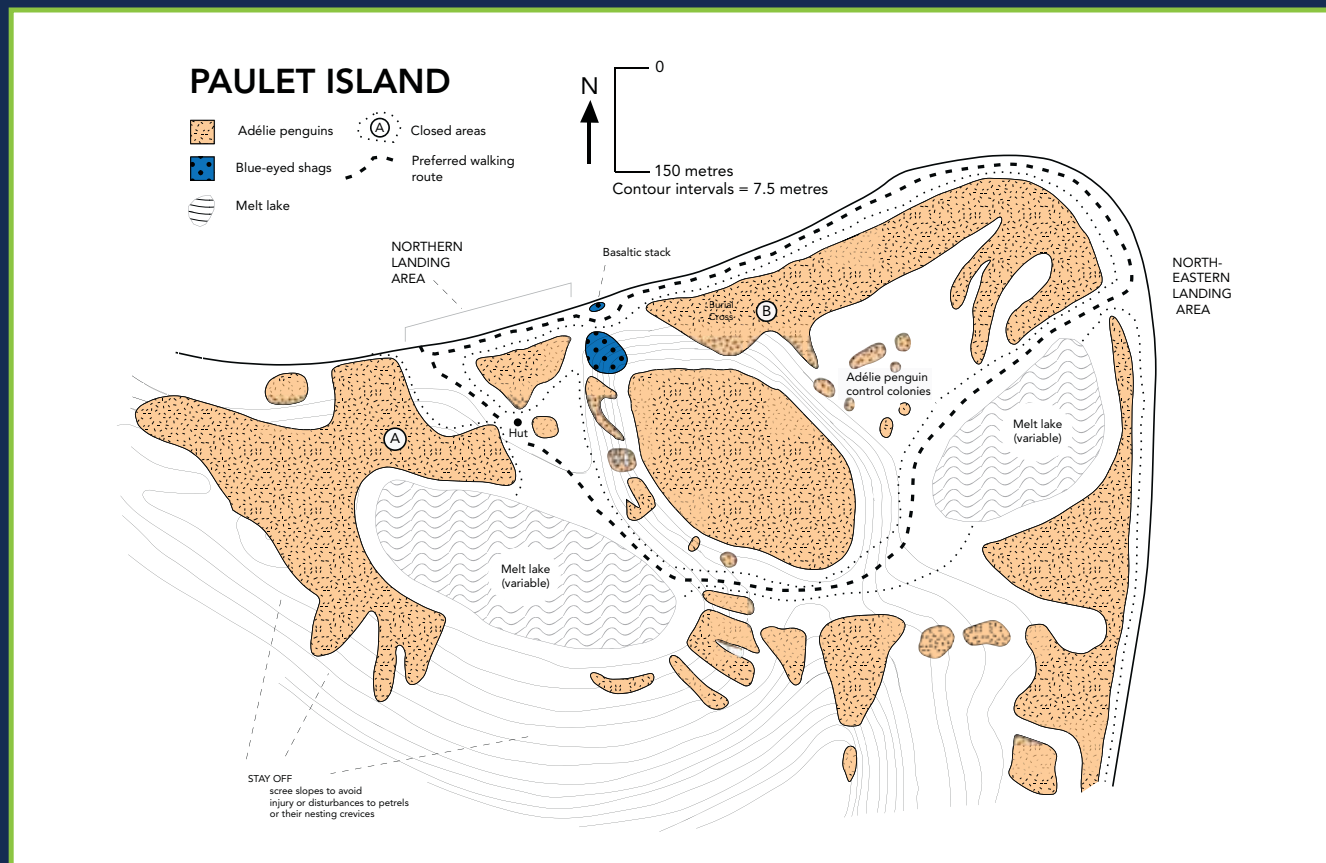
### CAUTIONARY NOTES

Stay clear of — and do not venture on — loose scree slopes.

Ensure the protection of the Historic Site and Monument. Maintain a distance of at least 1 metre from the walls of the hut, as trampling immediately next to the loose walls may cause damage.



Paulet Island from above



**Pendulum Cove, Deception Island (PEND)**  
**SH region (-62.93, -60.60)**

Please refer to DECEPTION ISLAND MANAGEMENT PLAN in the Appendix

The cove is located on the NE side of Port Foster, Deception Island, and its name relates to pendulum and magnetic observations made by a British expedition in 1829. The flat, black sand beach slopes gently offshore and forms a distinct beach ridge. From the beach the ground slopes gently up to the Chilean research station that was destroyed during the 1967 eruption.

*Landings.* The beach is entirely composed of loose cinders, with no soil.

*Site Sensitivities.* The ground behind the ruins of the old station rises abruptly to the inner caldera wall, which at this point is mostly covered with glacial ice from the E rim ice cap. A substantial hill to the E is covered with ash and cinders that are deeply gullied. An Antarctic Specially Protected Area (ASPA) is located here, and is intended to protect rare bryophytes; entry is prohibited.

*Proximate visitor sites.* Whaler's Bay (WHAL), Telefon Bay (TELE), Vapour Col (VAPO), Baily Head (BAIL)

**Penguin Island (PENG)**  
**SH region (-62.10, -57.90)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
	✓	✓	✓	✓	✓	✓	✓	✓							✓			✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Br	Oc		Br		Oc		Oc	Oc	Oc	Oc	Br	Oc	Br	Br	Oc

**Recent ASI Census Data**

ADPE	CHPE	SOGP
c. 200 nests in 2010/11 (ASI, unpublished)	c. 3000 nests in 2010/11 (ASI, unpublished)	c. 400 nests in 2010/11 (ASI, unpublished)

# Penguin Island

62°06'S, 57°54'W - Eastern King George Island

# ANTARCTIC TREATY

visitor site guide



## Key features

- Dormant volcanic cone
- Southern Giant Petrels
- Chinstrap Penguins
- Vegetation
- Whale bones



## Description

### TOPOGRAPHY

This oval island is 1.6km long. The site's prominent geological feature is the 170m high cone of Deacon Peak, the northern face of which slopes gently down to the landing beach. Most of the island is surrounded by low cliffs, and there is a crater lake in the northeast.

### FAUNA

Confirmed breeders: Chinstrap penguins (*Pygoscelis antarctica*), Adélie penguins (*Pygoscelis adeliae*), southern giant petrels (*Macronectes giganteus*), Antarctic terns (*Sterna vittata*), kelp gulls (*Larus dominicanus*), and skuas (*Catharacta spp.*). Likely breeders: Snowy sheathbills (*Chionis alba*) and Wilson's storm-petrels (*Oceanites oceanicus*). Regular roosting: blue-eyed shags (*Phalacrocorax atriceps*). Regularly haul out: Southern elephant seals (*Mirounga leonina*) and Weddell seals (*Leptonychotes weddellii*).

### FLORA

*Deschampsia antarctica*, *Colobanthus quitensis*, *Xanthoria elegans*, moss species, *Caloplaca* and other crustose lichen species, and large swards of the fruticose lichen *Usnea antarctica*.

## Visitor Impact

### KNOWN IMPACTS

Erosion of footpaths en route to Deacon Peak.

### POTENTIAL IMPACTS

Trampling of vegetation, and disturbance of wildlife, particularly southern giant petrels.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time. Maximum 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a rest period for wildlife.

## Visitor Area

### LANDING AREA

The broad cobble beach along the northern coast. Be sure to land well clear of the low cliffs to the west of the landing beach because of the nesting southern giant petrels (Closed Area A).

### CLOSED AREAS

*Closed Area A:* Northwestern area of the island and low cliffs along the northern coastline where southern giant petrels nest.

*Closed Area B:* Vicinity of low cliff at the northeastern end of the island, where southern giant petrels nest.

*Closed Area C:* Rim of "crater lake" and knolls to the south, which have dense vegetation and where southern giant petrels nest.

*Closed Area D:* Monitoring control sites for penguins at the southern end of the island.

### GUIDED WALKING AREAS

Those visiting the chinstrap colonies at the northern end of the island should be under close supervision along the cobble shoreline. Particular caution should be exercised in guiding visitors quietly and slowly along the beach to the north of Closed Area B, to avoid disturbing the nesting southern giant petrels on the ledges above. Visitors to Deacon Peak should be directed toward the designated path to the west of Closed Area B. From the chinstrap colony it is also possible to follow the route south of "Skua Knoll". However, this route should only be taken in small guided groups to avoid trampling the vegetation.

### FREE ROAMING AREAS

None.

\* A ship is defined as a vessel which carries more than 12 passengers.





# Penguin Island

62°06'S, 57°54'W - Eastern King George Island

visitor site guide

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

When on the same level as, or higher than, nesting southern giant petrels, maintain a precautionary distance of at least 50 metres. Increase this distance if any change in the birds' behaviour is observed.

Be careful near Antarctic fur seals, they may be aggressive.

Do not walk on any vegetation.

### CAUTIONARY NOTES

While weather conditions can change rapidly anywhere in the Antarctic, this location is particularly prone to such changes.



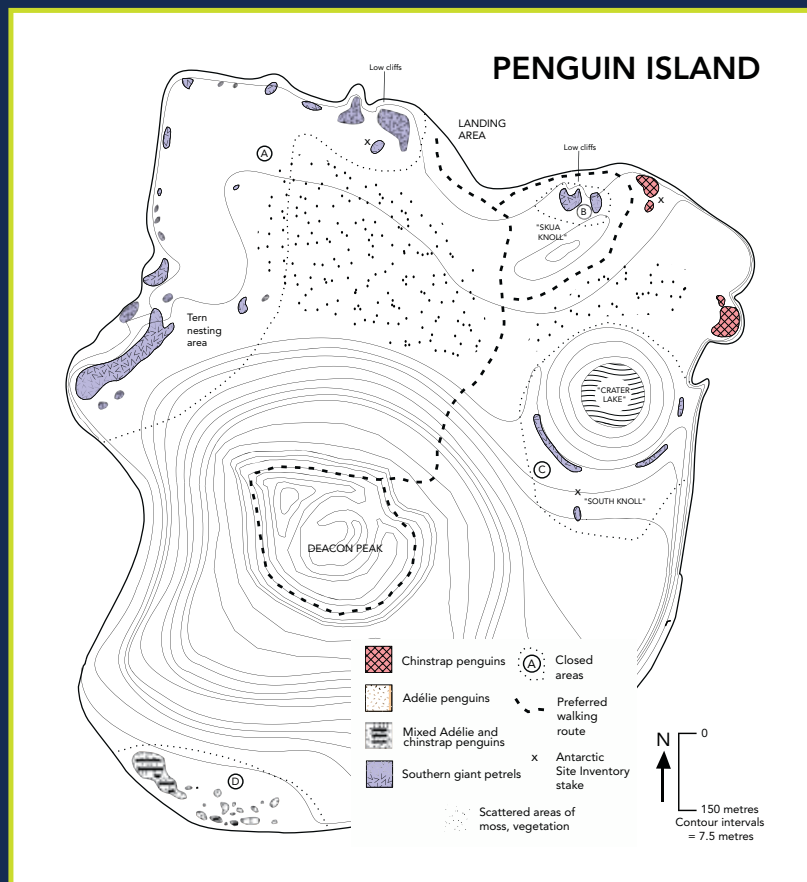
Penguin Island from above



The path up Deacon Peak is clearly visible, particularly late in the season



Landing site - be sure to stay clear of nesting giant petrels to the west





**Penguin Point (PEPO)**  
**NE region (-64.32, -56.72)**

Penguin Point is located on on Seymour Island, SE of the Argentine Marambio station. The site has a barren clay and mud landscape and an easily approached, large colony of Adélie penguins sprawled upward from the site's landing beach.

*Landings.* The beach below the penguin colony provides access, if not blocked by ice.

*Site Sensitivities.* The penguins are easily approached and disturbed; walk slowly around them and avoid impeding their access to and from the water.

*Proximate visitor sites.* Marambio Station Vicinity (MARA), Cockburn Island (COCK), Snow Hill Island (SNOW)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓					✓		✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br		Oc		Oc		Oc		Oc	Oc	Br	Br	Br	Oc	Br	Br	

**Recent ASI Census Data**

ADPE
26,400 N4 22 Dec 2006
No change since N2 count of 21,954 in 1985 (W 93)

**Persson Island (PERS)**  
**NE region (-64.22, -58.40)**

A 1.5-mi-long island in the entrance to Röhss Bay on the SW side of James Ross Island (NSF 1995). ASI floral records include: moss, spp. and various lichens (*Usnea*, spp., *Mastodia*, spp., *Caloplaca*, spp., and *Xanthoria*, spp.).

*Landings.* Rocky landing beach. Much frost heaving in the rocks, some fossils observed, and evidence of previous volcanic activity. Until recently, the SW end of James Ross Island and Persson Island were covered by the Larsen Ice Shelf.

*Site Sensitivities.* None.

*Proximate visitor sites.* Rum Cove (RUMC), Cape Obelisk (OBEL), Cape Lachman (LACH)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓									

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2001/02 (ASI, unpublished).



**Petermann Island (PETE)**  
**CW region (-65.17, -64.17)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

For five field seasons, from 2003-04 through 2007-08, this island was the location of an Oceanites/ASI field camp, dedicated to examining change at a heavily-visited, historically-important, and environmentally-sensitive site.

This island is also where Jean Charcot's 2d French Antarctic Expedition camped during the austral winter of 1909. Charcot's lead biologist, Louis Gain, became the first scientist to band Antarctic penguins, using makeshift plastic rings of different colors, and he systematically recorded numbers of adult penguins he observed. No standardized censusing protocol then existed, but, assuming that two adult individuals comprise one occupied nest, Gain's maximum counts of 1,850 adult Adélie penguins and 112 adult Gentoo penguins suggest a 1909 population comprising 925 Adélie nests and 56 gentoo nests.

A pair of chinstrap penguins nested on the island during the 2010-11 season, making Petermann Island the 6<sup>th</sup> location in the Antarctic Peninsula where all three *Pygoscelid* penguins breed contiguously.

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Br (new)	Br		Oc	Oc	Oc	Oc	Br	Br	Br	Oc	Br	Br	Br	Br	Oc

**Recent ASI Census Data**

ADPE	GEPE	CHPE	BESH
485 N1 10 Dec 2002 553 N1 21 Nov 2003 731 C1 24 Jan 2004 532 N1 21 Nov 2004 580 C1 4 Feb 2005 505 N1 16 Nov 2005 589 C1 27 Jan 2006 410 N1 21 Nov 2006 458 C1 4 Feb 2007  N1 count of 410 is down 52% from N1 count of 862 in 1997 (Naveen <i>et al.</i> 2000)	2,212 N1 17 Jan 2004 3,260 C1 24 Jan 2004 2,301 N1 4 Dec 2004 2,781 C1 23 Jan 2005 2,438 N1 2 Dec 2005 3,453 C1 25 Jan 2006 2,293 N1 24 Nov 2006 3,344 C1 2 Feb 2007  N1 count of 2,293 is up 47% since N1 count of 1,224 in 1997 (Naveen <i>et al.</i> 2000)	1 N1 5 Dec. 2010	19 N1 15 Nov 2004 37 C1 25 Jan 2005 11 N1 16 Nov 2005 26 C1 16 Jan 2006 13 N1 4 Nov 2006 29 C1 12 Jan 2007  N1 count of 13 in Nov. 2006 is down 55% since N1 count of 29 in Nov 1997 and C1 count of 29 in Jan 2007 is down 37% since C1 count of 46 in Jan 2000 (Naveen <i>et al.</i> 2000)



# Petermann Island

65°10'S, 64°10'W - Located in the Penola Strait, south of Hovgaard Island

## Key features

- Gentoo and Adélie Penguins
- Blue-eyed Shags
- Mountainous Scenery
- Cairn (Historic Site and Monument No. 27) and Commemorative Cross.



## Description

### TOPOGRAPHY

This 1km-long island rises up to approximately 150 metres above sea level. An ice-cap covers part of the northwestern end of the island and a potentially crevassed permanent ice-slope largely covers the southern end of the island. Many small cobbled bays indent its coastline, with nearly continuous rocky outcrops along the shore.

### FAUNA

Confirmed breeders: Adélie penguins (*Pygoscelis adeliae*), gentoo penguins (*Pygoscelis papua*), blue-eyed shags (*Phalacrocorax atriceps*), Wilson's storm-petrels (*Oceanites oceanicus*), snowy sheathbills (*Chionis alba*), and south polar skuas (*Catharacta maccormicki*).

### FLORA

*Deschampsia antarctica*; swards of moss species; *Xanthoria* spp., *Caloplaca* spp., and other crustose lichens; and the green alga *Prasiola crispa* are present. Snow algae may be extensive.

### OTHER

On the site there is an Argentine refuge hut. A commemorative cross and Historic Site and Monument No. 27 is also located on the site.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife and trampling of vegetation.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers. One ship at a time. Maximum 3 ships per day (midnight to midnight), of which no more than 2 may be vessels carrying more than 200 passengers.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time), except for those engaged in organised overnight stays. This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

Along the shoreline in Port Circumcision.

### CLOSED AREAS

**Closed Area A:** Breeding Adélie penguins and blue-eyed shags in the vicinity of the basaltic dyke at the northeastern tip of the island.

**Closed Area B:** Breeding Adélie penguins at higher elevations northwest of Port Circumcision.

**Closed Area C:** Southwestern end of the island, with breeding skuas, gentoo penguins and Wilson's storm-petrels, and vegetation.

### GUIDED WALKING AREAS

Visit to the Historic Site and Monument on Megalestris Hill or to the view point at the southern end of the island should be in guided groups.

### FREE ROAMING AREAS

Visitors may roam freely, but under close supervision, except in the closed or guided walking areas. Given the irregular topography at this site, guides should be aware that it is more difficult to ensure the necessary supervision of visitors. Note that the area north of Closed Areas A and B has less room for visitors, and a higher likelihood of disruption to the wildlife. Therefore, guides should discourage visits to this area.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Petermann Island

65°10'S, 64°10'W - Located in the Penola Strait, south of Hovgaard Island

visitor site guide

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully.

Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Be careful near skuas. They may be aggressive.

Do not walk on any vegetation.

### CAUTIONARY NOTES

Do not enter the refuge hut or damage, remove or destroy the designated Antarctic Historic Site and Monument, or the commemorative cross.

Respect scientific and monitoring activities.



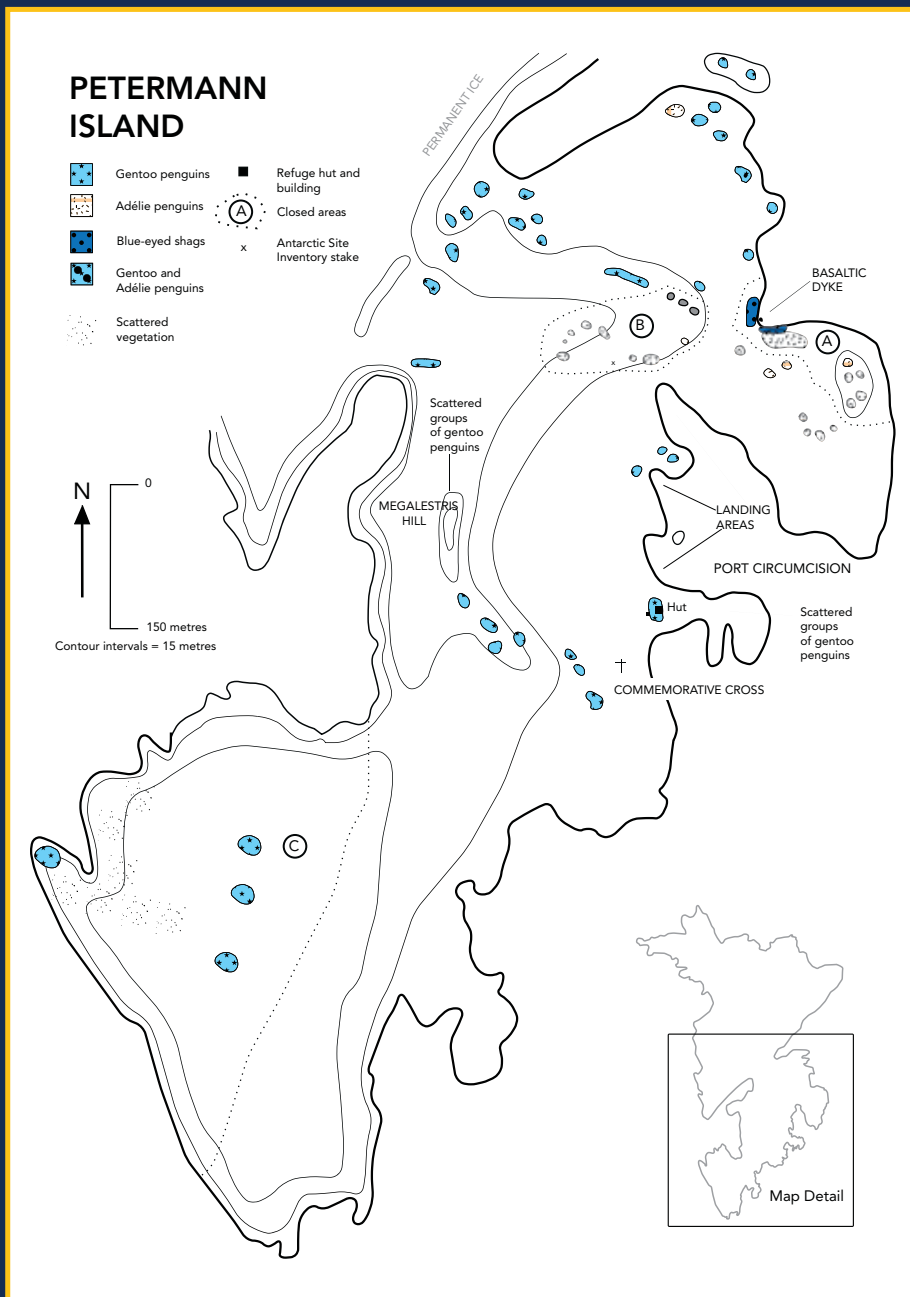
Petermann Island - refuge hut, historical features and scientific activities



Commemorative cross



Blue eyed shags in the vicinity of the basaltic dyke (NE Petermann Island)





**Pléneau Island (PLEN)**  
**CW region (-65.10, -64.07)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br		Oc				Br	Br	Br	Br	Br	Oc	Br	Br	Oc

**Recent ASI Census Data**

ADPE	GEPE	BESH
1 N1 3 Jan 2003 1 N1 4 Jan 2004 0 nests in 2010/11  No Adélie penguins have bred here since 2003/04.	1,579 N1 13 Dec 2000 1,639 N1 3 Jan 2003 2,170 N1 22 Dec 2003 2,135 N1 4 Jan 2005 1,574 N1 5 Jan 2007  No change since N1 count of 1,577 in 1999 (Naveen <i>et al.</i> 2000)	27 N1 13 Dec 2000 53 C1 24 Jan 2001 18 N1 4 Jan 2002 18 C1 15 Jan 2002 28 N1 3 Jan 2003 27 C1 14 Jan 2003 38 N1 22 Dec 2003 73 C1 15 Jan 2004 36 N1 4 Jan 2005 58 N1 14 Dec 2006  N1 count of 58 in Dec 2006 is up 115% since N1 count of 27 in Dec 2000.





# Pléneau Island

65°06'S, 64°04'W - Located west of Booth Island at the southern end of the Lemaire Channel

## Key features

- Iceberg and glacial scenery
- Gentoo Penguins



## Description

### TOPOGRAPHY

This island is around 1.2km long. From the cobbled beach on the eastern coast, smooth rock terraces slope gently upwards towards a large, potentially crevassed, ice-cap, which covers the western two-thirds of the island.

### FAUNA

Confirmed breeders: Gentoo penguins (*Pygoscelis papua*), kelp gulls (*Larus dominicanus*), south polar skuas (*Catharacta maccormicki*), and Antarctic terns (*Sterna vittata*).

Haul out: Southern elephant seals (*Mirounga leonina*).

### FLORA

Swards of moss species, *Caloplaca* spp. and other lichens, the green alga *Prasiola crispa* and snow algae.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife and trampling of vegetation.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time. Maximum 3 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at any time. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time), except for those engaged in organised overnight stays. This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

On rocks and boulders on the east-northeastern end, facing Booth Island.

### CLOSED AREAS

*Closed Area A:* Antarctic tern nesting area on the northeastern tip of the island.

*Closed Area B:* Blue-eyed shag nesting area on the northern end of the island.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely, but under close supervision, except in the closed areas. Given the irregular topography at this site, guides should be aware that it is more difficult to ensure the necessary supervision of visitors.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed. Be careful near skuas, they may be aggressive. Do not walk on any vegetation.

### CAUTIONARY NOTES

Be sensitive to tern nesting sites, which may extend beyond the limits shown on the map for Closed Area A.

\* A ship is defined as a vessel which carries more than 12 passengers.

# Pléneau Island

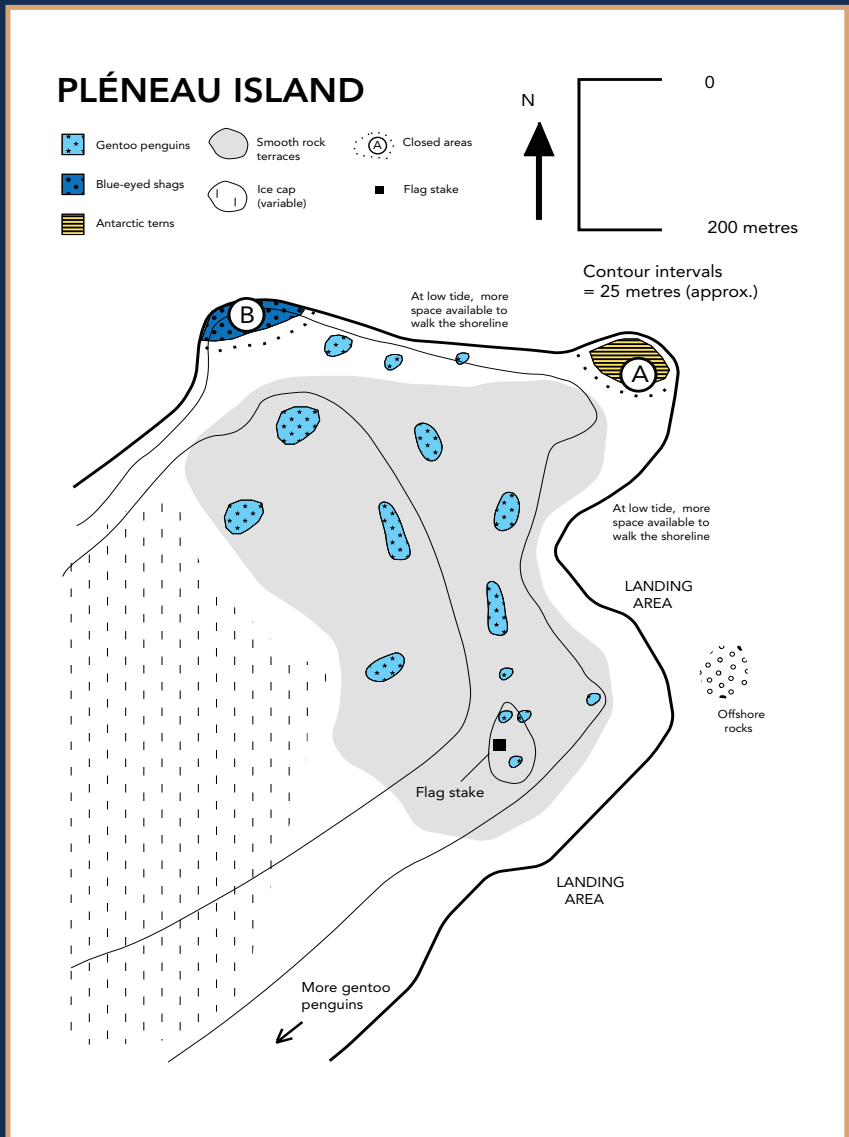
65°06'S, 64°04'W - Located west of Booth Island at the southern end of the Lemaire Channel



A large ice cap covers two-thirds of Pléneau Island



Free roaming areas feature irregular topography and are scattered with penguins



## Portal Point (POPT)

CW region (-64.50, -61.77)

This narrow point in the NE part of the Reclus Peninsula, on the W coast of the Antarctic Peninsula, extending from the Antarctic Peninsula into Charlotte Bay (USBGN). It is where a Falkland Islands Dependencies Survey hut was established in 1956. The hut has now been removed to the Falklands Islands Museum in Stanley. Portal Point served as the gateway for a route to the polar plateau. Immediately behind the low point on which the hut was located the (usually snow-covered) land rises steeply upslope toward the plateau.

*Landings.* On the point, snow and ice permitting.

*Site Sensitivities.* None.

*Proximate visitor sites.* Eckener Point (ECKE), Enterprise Island (ENTE), Gouvernoren Harbor (GOUV)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓															

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Oc		Oc								Oc				

## Pourquoi-pas Island (POUR)

SW region (-67.68, -67.47)

A 17-mi-long, 5-to-11-mi-wide, mountainous island lying between Bigourdan and Bourgeois Fjords off the W coast of Graham land (USBGN). The island was discovered by Charcot's 2<sup>nd</sup> French Antarctic Expedition (1908-10). ASI floral records include: *Usnea*, spp., *Xanthoria*, spp., and moss, spp.

*Landings.* The landing beach for this visit is located on the W side of the island, NW of an extensive moraine.

*Site Sensitivities.* Walk slowly and around penguins, which are easily approached and disturbed.

*Proximate visitor sites.* Stonington Island (STON), Blaiklock Island (BLAI), Webb Island (WEBB), Red Rock Ridge (RRRI)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓												✓	✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br					Br		Br	Br		Br	Oc	Br	Br	Br	Oc	

### Recent ASI Census Data

ADPE
c. 3000 nests in 2008/09 (ASI, unpublished)

**President Head (PRES)**  
**SH region (-62.73, -61.20)**

A headland forming the E end of Snow Island, in the South Shetland Islands.

*Landings.* Landings are possible on the E side of the island. The island does not have much beach space and consists of snow-covered rubble slopes on east and west sides of the island with some snow/ice/rock cliffs near the top.

*Site Sensitivities.* Avoid skua territories and lichens covering snow-free areas.

*Proximate visitor sites.* Hannah Point (HANN) and all Deception Island sites (BAIL, VAPO, WHAL, TELE, PEND).

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓		✓			

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Oc		Br		Oc		Oc			Br	Br		Br	Br	Wa

**Recent ASI Census Data**

CHPE	SOGP
23 N1 21 Nov 2005 c. 10 nests in 2007/08 (ASI unpublished)	40 N4 21 Nov 2005 c. 10 nests in 2007/08 (ASI unpublished)
Decline since A4 count of 50 in 1987 (W 93)	

**Priest (Goetschy) Island (PRIE)**  
**CW region (-64.87, -63.52)**

Low rocky island lying near the middle of Peltier Channel in the Palmer Archipelago. First charted and named as Goetschy Island by Charcot's 1<sup>st</sup> French Antarctic Expedition (1903-5).

*Landings.* No information available, as this site has always been surveyed from ship.

*Site Sensitivities.* None.

*Proximate visitor sites.* Peltier Channel (PELT), Py Point (PYPT), Jouglia Point (JOUG)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓	✓		✓							

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
								Br								

**Recent ASI Census Data**

BESH
8 N1 14 Dec 2001

**Prospect Point (PROS)**  
**SW region (-66.02, -65.35)**

Located on the W coast of Graham Land, nearly two mi S of Fern Head and immediately E of the Fish Islands (NSF 1995).

*Landings.* Landings easily accomplished on the rocky shoreline.

*Site Sensitivities.* None.

*Proximate visitor sites.* Fish Islands (FISH).

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
							Oc	Oc				Oc		Br		

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2007/08 (ASI, unpublished).

**Py Point (PYPT)**

**CW region (-64.88, -63.62)**

A point forming the S extremity of Doumer Island (NSF 1995). Discovered by Charcot's 1<sup>st</sup> French Antarctic Expedition (1903-05).

*Landings.* On to slippery shoreline cobble and rock outcrops.

*Site Sensitivities.* Walk slowly and around gentoo penguins that are easily approached and disturbed.

*Proximate visitor sites.* US Palmer Station (Arthur Harbor), Dorian Bay/Damoy Point (DAMO), Jougla Point (JOUG), Almirante Brown Station (ALMI) ,Waterboat Point (WATE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓								✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br						Br	Br	Br		Br				

**Recent ASI Census Data**

GEPE
2,000 nests in 2008/09 (ASI, unpublished)



**Red Rock Ridge (RRRI)**  
**SW region (-68.30, -67.13)**

Conspicuous reddish-colored promontory which rises to 690 meters and projects from the W coast of Graham Land between Nyen Fjord and Rymill Bay (USBGN).

*Landings.* Possible, but specific details unavailable.

*Site Sensitivities.* Avoid nesting birds.

*Proximate visitor sites.* Stonington Island (STON)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓		✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc							Br				Br			Br	

**Recent ASI Census Data**

ADPE
c. 3500 nests in 2007/08 (ASI, unpublished)

**Robert Point (ROBE)**  
**SH region (-62.47, -59.38)**

The SE tip of Robert Island, in the South Shetlands.

*Landings.* Several landing sits appear possible, but beware of reefs and rocks on the approach.

*Site Sensitivities.* Walk slowly and carefully around nesting, crèching, or molting penguins.

*Proximate visitor sites.* Mitchell Cove (MITC), Half Moon Island (HALF), Barrientos Islands (AITC), Fort Point (FORT), Yankee Harbor (YANK)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓															

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br											Oc				Wa

**Recent Census Data**

CHPE
A rough count of 5,000 breeding pairs in 1987 (S&S 88)

## Rum Cove (RUMC)

NE region (-64.10, -58.42)

A cove indenting the NW coast of James Ross Island between Tumbledown Cliffs and Cape Obelisk (USBGN). This site was first visited in 1996-97 after the disintegration of the Larsen Ice Shelf on the SW side of James Ross Island, which allowed the island to be circumnavigated. Lichens appeared to be the only living organisms on site.

*Landings.* Uncharted waters. Beach access may be impeded by ice.

*Site Sensitivities.* None.

*Proximate visitor sites.* Cape Obelisk (OBEL), Cape Lachman (LACH), Persson Island (PERS).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
				✓														

### Recent ASI Census Data

No breeding penguins or seabirds recorded.

**Sandefjord Bay (SAND)**

**SO region (-60.62, -46.05 / 60.62, -46.05)**

Narrow body of water, 2 mi long, extending in a NE-SW direction between the W end of Coronation Island and Monroe Island (USBGN). The N entrance is narrow and has Spine Island in the middle.

*Landings.* No details available because this site has only been surveyed by zodiac.

*Site Sensitivities.* The high density of chinstraps over every surface would make it difficult to walk around without disturbance to nesting penguins.

*Proximate visitor sites.* Marshall Bay (MARS), Shingle Cove (SHIN), Amphibolite Point (AMPH), Gibbon Bay (GIBA)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓		✓					

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br			Oc	Br	Oc	Oc	Oc	Oc		Br		Oc			Oc

**Recent ASI Census Data**

CHPE
125,000 A4 28 Nov 2003 (this estimate may be low)

**Saxum Nunatak (SAXU)**  
**NE region (-63.17, -56.03)**

Isolated nunatak on the N side of Joinville Island, which appears dome-shaped when seen from the S, with a conspicuous rock wall on its N side (USBGN).

*Landings.* No information available because this site has only been surveyed from zodiac.

*Site Sensitivities.* None known.

*Proximate visitor sites.* Madder Cliffs (MADD), d'Urville Monument (DURV), Tay Head (TAYH)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
													✓					

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br		Br		Oc										Br		

**Recent ASI Census Data**

ADPE	GEPE
150 N4 22 Dec 2005	540 N4 22 Dec 2005

**Selvick Cove (SELV)**

**CW region (-64.65, -62.57)**

A small cove S of Spigot Peak, Errera Channel, on the Danco Coast.

*Landings.* At low tides, an easy landing is possible via a small beach.

*Site Sensitivities.* None

*Proximate visitor sites.* Spigot Peak (SPIG), Cuverville Island (CUVE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓	✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br							Br					Oc		

**Recent ASI Census Data**

CHPE	GEPE
c. 150 nests in 2007/08 (ASI, unpublished)	c. 250 nests in 2008/09 (ASI, unpublished)



**Shingle Cove (SHIN)**  
**SO region (-60.65, -45.57)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓			✓				

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Oc		Oc		Br	Br				Br	Br	Br	Oc	Oc	Wa

**Recent ASI Census Data**

ADPE
3,205 N1 17 Dec 2003 3,041 N1/N2/N3 9 Dec 2006
No change since N4 count of 3,000 in 1978 (W 93)





# Shingle Cove

60°39'S, 45°34'W - Small sheltered cove on southern shore of Coronation Island, on NW shore of Iceberg Bay.

## Key features

- Adélie penguins
- Vegetation
- Burrowing snow petrels



## Description

### TOPOGRAPHY

The south-western inner shore of Shingle Cove comprises low cliffs with two gravel beaches at either end of the inner bay, providing access to the higher ground. The site consists of boulder and cobbled scree with a few rocky outcrops of metamorphic schist, thin pale layers of quartz and feldspar accentuate the layering. Other metamorphic minerals such as deep red garnet and dark green amphibole may also be visible to the naked eye.

### FAUNA

Confirmed breeders: Adélie penguin (*Pygoscelis adeliae*), cape petrel (*Daption capense*) snow petrel (*Pagodroma nivea*), skuas (*Catharacta*, spp.) and snowy sheathbill (*Chionis alba*).

Suspected breeders: Antarctic prion (*Pachyptila desolata*), kelp gull (*Larus dominicanus*) and Wilson's storm-petrel (*Oceanites oceanicus*).

Regularly haul out: southern elephant seals (*Mirounga leonina*) and Antarctic fur seals (*Arctocephalus gazella*).

### FLORA

Forty-nine plant species have been recorded, primarily in the scree and in the extensive vegetation stands near the penguin colony. These include 17 moss species and 19 lichen species including *Usnea Antarctica*, *Xanthoria*, spp. and *Caloplaca*, spp. which can also be observed in the low cliffs below the colony. Both vascular plants, *Deschampsia antarctica* and *Colobanthus quitensis* are recorded here.

### OTHER

Hazardous rocks and reefs lie immediately off shore.

## Visitor Impacts

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Disturbance of wildlife, trampling of vegetation, damage to petrels burrows and trail formation.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time.

Maximum 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. 1 guide per 20 visitors.

No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a resting period for the wildlife.

## Visitor Area

### LANDING AREA

Primary: small beach area at northern end of visitor site in inner bay between two low cliffs with nesting petrels.

Secondary: gravel beach to south of penguin colony protected by reef but generally more exposed to the swell.

### CLOSED AREAS

Closed Area A: low coastal cliffs of loose rocks above and below main track to colony where nesting petrels breed.

Closed Area B: the large scree slopes inland from the colony where burrowing petrels breed.

Closed Area C: extensive vegetation patch situated behind the Adélie colony.

### GUIDED WALKING AREAS

Walks to the Adélie colony must follow a carefully flagged route to avoid straying into burrowing petrel areas.

Visits to the colony should be in small closely supervised groups with no more than two discrete groups of 20 in the colony area at one time.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Shingle Cove

60°39'S, 45°34'W - Small sheltered cove on southern shore of Coronation Island, on NW shore of Iceberg Bay.

visitor site guide

Visitors may approach the base of the coastal cliffs in order to observe petrel nests accessible from landing beaches. This must be in small groups (no more than 20) and extreme caution must be exercised not to disturb the breeding groups. Always approach from downhill and take care not to disturb rocks. Do not use flash photography.

## FREE ROAMING AREAS

Visitors may roam freely in the immediate landing beach area.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

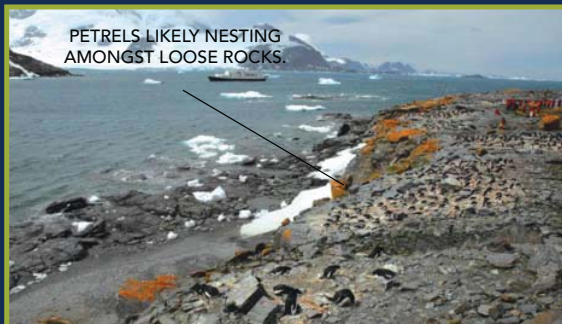
Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Take care not to displace penguins along the shoreline.

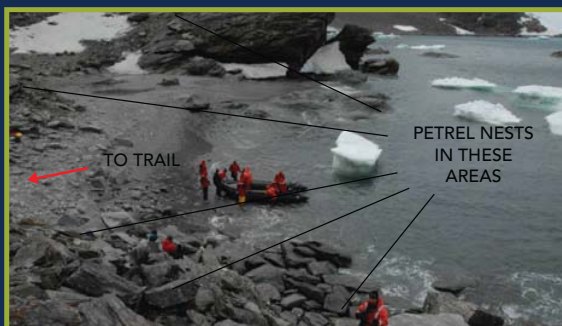
Walk carefully and do not tread on vegetated areas which are susceptible to trampling.

### CAUTIONARY NOTES

Strong winds and tidal variation can bring pack and brash ice quickly onto the beach area. Strong tidal variation can result in small growlers and bergy bits being stranded in the shallow area off shore. These can fracture suddenly during stranding or subsequent re-floating.



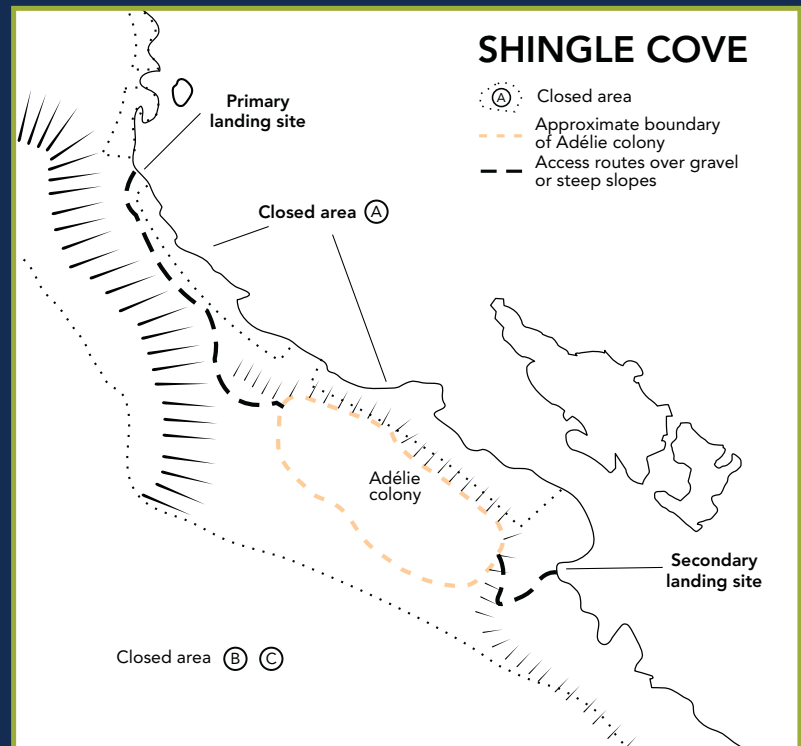
Adélie colony area



Primary landing site



Access route from primary landing



**Shumskiy Cove (SHUM)**  
**SW region (-67.07, -67.35)**

A cove in southern Hanusse Bay indenting the NW side of Arrowsmith Peninsula in Graham Land (USBGN).

*Landings.* When conditions allow, it is possible to land on fast ice in the cove.

*Site Sensitivities.* None.

*Proximate visitor sites.* Detaille Island (DETA), Andresen Island (ANDR), Webb Island (WEBB).

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
										✓								

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
										Oc						

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2002/03 (ASI, unpublished).

### Siffrey Point (SIFF)

NW region (-63.22, -57.22)

A low, rocky point projecting from the N coast of Trinity Peninsula, 6 mi WNW of Cape Dubouzet.

*Landings.* No information is available.

*Site Sensitivities.* None known.

*Proximate visitor sites.* Gourdin Island (GOUR)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
										✓								

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc	Oc					Oc									

### Recent ASI Census Data

No penguins were breeding here as of the last census in 2002/03 (ASI, unpublished).

**Skottsberg Point (SKOT)**  
**CW region (-63.92, -60.82)**

A point forming the S end of Trinity Island, in the Palmer Archipelago (USBGN).

*Landings.* Shallow water on approach makes it difficult to get ashore.

*Site Sensitivities.* Avoid fur seals, which may be present in late summer.

*Proximate visitor sites.* Mikkelsen Harbor (MIKK), Tetrad Islands (TETR)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
																✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc	Br							Oc			Oc				

**Recent ASI Census Data**

GEPE
c. 190 chicks in 2008/09 (ASI, unpublished)

**Snow Hill Island (SNOW)**  
**NE region (-64.47, -57.20)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓	✓		✓	✓					

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc								Oc		Oc	Oc		Oc	Br	Oc	

# Snow Hill

64°22'S, 56°59'W - North coast of Snow Hill Island, at Admiralty sound (Weddell Sea).

## Key features

- Wooden hut of the expedition led by Otto Nordenskjöld (1902)
- Presence of basalt dikes



## Description

### TOPOGRAPHY

The hut is found on the northeast coast of Snow Hill Island. The relief is characterized by three distinct units: the topography gradually rises from the coastline to the 5-10m contour in terraced sedimentary levels. On one of these is found the Nordenskjöld hut. From there up to the 170m contour, the relief consists of steep slopes (15-40°), which are highly dissected by deep fluvial valleys. This area has abundant fossils of marine origin and is traversed by basalt dikes that run NE-SW. Due to their greater resistance to erosion, these constitute important topographic features. The most important feature is Haslum Crag, a small volcanic neck. At the 170m contour, the topography descends gradually to the Weddell Sea.

### FAUNA

Confirmed breeders: 3-5 nests of kelp gull (*Larus dominicanus*) and Antarctic tern (*Sterna vittata*) 500 meters northeast of the hut on the northwest facing slope.

### FLORA

Virtually absent.

### OTHER

Wooden hut on Snow Hill Island built in February 1902 by the main party of the Swedish South Polar Expedition led by Otto Nordenskjöld. It was designated as Historical Site and Monument number 38 in the framework of the Antarctic Treaty. The hut contains original objects from the expedition and functions as a living museum, which is managed by Argentina and Sweden.

## Visitor Impact

### KNOWN IMPACTS

Some acts of vandalism in the hut's interior have been recorded.

### POTENTIAL IMPACTS

Worsening of erosive processes -naturally rapid in the area of the location of the hut- due to trampling. Fire. Small fuel leaks.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers\*\*. One ship at a time. Ships should contact the hut with 24 hours of anticipation to confirm the visit.

### VISITORS

No more than 100 visitors ashore at any time. Maximum visitor numbers are exclusive of expedition guides and leaders. One guide for every 20 visitors. Visits to the hut may only be made with the prior agreement of the head of the hut. Visits to the interior of the hut should be conducted in groups of no more than 5 persons at a time. No visitors to the hut between 19:00hrs and 08:00hrs (local time).

## Visitor Area

### LANDING AREA

On the beach facing the hut, northeast of the Comerci channel (see map).

### CLOSED AREAS

**Closed Area A:** The northeast and southwestern ends of the small terrace on which the hut is located, to avoid the acceleration of erosive processes. These areas are clearly marked with stakes and rope.  
**Closed Area B:** The entire area with steep slopes, with the exception of the ascending path. This area has important paleontological deposits.

### GUIDED WALKING AREAS

Visitors should use the path that is shown in the map to go to the hut and return to the landing area. To climb the terrace on which the hut is found, they should use the stairs. More than 10 persons at a time are not permitted on the terrace on which the hut is located. Ascent of the slope that is behind the hut will be carried out using the path (see map) marked by a row of flags. The final section has a fixed rope to assist visitors in completing the ascent. Given that the slope is steep, groups that use the path cannot exceed 10 people at a time and should be assisted by a guide\*\*\*.

### FREE ROAMING AREAS

Visitors can move freely under supervision along the glaciofluvial plain around the landing site and extending southwest of the Comerci channel (see map). The free roaming area ends at the slope ridge.

\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* For ships with more than 200 passengers aboard, ascent to the terrace on which the hut is located, as well as entry into the hut, is restricted.

\*\*\* Visitors that engage in any of these activities do so on their own account and at their own risk. Argentina and Sweden will not assume responsibility for any personal injury or material damages that visitors might incur.



# Snow Hill

64°22'S, 56°59'W - North coast of Snow Hill Island, at Admiralty sound (Weddell Sea).

visitor site guide

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Be careful around the hut and on the small terrace on which it sits. Do not step on, move or damage the structures built to prop up the foundations of the hut. Before entering the hut, visitors should clean their boots. Removing snow and humidity from clothes and backpacks is recommended. Do not touch any object that is on display or the personal items of people living in the hut or in associated camps. Smoking is strictly prohibited. Collection of fossils or any other type of material from the ground is prohibited.

### CAUTIONARY NOTES

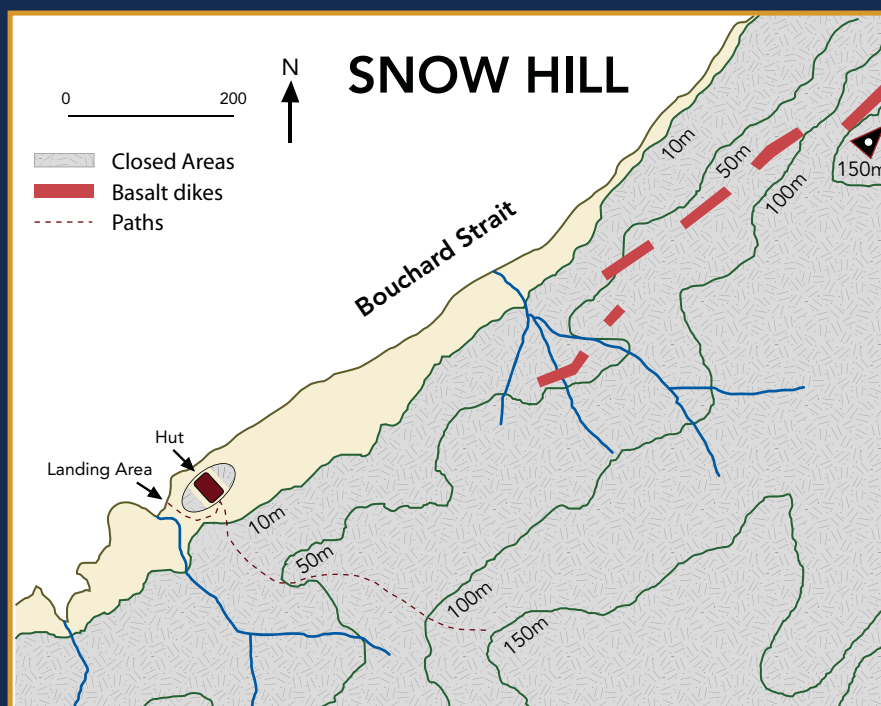
Be extremely cautious when climbing the slope southeast of the hut.



View of the hut and surrounding areas



Details about the hut



Map of the location of the Nordenskjöld hut



## Spigot Peak (SPIG)

CW region (-64.63, -62.57)

A conspicuous black peak rising to 285 m, marking the S side of the entrance to Orne Harbor on the W coast of Graham Land (USBGN).

*Landings.* Via a small rocky outcrop on the SE side of Orne Harbor. Landing leads up to a steep snow-covered slope that rises to the ridgeline along the center of the Peninsula. Note that the slope is steep and the ascent is challenging.

*Site Sensitivities.* Be careful to avoid chinstrap penguins breeding adjacent to the route up the slope.

*Proximate visitor sites.* Selvick Cove (SELV) is directly south and, at the correct tide, can be accessed directly from SPIG; to the southwest are the Orne Islands (ORNE), Georges Point (GEOR), and Cuverville Island (CUVE).

*Proximate visitor sites.* Selvick Cove (SELV) is directly south, to the southwest are the Orne Islands (ORNE), Georges Point (GEOR), and Cuverville Island (CUVE).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓	✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br				Oc		Br	Br	Br		Br	Oc	Br	Oc	Oc

### Recent ASI Census Data

CHPE
c. 700 nests in 2007/08 (ASI, unpublished)

## Spine Island (SPIN)

SO region (-60.60, -46.03)

Narrow island composed of several aligned rock segments, lying between the W end of Coronation Island and Monroe Island in the South Orkney Islands (USBGN).

*Landings.* No information available because this site has been surveyed from a spit of rock on Coronation island adjacent to Spine Island.

*Site Sensitivities.* It would be difficult to walk around this site without disturbing chinstrap penguins, which nest at high density.

*Proximate visitor sites.* Sandefjord Bay (SAND), Shingle Cove (SHIN), Marshall Bay (MARS)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
											✓						✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br			Oc	Br	Oc	Oc	Oc	Oc		Oc	Oc	Oc	Oc	Oc	Oc

### Recent ASI Census Data

CHPE
Very large but unestimated population of chinstraps breeding in 2009/10

**Sprightly Islands Vicinity (SPRI)**  
**CW region (-64.30, -61.05)**

An island lying one mi NW of Spring Point in Hughes Bay, on the W coast of the Antarctic Peninsula.

*Landings.* A small island with fractured, easy-to-climb, metamorphic rocks.

*Site Sensitivities.* None known.

*Proximate visitor sites.* Hydrurga Rocks (HYDR) and Cierva Point (CIER)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓															

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br															

**Recent Census Data**

CHPE
A rough count of 60 nests (N4) in 1990 (W 93)

**Stonington Island (STON)**  
**SW region (-68.18, -67.00)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
								✓						✓	✓			

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc								Br		Br				Br	Br	

**Recent ASI Census Data**

BESH
135 C1 6 Feb 2007

# Stonington Island

68°11'S, 67°00'W

# ANTARCTIC TREATY

visitor site guide



## Key features

- Historic East Base (USA)
- Historic Base 'E' Stonington (UK), including the graves of Noel and Allen
- Glacial scenery



## Description

### TOPOGRAPHY

Stonington is a small island in Neny Fjord at the southern end of Marguerite Bay. It is approximately 750 metres long and 250 metres wide. The island has areas of relatively flat boulder or gravel between rocky outcrops. It was until recently connected to the Antarctic mainland by North East Glacier.

### FAUNA

There is no breeding fauna on the island.

### FLORA

Seven species of lichen and two species of moss have been reported from Stonington Island.

### OTHER

East Base is designated as Historic Site and Monument No. 55 under the Antarctic Treaty. It was established during the United States Antarctic Service Expedition led by Richard E. Byrd (1939-41), and was subsequently occupied during the Ronne Antarctic Research Expedition (1947-1948). The latter included Edith Ronne and Jenny Darlington, the first two women to overwinter in Antarctica. The buildings were also occupied and modified by the UK during the construction and operation of Base 'E'. Base 'E' is designated as Historic Site and Monument No. 64 under the Antarctic Treaty. It was established by the UK in 1946, 100 m from the US East Base. The station closed in 1950 as sea ice conditions prevented access. It reopened in 1960 as the centre for field work in the south Antarctic Peninsula, and a new steel-framed, two story plywood hut was erected in 1961. Stonington served largely as a staging post for access to the peninsula via the North East Glacier. Up to 120 sledging dogs were spanned on the glacier above Stonington Island, which also served as runway for aircraft. The original Base 'E' was burnt down by accident in 1972 and only fragmentary remains mark the site. The station closed down in February 1975.

## Visitor Impact

### KNOWN IMPACTS

None known.

### POTENTIAL IMPACTS

Fire. Disturbance to historic artefacts. Minor fuel spills.

## Landing Requirements

### SHIPS\*

Ships\* carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time. Maximum 2 ships per day (midnight to midnight), of which no more than 1 can carry over 200 passengers.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. No more than 12 visitors are allowed inside any single building at any one time \*\*. Visitors must be closely supervised. East Base was proposed as HSM No. 55 by the USA, and Base 'E' was proposed as HSM No. 64 by the UK. Visits to Base 'E' may only take place with prior permission given by a Party. The Party undertaking management of the site should also be informed prior to the visit.

## Visitor Area

### LANDING AREA

The preferred landing site is in Fishtrap Cove, to the south of the two bases.

### CLOSED AREAS

Access to the East Base is limited to the main hut (via the main doors at the northern end of the building). Visitors should not enter the southern extension, the meteorological tower, the bunk room, the small hut to the south of the bunk room originally used by Finne Ronne and his wife, or the rubbish dump.

Access to Base 'E' is limited to the main hut and the main generator shed at Base 'E'. Access is not permitted to any of the attached or associated structures, including the dog pens and jetty.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely under close supervision.

\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* Visitors enter the bases at their own risk and neither the UK nor the US authorities will be liable for any personal injury or damage to property that may be sustained.



# Stonington Island

68°11'S, 67°00'W

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Give any animals the right-of-way.

No overnight stays in any of the huts or other structures are allowed. The huts are available for educational visits and, except in emergency circumstances, should not be used for any other purpose.

The Base E hut windows are all covered with fixed shutters and so electric torches will be needed to see anything of the interior.

Care should be taken not to disturb the remnants of the old burnt out Base 'E' (this lies between the American and British buildings). The site can be distinguished by foundation brick, ash and fragmentary ferrous material.

The grave of Thomas Allan and John Noel takes the form of a rock cairn above ground with the coffins only marginally concealed. This site should be treated with appropriate respect.

Artefacts in or outside the buildings should not be handled or removed from the site.

Do not sit on chairs or other furniture, or lay objects down on tables or work surfaces.

All boots and outdoor clothing should be cleaned of snow and grit before entering the building. All backpacks and large bags should be left outside the hut.

Loose gravel, mud and snow should be swept up after each visit.

Smoking and the use of candles, matches or stoves are prohibited in and around the hut.

A record of each visit should be left in the Visitors Book in Base 'E'. Expedition Leaders should provide the UK Antarctic Heritage Trust with a report on the condition of Base 'E'.

Visitors are to leave the bases safe and fully closed up on departure.

### CAUTIONARY NOTES

The rocks at the landing site can be slippery when wet.

The island is subject to very strong katabatic winds.



The side of the bunk house at East Base



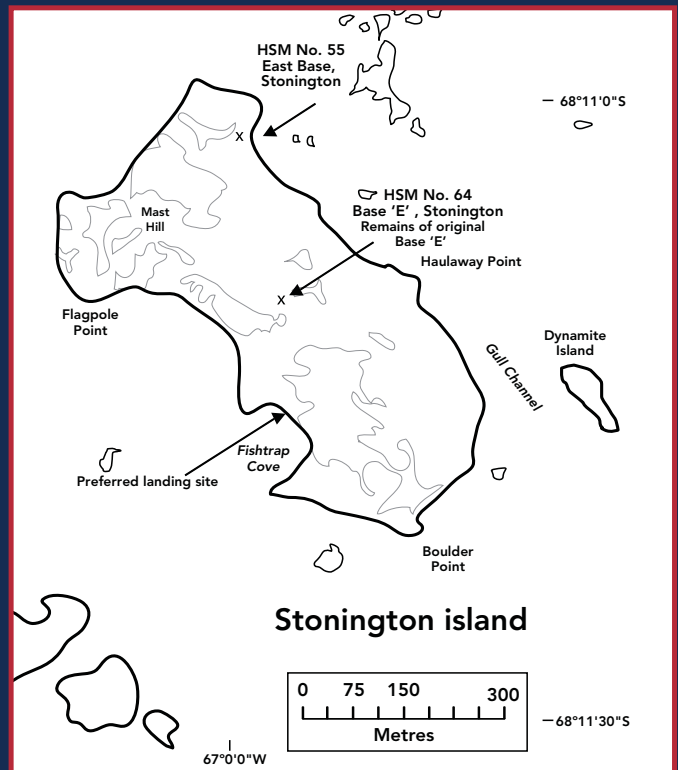
American East Base



British Base



Light tank abandoned by East Base



**Tay Head (TAYH)**  
**NE region (-63.35, -55.57)**

A rocky headland located 6 mi E of Mt. Alexander and extending into the Firth of Tay, on the S coast of Joinville Island. Named derives from the Firth of Tay.

*Landings.* Broad cobble landing beach that may be overrun by large numbers of fur seals, impeding access inland. Once above the cobble beach, a broad, flat stretch of terrain extends inland and N to a large glacier. Adélie penguin colony located W of the landing beach.

*Site Sensitivities.* Avoid and stay clear of Antarctic fur seals, which should be given a wide berth and should not be approached. Avoid and stay clear of wallowing elephant seals. Walk slowly and carefully around nesting, crèching, or molting penguins, which are easily approached and disturbed. Antarctic terns nesting opportunistically between the landing beach and N toward the glacier, on available, open ground, are skittish, defensive, and very easily disturbed, even from a distance.

*Proximate visitor sites.* Heroína Island (HERO), Eden Rocks (EDEN) and Paulet Island (PAUL)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
									✓					✓				

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Oc		Oc				Oc	Br	Br	Br		Oc	Br	Br	Wa

**Recent ASI Census Data**

ADPE
6,450 N4 21 Dec 2006

**Telefon Bay (TELE)**  
**SH region (-62.93, -60.67)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages  
In addition, please refer to DECEPTION ISLAND MANAGEMENT PLAN in the Appendix

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
				✓					✓	✓								

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Oc											Oc		Oc	Oc	

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 2002/03 (ASI, unpublished).





# Telefon Bay (East), Deception Island

62°56'S, 60°40'W - Volcanic crater

## Key features

- Crater
- Outstanding scenery



## Description

### TOPOGRAPHY

At the easternmost end of Telefon Bay, a gently sloping beach leads to a broad shallow valley which rises sharply to a number of unnamed volcanic craters. These are up to 45m in depth, although they are slowly being filled in by sediment and ice. The prominent ash cliffs that form the east and west sides of the valley are remnants of an older crater that was modified during an eruption in 1967, which broadened the valley itself. Relict heat still affects the beach at the landing site and has caused local orange staining of the rocks exposed there.

### FAUNA

There is no breeding wildlife at Telefon Bay.

Occasionally haul out: Antarctic fur seals (*Arctocephalus gazella*), Weddell seals (*Leptonychotes weddellii*).

### FLORA

The site has a generally barren appearance, but close inspection reveals inconspicuous flora (14 species of moss and 8 species of lichen have been recorded from the Telefon Bay area). Immediately adjacent, ASPA 140 (area F) has been designated for its botanical interest – primarily because the ground surfaces within the site date from 1967, allowing accurate monitoring of colonisation by plants and other biota.

### OTHER

Telefon Bay comprises part of Deception Island Antarctic Specially Managed Area No 4.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Erosion of paths and crater ridge.

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers. One ship at a time.

### VISITORS

No more than 100 visitors ashore at any time, exclusive of expedition guides and leaders. One guide per 20 visitors.

## Visitor Area

### LANDING AREA

Beach immediately to the south-west of the crater.

### CLOSED AREAS

None.

### GUIDED WALKING AREAS

Visitors will be guided up to the crater in small closely supervised groups.

### FREE ROAMING AREAS

Visitors may roam freely under supervision in the landing beach area.

## Visitor code of conduct

### BEHAVIOUR ASHORE

Visits are to be undertaken in line with the Management Plan for Deception Island ASMA 4. Walk slowly and carefully. Remain on the beach and foreshore which leads up to the crater. Maintain a precautionary distance of 5 metres from any wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Take care not to displace penguins along the shoreline.

Walk carefully and do not tread on vegetated areas.

Maintain at least 20 metres distance from seismic monitoring equipment and other types of scientific equipment, which will normally be marked with a red flag. Do not touch or disturb other types of scientific instruments, markers or field depots.

### CAUTIONARY NOTES

All visits must be planned taking into account the significant risk posed by the threat of volcanic eruption. Real time information can be obtained from the stations operating on the island.

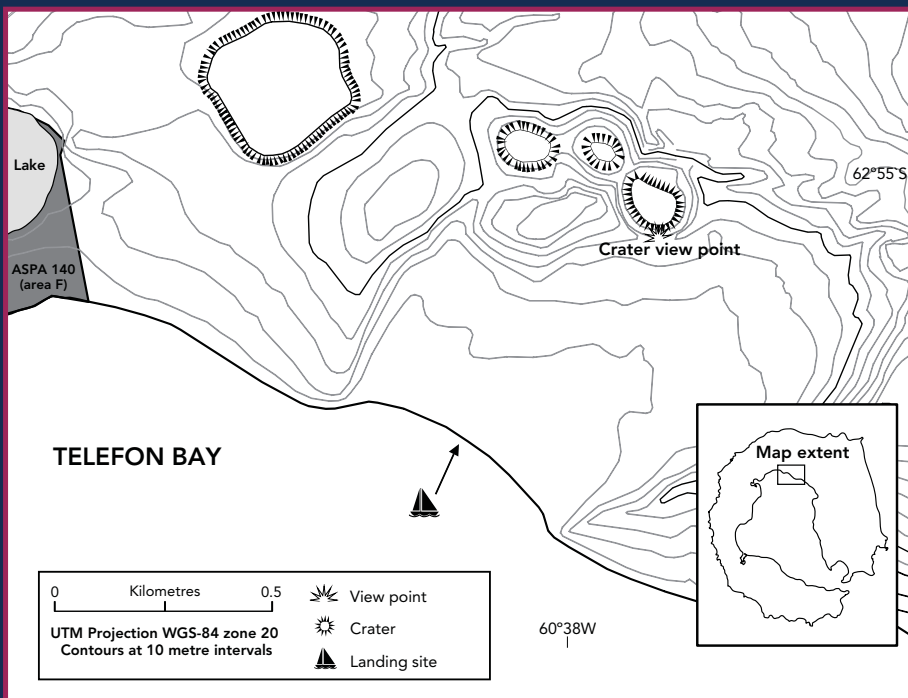
Exercise extreme caution when approaching the steep edge of the crater lip. The soil is friable and may collapse underfoot.

\*A ship is defined as a vessel which carries more than 12 passengers.



# Telefon Bay (East), Deception Island

*62°56'S, 60°40'W - Volcanic crater*



## Tetrad Islands (TETR)

CW region (-63.92, -60.73)

Group of small islands lying SE of Borge Point, Trinity Island, in the Palmer Archipelago (USBGN).

*Landings.* Can be made but require a climb up a rocky slope.

*Site Sensitivities.* Avoid fur seals that can be present in large numbers in late summer.

*Proximate visitor sites.* Mikkelsen Harbor (MIKK) and Skottsberg Point (SKOT).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
																✓		

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Oc				Oc		Oc	Oc			Oc	Oc	Oc	Oc	

### Recent ASI Census Data

CHPE
> c. 150 chicks in 2008/09 (ASI, unpublished)

**Torgersen Island / Palmer Station (TORG)**  
**CW region (-64.77, -64.07)**

**Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages**  
**ADVANCE NOTICE must be given before visiting the station**

# Torgersen Island

64°46'S, 64°04'W – Arthur Harbour, southwest Anvers Island



## Key features

- Adélie penguin colony- Outstanding scenery
- Scientific monitoring of visitor impacts



## Description

TOPOGRAPHY	Torgersen Island is roughly circular and approximately 400m across. The island slopes upwards from its rocky shoreline to a summit of 17m, and is bisected by a stony ridge lying in an east-west direction.
FAUNA	Confirmed breeders: Adélie penguins ( <i>Pygoscelis adeliae</i> ), South Polar skuas ( <i>Catharacta maccormicki</i> ), brown skuas ( <i>Catharacta lonnbergi</i> ), Wilson's storm petrels ( <i>Oceanites oceanicus</i> ). Other birds present: chinstrap penguins ( <i>Pygoscelis antarctica</i> ), gentoo penguins ( <i>Pygoscelis papua</i> ), emperor penguins ( <i>Aptenodytes forsteri</i> ), king penguins ( <i>Aptenodytes patagonicus</i> ), macaroni penguins ( <i>Eudyptes chrysolophus</i> ). Haul out: Leopard seals ( <i>Hydrurga leptonyx</i> ), Weddell seals ( <i>Leptonychotes weddellii</i> ), crabeater seals ( <i>Lobodon carcinophaga</i> ), southern elephant seals ( <i>Mirounga leonina</i> ) and Antarctic fur seals ( <i>Arctocephalus gazella</i> ).
FLORA	A variety of mosses grow on Torgersen Island, including <i>Polytrichum strictum</i> , <i>Chorisodontium aciphyllum</i> and <i>Sanionia uncinata</i> . Antarctic hair grass ( <i>Deschampsia antarctica</i> ) - one of the two flowering plant species present in Antarctica - is also present on the island.
OTHER	The island is divided into a Visitor Zone and a Restricted Zone. The Visitor Zone is for general access, whilst the Restricted Zone serves as a control site for scientific research related to human impacts. The Restricted Zone should not be entered, except in an emergency to access the emergency cache located on slopes opposite the landing site. Use the cache only in a genuine emergency and notify Palmer Station if anything is used.

## Visitor Impact

KNOWN IMPACTS	Survey benchmark embedded in rock at summit.
POTENTIAL IMPACTS	Disturbance to wildlife and trampling of vegetation. Disturbance to scientific research.

## Landing Requirements

SHIPS*	Ships and small boat cruising should avoid disturbing seal and bird colonies and should take into account the 50m operational limit around Restricted Zones (see map). Tour vessels and yachts visiting the area should provide advance notice of their visit schedule to National Programs operating in the area, in particular to Palmer Station (US).
VISITORS	No more than 40 passengers should be ashore at any time.

## Visitor Area

LANDING AREA	Landings on Torgersen Island should be made at the designated small boat landing site on the northwestern shore of the island (64° 46' 17.8" S, 64° 04' 31" W).
CLOSED AREAS	A Restricted Zone covering the southwestern half of the island is closed to visitors.
GUIDED WALKING AREAS	None.
FREE ROAMING AREAS	Visitors may roam freely within the Visitor Zone, which lies in the northeastern half of the island.

\*A ship is defined as a vessel which carries more than 12 passengers.





# Torgersen Island

64°46'S, 64°04'W – Arthur Harbour, southwest Anvers Island

## Visitor code of conduct

### BEHAVIOUR ASHORE

Visitor activities should be undertaken in a manner that minimizes any adverse impacts to the ecosystem or scientific activities on the island. Visitors should not remove any biological, geological or other souvenirs from the island and no litter should be left behind. Walking on vegetation should be avoided.

Visitors should maintain a distance of at least 5m from birds to avoid causing disturbance and a distance of at least 15m from fur seals where practical. A distance of at least 15m should also be maintained from Southern elephant seals, especially if they are hauled out near nesting penguins. Disturbing seals could cause a stampede and threaten nearby breeding birds.

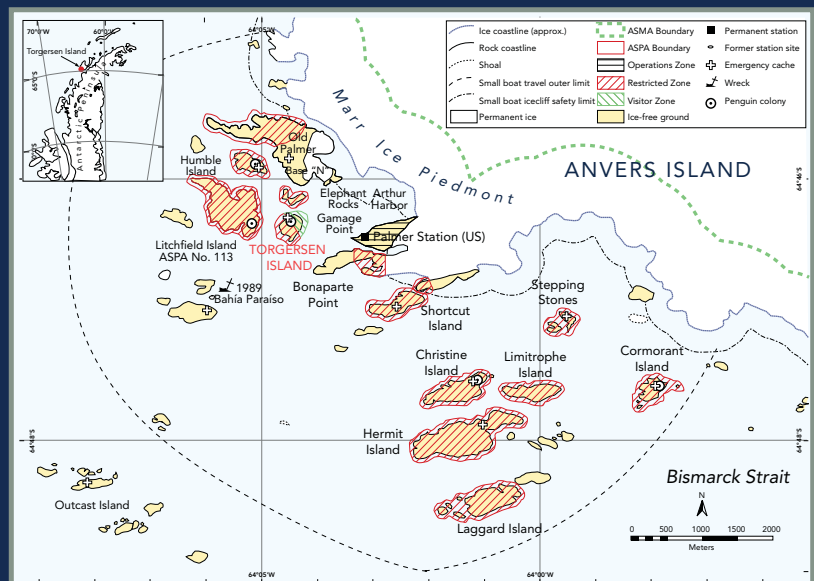
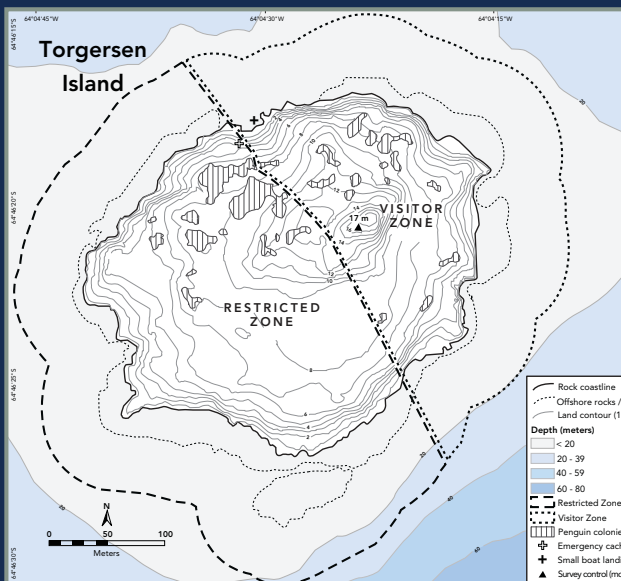
Visitors should not touch or disturb scientific equipment, research areas, or any other facilities or equipment.

### CAUTIONARY NOTES

Be sensitive to penguin nesting sites, which may extend beyond the limits shown on the map.



Torgersen Island Adélie penguin colony (D. Patterson-Fraser, 2008)





**Turret Point (TURR)**  
**SH region (-62.08, -57.92)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓		✓													

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Br	Oc		Br				Br	Oc			Oc		Br		Wa

**Recent ASI Census Data**

CHPE	ADPE	SOGP	BESH
c. 50 nests in in 2010/11 (ASI unpublished)	c. 200 nests in 2010/11 (ASI unpublished)	c. 200 nests in 2010/11 (ASI unpublished)	c. 50 nests in 2010/11 (ASI unpublished)



# Turret Point

62°05'S, 57°55'W - Eastern end of King George Island



## Key features

- Southern Giant Petrels
- Blue-eyed Shags
- Chinstrap and Adélie Penguins
- Southern Elephant Seals
- Glacial Outwash Plain



## Description

### TOPOGRAPHY

Turret Point is marked by conspicuous rock stacks that form the eastern limit of King George Bay west of Three Sisters Point. There is a cobble beach on the southern coast and melt pools inland. The beach gently slopes to an extensive, heavily crevassed glacier.

### FAUNA

Confirmed breeders: Adélie penguins (*Pygoscelis adeliae*), chinstrap penguins (*Pygoscelis antarctica*), southern giant petrels (*Macronectes giganteus*), kelp gulls (*Larus dominicanus*), blue-eyed shags (*Phalacrocorax atriceps*), and Antarctic terns (*Sterna vittata*). Suspected breeders: Skuas (*Catharacta*, spp.) and snowy sheathbills (*Chionis alba*). Regularly wallow and haul out: southern elephant seals (*Mirounga leonina*), Weddell seals (*Leptonychotes weddellii*) and Antarctic fur seals (*Arctocephalus gazella*).

### FLORA

Swards of moss species, the lichens *Xanthoria* spp., *Caloplaca* spp. and other crustose lichens.

## Visitor Impact

### KNOWN IMPACTS

None.

### POTENTIAL IMPACTS

Trampling of vegetation en route to the glacier and disturbance of wildlife, particularly southern giant petrels.

## Landing Requirements

### SHIPS\*

Ships carrying 200 or fewer passengers. One ship at a time. Maximum 2 ships per day (midnight to midnight).

### VISITORS

No more than 100 visitors ashore at once, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time). This is in order to establish a rest period for wildlife.

## Visitor Area

### LANDING AREA

**Primary:** along an exposed broad cobble beach to the south, which may be packed with ice.

**Secondary:** to the west. If this is used, be sure to stay clear of nesting sites for southern giant petrel at both ends of the beach (Closed Areas A and B).

### CLOSED AREAS

**Closed Area A:** Biodiverse fragile area including nesting southern giant petrels, kelp gulls, chinstrap penguins, blue-eyed shags and elephant seals wallows.

**Closed Area B:** Nesting southern giant petrels.

**Closed Area C:** Elevated area above the beach with nesting southern giant petrels.

### GUIDED WALKING AREAS

Visitors to the glacier should be guided in small groups following the streambed to avoid trampling of vegetation.

### FREE ROAMING AREAS

Visitors may roam freely, but under supervision, between the landing beaches, avoiding the closed areas.

\* A ship is defined as a vessel which carries more than 12 passengers.



# Turret Point

62°05'S, 57°55'W - Eastern end of King George Island

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

When on the same level as, or higher than, nesting southern giant petrels maintain a precautionary distance of at least 50 metres. Increase this distance if any change in the birds' behaviour is observed.

Be careful near Antarctic fur seals, they may be aggressive.

Do not walk on any vegetation.

### CAUTIONARY NOTES

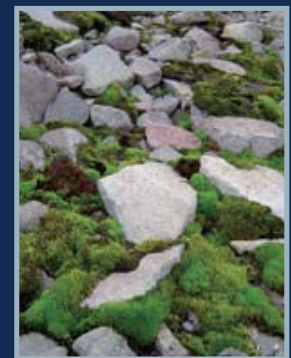
While weather conditions can change rapidly anywhere in the Antarctic, this location is particularly prone to such changes.



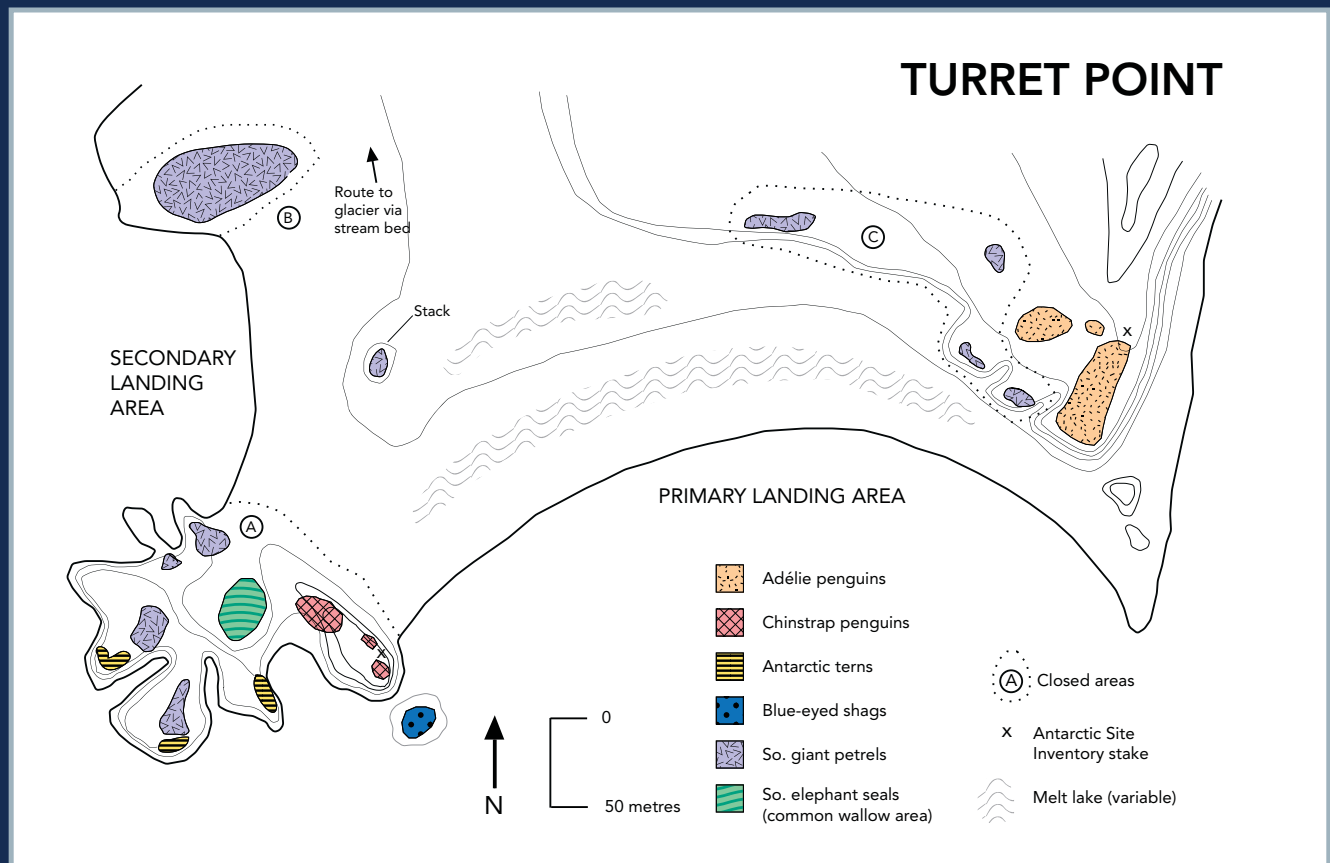
Turret Point from above - towards the primary landing beach



The glacial melt stream is clearly visible in times of limited snow and ice cover



Vegetation is scattered across the site



## Useful Island (USEF)

CW region (-64.72, -62.87)

An island 2 mi W of Ronge Island, with a string of rocks between, lying in the Gerlache Strait off the W coast of Graham Land (USBGN). This site, and census counts of breeding penguins, includes a much smaller island directly adjacent and E of Useful Island and separated by a small (c. 10 m) channel.

*Landings.* Useful Island is accessible by zodiac and landing is via a flat wide beach. There is a steep rocky hill up to a plateau that contains a beacon, which may be accessed if care is taken to avoid breeding penguins.

*Site Sensitivities.* Gentoo and chinstrap penguins breed in groups all over the island, including on the upper plateau, but there are sufficient open areas for visitors to walk without disturbing the penguins. Numerous fur seals are present later in the season and care should be taken to avoid fur seals along the beach when they are present. The second (smaller) island is also accessible by zodiac but there is limited open space for walking and disturbance to the penguins is more likely.

*Proximate visitor sites.* Ketley Point (KETL), Beneden Head (BENE), Waterboat Point (WATE).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
												✓			✓	✓	✓	✓

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Br	Br		Oc		Oc		Br	Br	Br	Br	Br	Br	Br	Br	

### Recent ASI Census Data

GEPE	CHPE	BESH
1,861 N1 3 Jan 2005  Up >1500% over N3N/4 count of 150 in 1984 (W 93)	160 N1 3 Jan 2005  No change since N3/N4 count of 100 in 1984 (W 93)	17 N1 3 Jan 2005

**Vapour Col (VAPO)**  
**SH region (-62.98, -60.73)**

Please refer to DECEPTION ISLAND MANAGEMENT PLAN in the Appendix

Located on the W side of Deception Island. Name originates from fumaroles observed in the col. This is the only location on Deception Island where there is a complete cross-section through the volcanic succession.

*Landings.* ASI researchers have visited this site twice, once via a helicopter drop, the second time via a zodiac tour. Coastline subject to heavy swell and zodiac landings would be difficult.

*Site Sensitivities.* Penguins are easily approached and disturbed; walk slowly around them and avoid impeding their access to and from the water.

*Proximate visitor sites.* Baily Head (BAIL), Whaler's Bay (WHAL), Pendulum Cove (PEND), Telefon Bay (TELE)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
						✓		✓								✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br															Oc

**Recent ASI Census Data**

CHPE
A very rough estimate of 20,000 nests based on photos taken in 1998/99 (Juan Moreno, Pers. Comm.)



**Vernadsky Station (VERN) / Wordie House**  
**CW region (-65.25, -64.26)**

**ADVANCE NOTICE must be given before visiting the station**

**Please note ANTARCTIC TREATY Visitor Site Guideline for WORDIE HOUSE on the following pages**

The Ukrainian Research Station was, formerly, the UK Faraday Station. The Ukrainians have operated the station since 1996. Gentoo penguins have begun breeding in the vicinity.

*Landings.* On the station jetty.

*Site Sensitivities.* Walk slowly around penguins nesting near station buildings

*Proximate visitor sites.* Petermann Island (PETE), Yalour Islands (YALO), Berthelot Islands (BERT)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
							✓				✓	✓	✓	✓	✓	✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Br						Oc		Oc		Oc		Br	Oc	

**Recent ASI Census Data**

GEPE
c. 50 nests in 2008/09 (ASI, unpublished)
This population is new and growing rapidly



# Wordie House, Winter Island

65°15'S, 64°16'W Located in the Argentine Islands

## Key features

- Historic British Base 'F', Wordie House
- Glacial scenery



## Description

### TOPOGRAPHY

Wordie House stands on a very small, flat peninsula on Winter Island (part of the Argentine Islands and composed entirely of igneous rocks). The hut is surrounded by water to the immediate south. A narrow channel called Stella Creek separates Winter Island from Galindez Island on which Vernadsky Station is situated. The surrounding islands protect the site from the open sea and in summer the area is relatively clear of snow. A large permanent snow bank is found to the west of the base.

### FAUNA

Although there is no breeding fauna, the following species are regularly sighted on the Island: Adélie penguins (*Pygoscelis adeliae*), gentoo penguins (*Pygoscelis papua*), blue-eyed shags (*Phalacrocorax atriceps*), Wilson's storm-petrels (*Oceanites oceanicus*), south polar skuas (*Catharacta maccormicki*), kelp gulls (*Larus dominicanus*).

Regularly haul out: Weddell seals (*Leptonychotes weddellii*).

### FLORA

*Rhizocarpon* sp. and *Usnea Antarctica* lichens are present on the island. The moss *Polytrichum strictum* is also found.

### OTHER

Base 'F' is designated as Historic Site and Monument No. 62 under the Antarctic Treaty. It was built in 1947 on the site of the earlier 1936 British Grahamland Expedition hut, which was swept away by a tidal wave. In addition to the building, there is also a rare timber sign which dates from 1947.

## Visitor Impact

### KNOWN IMPACTS

None known.

### POTENTIAL IMPACTS

Fire. Minor fuel spills.

## Landing Requirements

### SHIPS\*

Ships\* carrying 500 or fewer passengers (however, note visitor restrictions below). One ship at a time.

Maximum 2 ships per day (midnight to midnight), of which no more than 1 can carry over 200 passengers.

### VISITORS

No more than 36 visitors ashore at any time, exclusive of expedition guides and leaders. No more than 12 visitors are allowed inside the base at any one time\*\*.

Base 'F' was proposed as HSM No 62 by the United Kingdom. The site is managed by the UK and the nearby Ukrainian station Vernadsky. Visits to the hut may only take place with prior permission given by a Party. The Party undertaking management of the site should also be informed prior to the visit. The key for the hut is held by the Vernadsky Base Commander. Where practicable, expedition leaders are requested to invite at least one member of the Vernadsky staff to come aboard the vessel to brief passengers and staff prior to any visit taking place.

## Visitor Area

### LANDING AREA

The preferred site is on the south-east side of the island, immediately in front of the entrance to the hut.

### CLOSED AREAS

None.

### GUIDED WALKING AREAS

None.

### FREE ROAMING AREAS

Visitors may roam freely under close supervision.

\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* Visitors enter the base at their own risk and neither the UK authorities nor National Antarctic Scientific Centre, personnel from Vernadsky, nor the Ukraine authorities will be liable for any personal injury or damage to property that may be sustained.



# Wordie House, Winter Island

65°15'S, 64°16'W Located in the Argentine Islands

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Walk slowly and carefully. Give animals the right-of-way.  
No overnight stays in the hut are allowed. The hut is available for educational visits and, except in emergency circumstances, should not be used for any other purpose.  
Artefacts should not be handled or removed from the site. Do not sit on chairs or other furniture, or lay objects down on tables or work surfaces.  
All boots and outdoor clothing should be cleaned of snow and grit before entering the building. All backpacks and large bags should be left outside the hut.  
Loose gravel, mud and snow should be swept up after each visit.  
Smoking and the use of candles, matches or stoves are prohibited in and around the hut.  
A record of each visit should be left in the Visitors Book, located in the base.  
Visitors are to leave the base safe and fully closed up on departure.

### CAUTIONARY NOTES

The rocks at the landing site can be slippery when wet.



The hut seen from the north and showing the various different builds



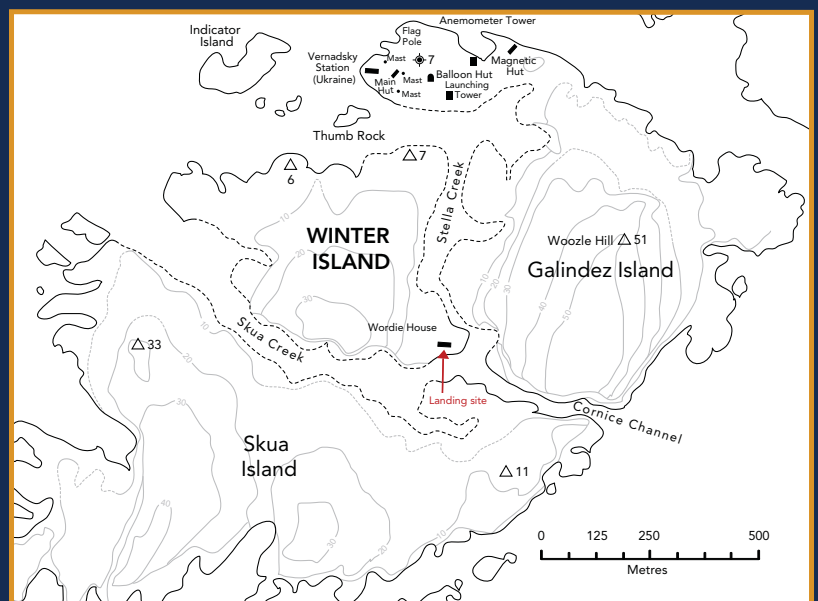
The hut seen from the south showing how close it is built to the sea



The kitchen and the living and bunk room area beyond



Breathing apparatus and a stirrup pump hanging on the entrance porch wall





**View Point (VIEW)**

**NE region (-63.55, -57.37)**

E tip of a promontory, 150 meters in elevation, forming the W side of the entrance to Duse Bay on the S coast of the Trinity Peninsula (USBGN).

*Landings.* Continental landing site.

*Site Sensitivities.* None.

*Proximate visitor sites.* Jade Point (JADE), Crystal Hill (CRYS), Bald Head (BALD), Camp Hill (HILL), Cape Burd (BURD), False Island Point (FALS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
							✓											

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc		Oc								Oc		Oc		Br		Oc

**Recent ASI Census Data**

No penguins were breeding here as of the last census in 1999/2000 (ASI, unpublished).

**Vortex Island (VORT)**  
**NE region (-63.73, -57.63)**

A small 0.5-mi-long island, 245 m high, lying in the NE part of Prince Gustav Channel about 2 mi WSW of Corry Island, close S of Trinity Peninsula; first seen by a party under J. Gunnar Andersson of the Swedish Antarctic Expedition, 1901-04 (USBGN).

*Landings.* Only possible along a wide flat beach that rises to a slope on which the penguins breed.

*Site Sensitivities.* Penguins are easily avoided by walking along the beach close to the shoreline.

*Proximate visitor sites.* Devil Island (DEVI), Cape Lachman (LACH), Eagle Island (EAGL), Bald Head (BALD), Crystal Hill (CRYS)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
																✓	✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc				Oc								Br	Oc	Oc		

**Recent ASI Census Data**

ADPE
c. 4300 nests in 2008/09 (ASI, unpublished)

**Waterboat Point (WATE) / Gonzalez Videla Station**  
**CW region (-64.82, -62.85)**

**ADVANCE NOTICE must be given before visiting the station**

This is the low, westernmost termination of the peninsula between Paradise Harbor and Andvord Bay on the W coast of the Antarctic Peninsula. It is the site of the Chilean Station González Videla. Waterboat Point is separated from the mainland at high water. The Belgian Antarctic Expedition of 1898 first surveyed the coast in this vicinity. This particular point was surveyed and named by T. W. Bagshawe and M. C. Lester who lived here in a waterboat from 1921-22, while conducting studies of the on-site penguins (USBGN). The area where they worked is roped off and designated as an Historic Site and Monument. The remains include the base of their waterboat, the roots of door posts, and an outline of the hut and extension. This two-man expedition was the smallest expedition to ever overwinter in Antarctica. Another Historic Site and Monument is a shelter erected in 1950 to honor Gabriel González Videla, the first Head of State to visit the Antarctic.

*Landings.* On the station jetty.

*Site Sensitivities.* The penguins are easily approached and disturbed; walk slowly around them.

*Proximate visitor sites.* Almirante Brown Station (ALMI), Bryde Island (BRYD)

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓		✓	✓						✓				✓		

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Br						Oc	Br		Br	Oc	Oc	Br	Oc	Oc

**Recent ASI Census Data**

GEPE	CHPE
2,122 N2 4 Dec 2004  This represents a significant increase since C1 count of 750 in 1986 (W 93)	0 N1 Jan 2005 2 N1 Jan 2010  A declining population over the last two decades at this site; N1 = 4 in 1998 (Naveen; unpub. data); N1 = 28 in 1989 (W 93)

## Webb Island (WEBB)

SW region (-67.45, -67.93)

A rocky 1.5-mi-long island lying in Laubeuf Fjord about 3 mi S of the entrance to Stonehouse Bay, Adelaide Island.

*Landings.* On the E side of the island. Island does not have much beach space and consists of snow-covered rubble slopes on the E and W sides of the island with some snow/ice/rock cliffs near the top.

*Site Sensitivities.* Avoid nesting SPSK and lichens growing on snow-free rocks.

*Proximate visitor sites.* Webb Island (WEBB), Shumskiy Cove (SHUM), and Pourquoi-Pas Island (POUR).

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
															✓			

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
										Br				Br	Br	



**Whalers Bay, Deception Island (WHAL)**  
**SH region (-62.98, -60.57)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

In addition, please refer to DECEPTION ISLAND MANAGEMENT PLAN in the Appendix

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Oc	Oc	Oc		Oc		Br		Br	Oc	Br	Br	Br	Br	Br	Br	

**Recent ASI Census Data**

BESH
10 N1 13 Jan 2005 17 C1 13 Jan 2005 8 N1 3 Dec 2005

No penguins were breeding here as of the last census in 2009/10 (ASI, unpublished).

# Whalers Bay

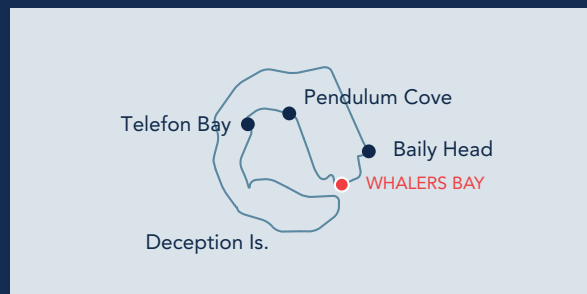
62°59'S, 60°34'W - Port Foster, Deception Island.

## Key features

- Historic Site and Monument No. 71, including:
  - the remains of the Norwegian Hektor Whaling Station
  - the site of the Whalers Cemetery and other whaling remains along the beach
  - the abandoned British 'Base B'
- Neptunes Window
- Ronald Hill

## ANTARCTIC TREATY

visitor site guide



## Description

### TOPOGRAPHY

Whalers Bay is a small harbour immediately to the east after passing through Neptunes Bellows. The Whalers Bay site comprises the semi-circular, gently sloping ash beach which is approximately 2km in length and stretches from Penfold Point in the northwest to Cathedral Crags in the southeast. Kroner Lake, a geothermally heated lagoon, is located on the western side of the bay. Ronald Hill (103m) is located 800m north of the lagoon, whilst steep glacier cliffs with dark grey pyroclastic layers rise immediately to the northwest. A collapse of Cathedral Crags on the southeastern side of Whalers Bay is known as Neptunes Window. Of particular importance are the low fluvial terraces behind the site of the whaling station and remains of the lahar (mud slide) which formed as a result of an eruption in 1969.

### FAUNA

Confirmed breeders: kelp gulls (*Larus dominicanus*), Wilson's storm-petrels (*Oceanites oceanicus*), skuas (*Catharacta* spp.) and Antarctic terns (*Sterna vittata*). Cape petrels (*Daption capensis*) nest in Cathedral Crags, overlooking the site. Other species, such as blue-eyed shags (*Phalacrocorax atriceps bransfieldensis*) and snowy sheathbills (*Chonis alba*), have been observed in the area. The beach is also used as a resting place for seals and penguins, primarily Antarctic fur seals (*Arctocephalus gazella*), Weddell seals (*Leptonychotes weddellii*), crabeater seals (*Lobodon carcinophagus*), leopard seals (*Hydrurga leptonyx*), gentoo penguins (*Pygoscelis papua*) and chinstrap penguins (*Pygoscelis Antarctica*).

### FLORA

Geothermally active scoria outcrops to the east of the whaling station support moss and lichen, which also grow on the timber, iron and brick structures and on the cliffs and massive boulders at Cathedral Crags and Neptunes Window. Rare and important species may also be present. *Usnea* spp., *Xanthoria* spp., *Caloplaca* spp. and *Deschampsia Antarctica* are present in the Cathedral Crags area.

### OTHER

The buildings, structures and other artefacts on the shore of Whalers Bay, which date from the period 1906-1931, represent the most significant whaling remains in the Antarctic. Other buildings, structures and artefacts of the British 'Base B' represent an important aspect of the scientific history of the area (1944-1969). The site is designated as Historic Site No. 71.

## Visitor Impact

### KNOWN IMPACTS

Graffiti on historic structures. Removal of historic artefacts. Erosion of footpaths en route to Neptunes Window.

### POTENTIAL IMPACTS

Damage to or removal of historic artefacts. Trampling of vegetation. Erosion of further paths. Fire. Damage to beach area due to ship operations (anchoring, pollution, maritime accidents, etc.).

## Landing Requirements

### SHIPS\*

Ships carrying 500 or fewer passengers aboard. One ship at a time.

### VISITORS

No more than 100 visitors ashore at any time. Maximum visitor numbers are exclusive of expedition guides and leaders. One guide for every 20 visitors.

## Visitor Area

### LANDING AREA

The recommended landing site for small boat operations is in the area in front of the floating dock, although be sensitive to the presence of birds or seals. The area directly in front of the whalers' boilers can be used as a secondary landing site.

### CLOSED AREAS

ASPAs 140 - Access to Kroner Lake is prohibited unless with a permit issued in accordance with provisions in Annex V to the Protocol on Environmental Protection to the Antarctic Treaty.

Access to buildings or other structures including boilers and tanks, is prohibited unless for management purposes, or for shelter in an emergency \*\*.

The geologically important, and fragile, fluvial terraces located to the north of the whaling station.

Visitors should not attempt to traverse the scree slope below Cathedral Crags, which is susceptible to rockfalls.

### GUIDED WALKING AREAS

Visitors to Neptunes Window should proceed along the beach on the seaward side of the waterboats.

\* A ship is defined as a vessel which carries more than 12 passengers.

\*\* Tour companies visit the site at their own risk. The UK authorities are not liable for any personal injury or damage to property that may be sustained.

# Whalers Bay

62°59'S, 60°34'W - Port Foster, Deception Island.

# ANTARCTIC TREATY

visitor site guide



They should then walk up the slope towards the 'window' in single file remaining on existing paths. Extreme caution should be exercised along the steep and friable edge of Neptunes Window. Follow existing paths back down to the beach.

Visitors to Ronald Hill should proceed up the ridge north of the aircraft hangar, towards the peak of Ronald Hill. Distance should be kept from the steep western edge of the ridge which is friable and susceptible to erosion. Follow the same route back to the hangar before returning to the landing site.

## FREE ROAMING AREAS

Visitors can move freely under supervision on the seaward side of the whaling station and along the beach.

## Visitor Code of Conduct

### BEHAVIOUR ASHORE

Visits are to be undertaken in line with the Management Plan for Deception Island ASMA 4.

Do not go beyond the western end of the airplane hangar in order to avoid entry into ASPA 140.

Approach oil and fuel tanks with caution. The foundations are vulnerable to erosion and the tanks are at risk of collapse. Do not enter buildings or tanks or sit or climb on the boats. Maintain a reasonable distance from any structures to avoid injury from collapsing debris.

Maintain at least 20 metres distance from seismic monitoring equipment and other types of scientific equipment, which normally will be marked with a red flag. Do not touch or disturb other types of scientific instruments, markers, or field depots.

Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed.

Do not dig bathing pits.

Hiking between Whalers Bay and Baily Head is discouraged as it can damage important vegetated areas, in particular Antarctica's largest recorded stand of Antarctic pearlwort.

### CAUTIONARY NOTES

All visits must be planned taking into account the significant risk posed by the threat of volcanic eruption. Real time information can be obtained from the stations operating on the island.

All the buildings on this site are in physically poor condition and there is an ongoing risk that parts of these buildings may collapse or sections be blown off. Entry to any of the buildings is unsafe at all times and a good distance should be left when walking adjacent to buildings. Beware of sharp objects and flying debris in windy conditions. In high winds the whole area should be avoided because of the risk of flying debris.

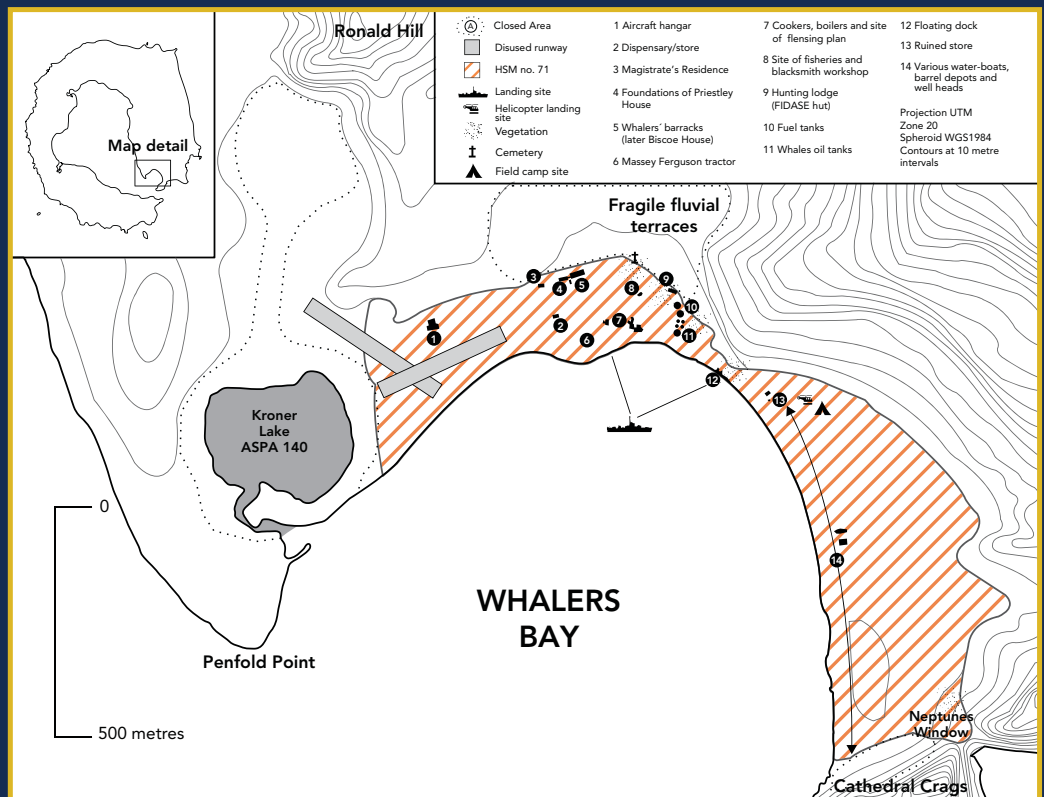
Beware of hazardous substances.



Overview of Whalers Bay visitor site with Neptunes Window in the background



Details from the cemetery in front, and remains of hunting lodge and fuel tanks in the back.





## Point Wild (WILD)

El region (-61.10, -54.87)

A point six mi W of Cape Valentine on the N coast of Elephant Island that was made famous during Shackleton's *Endurance* expedition (1914-17). It was the jumping-off spot for Shackleton and five of his men in the lifeboat *James Caird*. They successfully negotiated the 800 mi passage to South Georgia, and Shackleton ultimately returned to rescue the 22 men stranded at this rugged location. The site is named for Frank Wild, who was leader of the stranded party that camped here for four months until they were rescued in August 1916. The Chileans have erected a monument on site with a bust of Capt. Pardo, the master of the vessel *Yelcho* who successfully rescued these men.

*Landings.* Point Wild presents a difficult zodiac tour, even in the best of weather. Landings are few because of the increase in numbers of hauled-out fur seals. If landings are negotiated, there is limited visitor space because of the high concentration of on-shore animal life. Frequent glacier-calving and avalanches often fill the bay with brash ice and growlers, and potentially render zodiac travel more difficult.

*Site Sensitivities.* Restricted visitor space. The receding glacier W of Point Wild, between Point Wild and Cape Belsham, has enabled seawater to reach the landing beach more readily, and considerably decreased available landing space. Chinstrap penguins crowd the available space, along with elephant seals and increasing numbers of fur seals.

*Proximate visitor sites.* Point Lookout (LOOK)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
							✓	✓	✓	✓				✓	✓	✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
	Br	Oc	Oc	Oc	Oc	Br	Oc	Br	Br		Oc	Oc	Br	Oc	Oc	Oc

### Recent ASI Census Data

CHPE
10,000 N3 10 Dec 2006

## Yalour Islands (YALO)

CW region (-65.23, -64.17)

A 1.5-mi-long group of scattered, low lying islands and rocks in the S part of the Wilhelm Archipelago, found one mi NW of Cape Tuxen (USBGN). The islands were discovered and named by Charcot's 1<sup>st</sup> French Antarctic expedition (1903-5). Lt. Yalour was an officer of the Argentine ship *Uruguay*, which rescued members of the Swedish Antarctic Expedition in November 1903.

*Landings.* Possible via the cobble shoreline, although most of the islands involve climbing up rocky slopes to reach the nesting penguins.

*Site Sensitivities.* Penguins are easily approached and disturbed; walk slowly around them.

*Proximate visitor sites.* Moot Point (MOOT), Vernadsky Station (VERN), Berthelot Islands (BERT)

### Antarctic Site Inventory Effort

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓								✓			✓	✓	✓	✓	

### Presence / Absence

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
Br	Oc	Br						Br		Br	Br	Br	Oc	Br	Br	Oc

### Recent ASI Census Data

ADPE	GEPE	BESH
4,246 N1 30 Nov 2003 5,558 C1 27 Jan 2004  N1 count of 4,246 is down 47% from N1 count of 8,000 in 1982 (W 93)	15 N1  This represents a new breeding colony of gentoos and one of their southernmost breeding locations in the Antarctic Peninsula.	16 N1 27 Jan 2004 40 C1 27 Jan 2004 18 N1 25 Dec 2006



**Yankee Harbor (YANK)**  
**SH region (-62.53, -59.78)**

Please note ANTARCTIC TREATY Visitor Site Guideline on the following pages

**Antarctic Site Inventory Effort**

92/93	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
			✓	✓		✓	✓	✓		✓	✓				✓		✓	

**Presence / Absence**

ADPE	CHPE	GEPE	MCPE	SOGP	ANFU	PIPE	SNPE	BESH	SNSB	SPSK	BRSK	SKsp	WISP	KEGU	ANTE	ELPH
		Br		Oc		Oc			Oc		Br	Br	Br	Oc	Oc	Oc

**Recent ASI Census Data**

GEPE
3,974 N1 24 Dec 2000
3,804 N1 29 Dec 2002
4,918 N1 20 Dec 2003
No change since N1 count of 4,751 in 1999 (Naveen <i>et al.</i> 2000)



# Yankee Harbour

62°32'S, 59°47'W - South-western Greenwich Island

## Key features

- Gentoo Penguins
- Open walking areas
- Artefacts from sealing operations



## Description

<b>TOPOGRAPHY</b>	A small glacial-edged harbour, enclosed by a curved gravel spit. A large terraced beach area includes a melt-pool to the east. Beyond the beach, steep scree slopes rise to a rugged knife-edge summit.
<b>FAUNA</b>	Confirmed breeders: Gentoo penguins ( <i>Pygoscelis papua</i> ) and skuas ( <i>Catharacta, spp.</i> ). Suspected breeders: Snowy sheathbills ( <i>Chionis alba</i> ) and Wilson's storm-petrels ( <i>Oceanites oceanicus</i> ). Regularly haul out: Southern elephant seals ( <i>Mirounga leonina</i> ), Weddell seals ( <i>Leptonychotes weddellii</i> ), and Antarctic fur seals ( <i>Arctocephalus gazella</i> ).
<b>FLORA</b>	<i>Deschampsia antarctica</i> , <i>Colobanthus quitensis</i> , swards of moss species, <i>Xanthoria spp.</i> and other crustose lichens, and the green alga <i>Prasiola crispa</i> .
<b>OTHER</b>	Artefacts from early sealing activities may be found along the inner shoreline.

## Visitor Impact

<b>KNOWN IMPACTS</b>	None.
<b>POTENTIAL IMPACTS</b>	Disturbance of wildlife, damage to the sealing remains and trampling vegetation.

## Landing Requirements

<b>SHIPS*</b>	Ships carrying 500 or fewer passengers. One ship at a time. No more than 3 ships carrying more than 200 passengers per day (midnight to midnight).
<b>VISITORS</b>	No more than 100 visitors ashore at once, exclusive of expedition guides and leaders. 1 guide per 20 visitors. No visitors ashore between 22:00hrs and 04:00hrs (local time), except for those engaged in organised overnight stays. This is in order to establish a resting period for the wildlife.

## Visitor Area

<b>LANDING AREA</b>	Along the gravel spit, preferably on the inside.
<b>CLOSED AREAS</b>	Raised terraces above the melt pool with nesting gentoo penguins and the scree slopes above.
<b>GUIDED WALKING AREAS</b>	None.
<b>FREE ROAMING AREAS</b>	Visitors may roam freely under supervision anywhere on the site, except for the closed area. Longer walks are possible along the curved spit, towards the glacial moraine on the southeastern side, and towards the glacier in the northeast.

## Visitor Code of Conduct

<b>BEHAVIOUR ASHORE</b>	Walk slowly and carefully. Maintain a precautionary distance of 5 metres from wildlife and give animals the right-of-way. Increase this distance if any change in behaviour is observed. Be careful near Antarctic fur seals, they may be aggressive. Do not walk on any vegetation.
<b>CAUTIONARY NOTES</b>	Be careful around the sealing remains to avoid damage and do not move any artefacts. Be careful of the wires around the navigational mast. Be aware that glacier calving may produce dangerous waves.

\* A ship is defined as a vessel which carries more than 12 passengers.

# Yankee Harbour

62°32'S, 59°47'W - South-western Greenwich Island



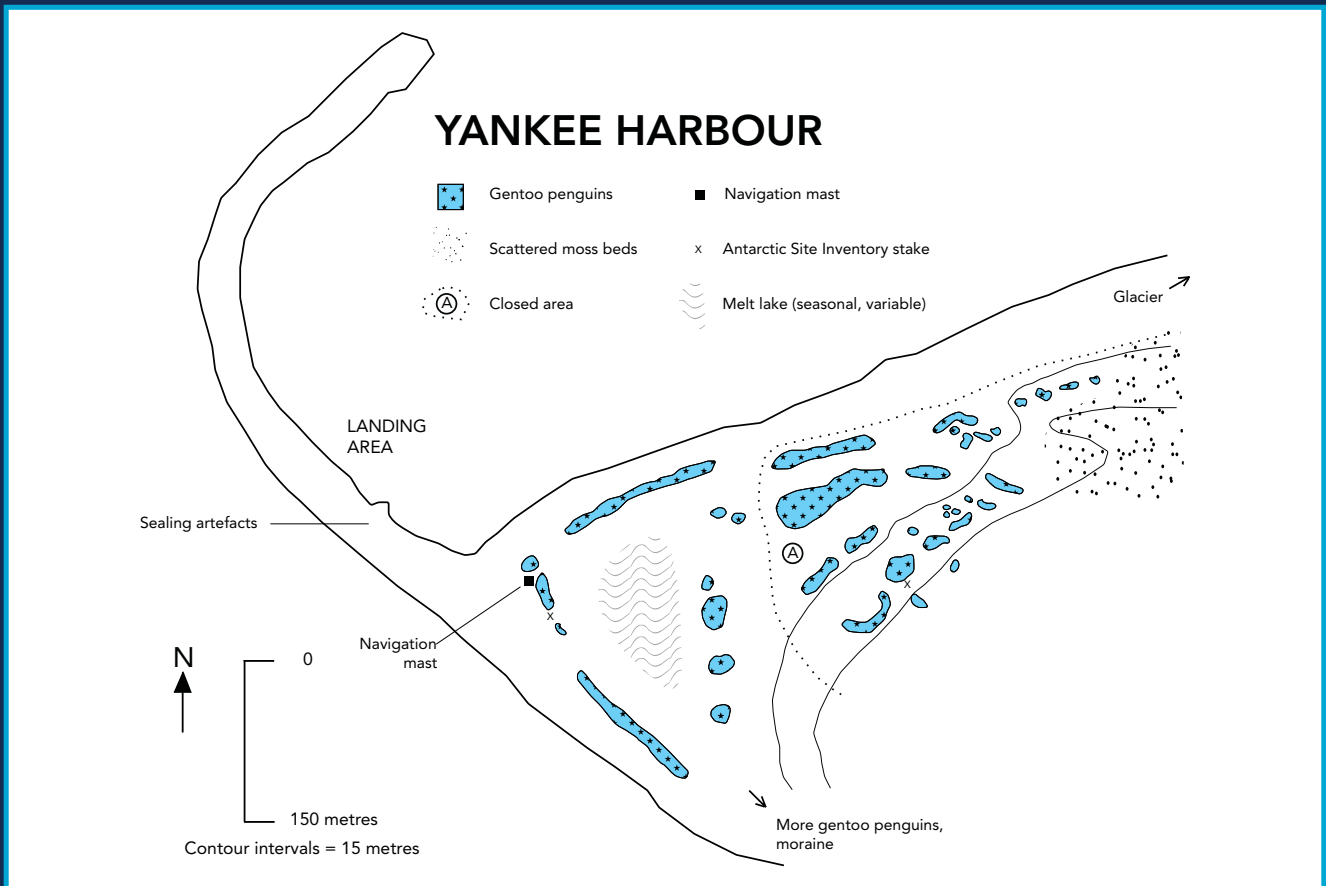
Yankee Harbour from above: showing the gravel spit enclosing the landing beach



Yankee Harbour landing site



Artefacts from early sealing activities (a trypot) found on the inner shoreline





## PART III

### Selected ASI Publications, Bibliography & Appendices

#### SELECTED ASI PUBLICATIONS

- Naveen, R., S.C. Forrest, R.G. Dagit, L.K. Blight, W.Z. Trivelpiece, and S.G. Trivelpiece. 2000. Censuses of penguin, blue-eyed shag, and southern giant petrel populations in the Antarctic Peninsula region, 1994-2000, *Polar Record* 36 (199): 323-334.
- Lynch, H.J., R. Naveen, and W.F. Fagan. 2008. Censuses of Penguin, Blue-Eyed Shag *Phalacrocorax Atriceps* and Southern Giant Petrel *Macronectes Giganteus* Populations in the Antarctic Peninsula, 2001-2007. *Marine Ornithology* 36: 83–97.



# Censuses of penguin, blue-eyed shag, and southern giant petrel populations in the Antarctic Peninsula region, 1994–2000

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Received February 2000

**ABSTRACT.** This paper presents new census data and population estimates for penguins, blue-eyed shags, and southern giant petrels from 26 sites in the Antarctic Peninsula, collected by the Antarctic Site Inventory from 1994 to 2000. For nine sites, population data or estimates are published for the first time. The newly discovered gentoo penguin population of 215 nests at Heroína Island (63°24'S, 54°36'W) represents the easternmost location where this species has been found breeding in the Peninsula. All three pygoscelid penguins — gentoo, Adélie, and chinstrap — were found breeding at Gourdin Island (63°12'S, 57°18'W), the fourth known site where these species nest contiguously in the Peninsula. During the period, significant declines in nesting populations of blue-eyed shag were documented at three northwestern Peninsula locations.

## Contents

The Antarctic Site Inventory	323
Census data	323
Census strategies	326
Discussion	326
Conclusion	331
Acknowledgements	331
References	333

## The Antarctic Site Inventory

From January 1994 to February 2000, under the aegis of the Antarctic Site Inventory project, 287 survey visits were made to 59 locations in the Antarctic Peninsula. A major objective of the Inventory is compiling baseline data and information that may be necessary to detect possible changes in the physical and biological variables monitored and to determine how best to minimize or avoid possible environmental impacts of tourism and non-governmental activities in the Antarctic Peninsula area.

Site visits are achieved by placing Antarctic Site Inventory researchers aboard tour ships at key census times each austral spring and summer, coinciding with the peak of penguin egg-laying (for nest censuses) and the peak of penguin chick crèching (for chick censuses). Site visits and aerial photo documentation also are undertaken in cooperation with the Royal Navy ice patrol vessel HMS *Endurance* (Naveen 1996, 1997a). Data are collected in accordance with the *CEMP standard methods for monitoring studies* (Scientific Committee for the

Conservation of Antarctic Marine Living Resources 1997).

The Inventory divides the Antarctic Peninsula into six sub-areas (Fig. 1), the designations of which are:

- South Orkneys (SO), including Laurie, Coronation, and Signy islands;
- Elephant Island and nearby islands (EI);
- South Shetland Islands (SH), including Deception, Low, and Smith islands (Fig. 2);
- Northeast Antarctic Peninsula (NE), from Cape Dubouzet (63°16'S, 64°00'W) and Joinville Island (63°15'S, 55°45'W) to James Ross Island (64°10'S, 57°45'W) (Fig. 3);
- Northwest Antarctic Peninsula (NW), from Cape Dubouzet to the northern end of the Lemaire Channel (65°04'S, 63°57'W) (Fig. 4); and
- Southwest Antarctic Peninsula (SW), from the northern end of the Lemaire Channel to the northern part of Marguerite Bay (68°18'S, 67°11'W) (Fig. 5).

This paper presents new census data and population estimates for penguins, blue-eyed shags, and southern giant petrels from 26 sites in the Antarctic Peninsula, collected from 1994 to 2000. Site locations are noted in Figures 2–5.

## Census data

The nest and chick census data listed in Tables 1–6 represent either site-wide censuses and estimates, or censuses and estimates of major colonies at particular sites. The data are formatted according to census codes

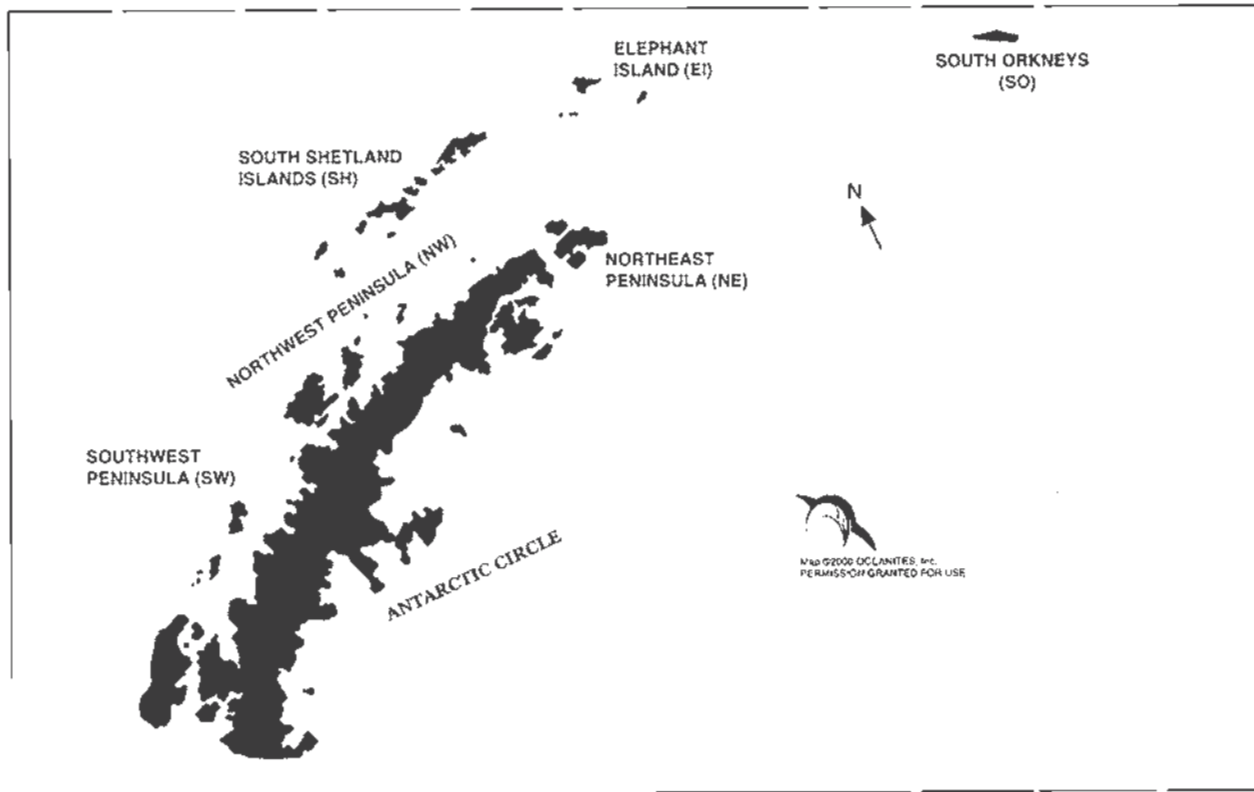


Fig. 1. Map of the Antarctic Peninsula region, indicating the six sub-areas and their abbreviations, as divided by the Antarctic Site Inventory: the South Orkneys, Elephant Island and nearby islands, the South Shetland Islands, the Northeast Antarctic Peninsula, the Northwest Antarctic Peninsula, and the Southwest Antarctic Peninsula.

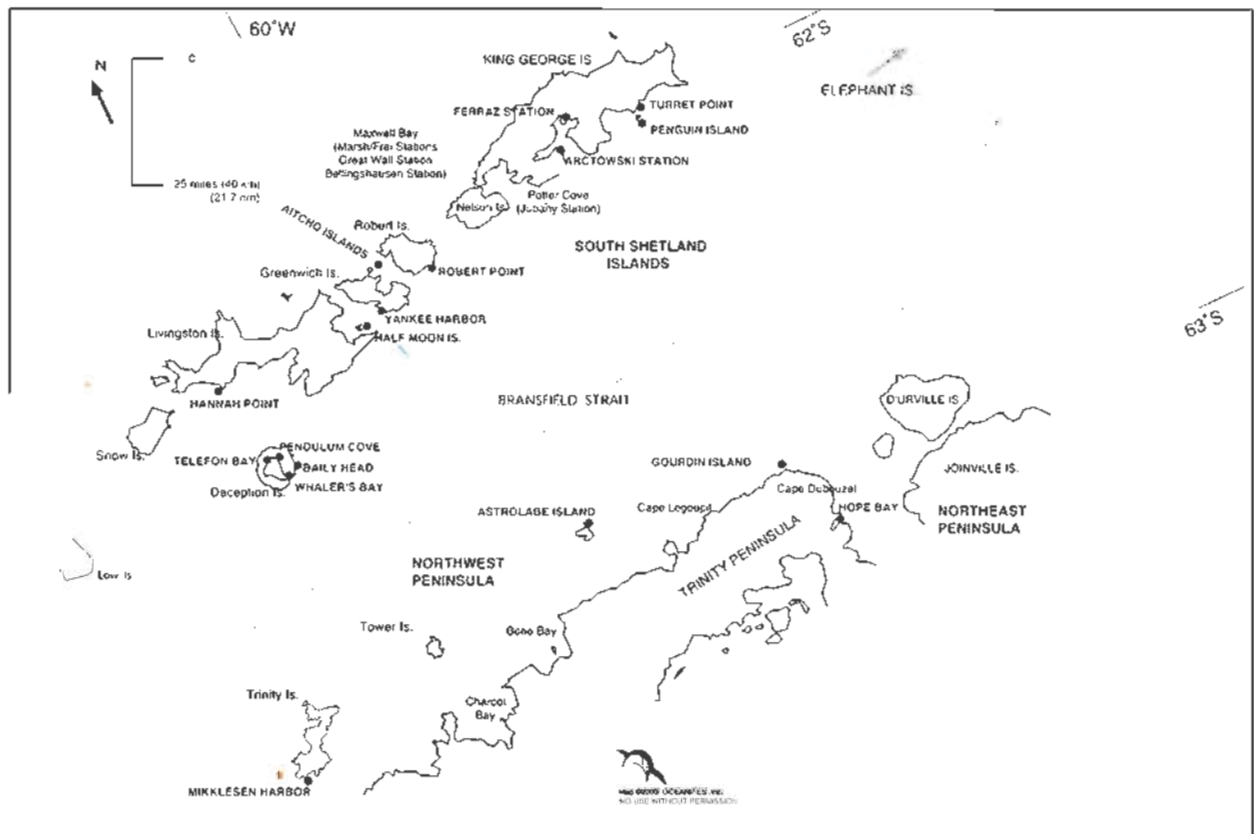


Fig. 2. Map of the South Shetland Islands and parts of the Northwest Antarctic Peninsula region.

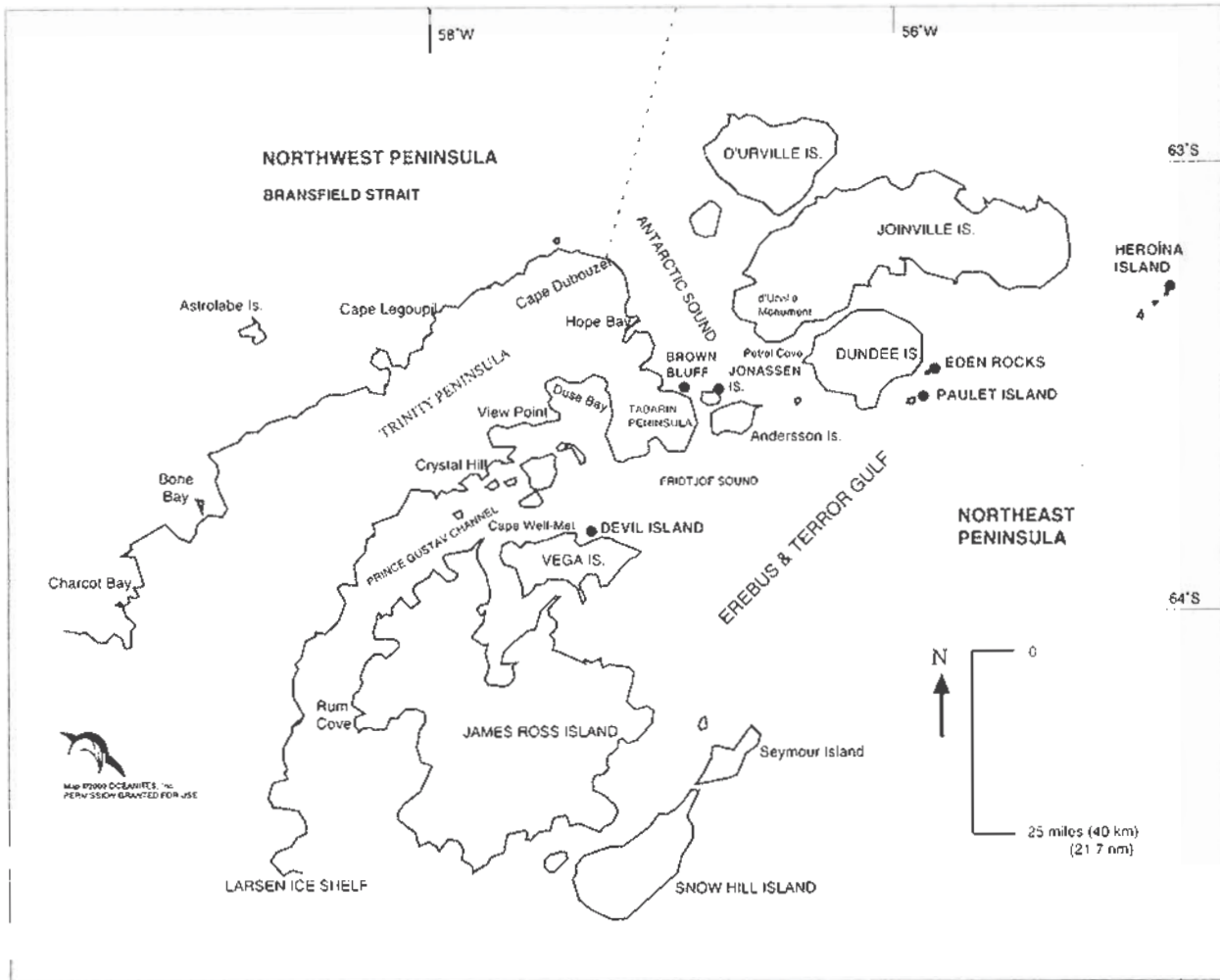


Fig. 3. Map emphasizing the Northeast Antarctic Peninsula region, as defined by the Antarctic Site Inventory.

established in Woehler (1993), which specify the nature and accuracy of each census. For example, an 'N1' census of breeding pairs/nests is the most accurate of nest counts, with pairs/nests individually counted and probably accurate to better than  $\pm 5\%$ ; a 'C1' census of chicks is the most accurate of chick counts, with chicks individually counted and probably accurate to better than  $\pm 5\%$ . Note that chick counts are difficult to interpret, because the census may not have occurred during the peak of chick crèching or because there is variation in annual breeding productivity (crèched chicks per active nest) (Woehler 1993; Scientific Committee for the Conservation of Antarctic Marine Living Resources 1997). N1 and C1 data obtained for the Inventory represent mean values for the months in which the censuses were made.

In attempting to establish baselines at the various locations, the Inventory routinely references the historic penguin nest and chick censuses compiled in Woehler (1993) and updated in Woehler and Croxall (1996). The SCAR Sub-committee on Bird Biology is producing a revision to this data compilation, and the Inventory data presented below have been submitted for incorporation therein.

The historic data yield valuable information about penguin distribution and often reflect more detailed work being done at particular locations, but there is potential difficulty in using these data to assess population trends. These data have been collected over time by a large number of field workers using a variety of methods. As noted, the Inventory follows the *CEMP standard methods*, which requires penguin nest counts during the peak of egg-laying each season and chick censuses during the subsequent peak of chick crèching. Thus, the historic censuses may not be comparable to Inventory data because they were accomplished at various times, in varying fashions, and not necessarily in accordance with the *CEMP standard methods*. The only filter consistently applied to these compiled data relates to the exactitude of the counts themselves (that is, whether they represent actual nest counts or estimates with varying degrees of accuracy). Regarding some of the historic censuses, only the year is listed for a particular nest or chick count. In other instances, it is unclear at which point the census occurred within a particular breeding season. In other cases, where specific dates are ascribed to penguin nest or chick censuses (or where dates may be gleaned from primary source material),

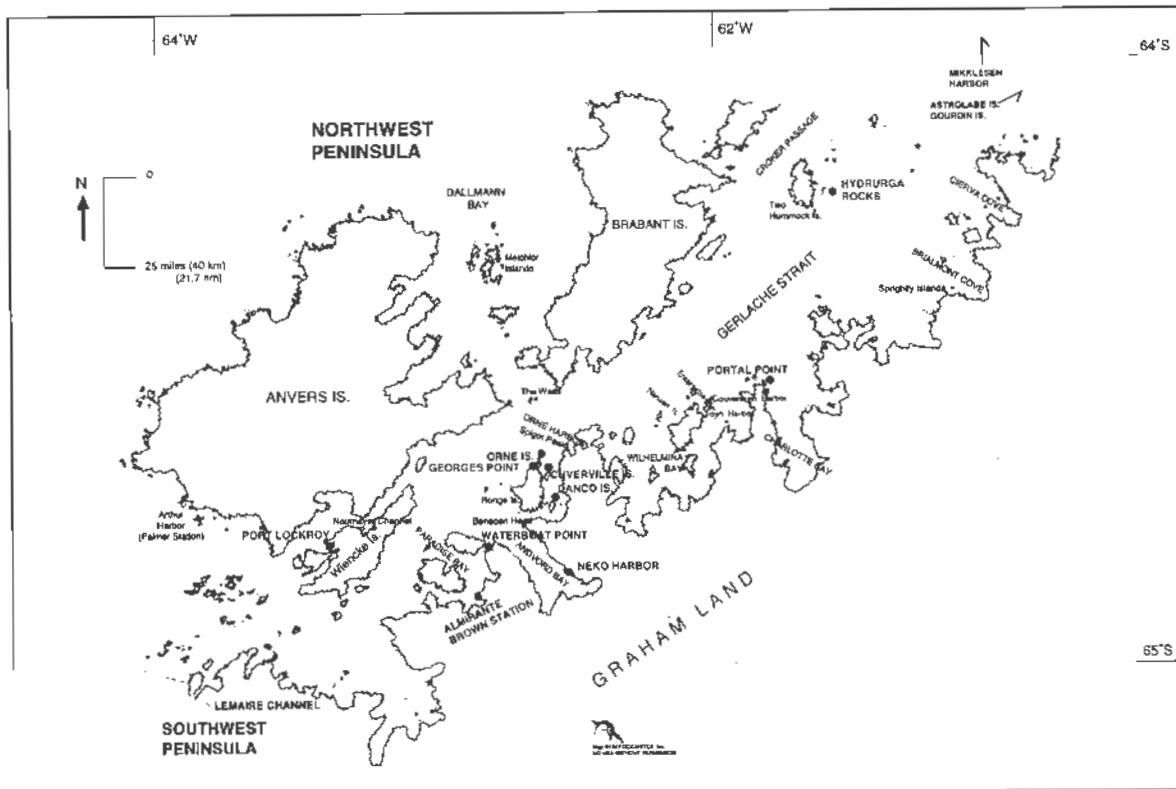


Fig. 4. Map of the Northwest Antarctic Peninsula region, as defined by the Antarctic Site Inventory.

it is unclear how close the censuses were to the peak of either egg-laying or chick crèching in that particular breeding season. See Norman (2000) for a related discussion regarding the difficulties in using historic census data.

Therefore, in the 'Discussion,' the only trends noted are those suggested by comparable data the Inventory has collected. Further, six seasons of Inventory data, in and of themselves, may be insufficient to assess long-term trends and whether any detected changes may be naturally occurring, produced perhaps by human activities, or resulting from other direct, consequential, synergistic, and cumulative effects (Naveen 1997a). With respect to future censusing efforts in the Antarctic Peninsula, whether by the Inventory or other projects, reliance on the *CEMP standard methods* will ensure that all data are fully comparable and, presumably, will enable a greater confidence in assessing and describing trends or variability. At present, in the Peninsula, long-term penguin and seabird projects on the western shore of Admiralty Bay (Site of Special Scientific Interest 8), Arthur Harbor, and Cape Shireff, Livingston Island, fully incorporate these standard, uniform procedures.

#### Census strategies

Regarding penguins, differences in breeding biology led to the adoption of different Inventory census strategies (Trivelpiece 1991; Williams 1995; Emslie 1997; Naveen 1997b). Chinstrap and Adélie penguins are highly faithful to specific nest sites, and do not tend to abandon regular

nest sites and rookeries if there is a breeding failure in a single season. Because of the strong site fidelity of chinstrap and Adélie penguins, nest and chick censuses of discrete colonies and subgroups at a particular site may have long-term relevance, even if all colonies and subgroups at that site cannot be censused. Gentoo penguins do not exhibit the same nest-site fidelity and regularly change nesting locations if there are disturbances. This means that gentoo penguin nest and chick censuses may have long-term relevance only if all gentoo colonies and subgroups at a particular site are censused (Trivelpiece and Trivelpiece 1990; Trivelpiece and others 1990).

#### Discussion

Tables 1–6 list 45 censuses or population estimates of penguin, blue-eyed shag, and southern giant petrel colonies at 26 sites in the Antarctic Peninsula, collected by the Antarctic Site Inventory from 1994 to 2000. For nine sites, population data or estimates are published for the first time. The following species-specific discussion indicates sites where the Inventory has upgraded the accuracy of historic censuses. For each site, nest and chick census data are presented with the terminology suggested in Woehler (1993).

#### Adélie penguin

In six field seasons from 1994 to 2000, the Inventory censused or estimated populations at 14 different Adélie penguin breeding sites (Table 1). Data/estimates for seven Adélie penguin colonies in the northeast Peninsula region



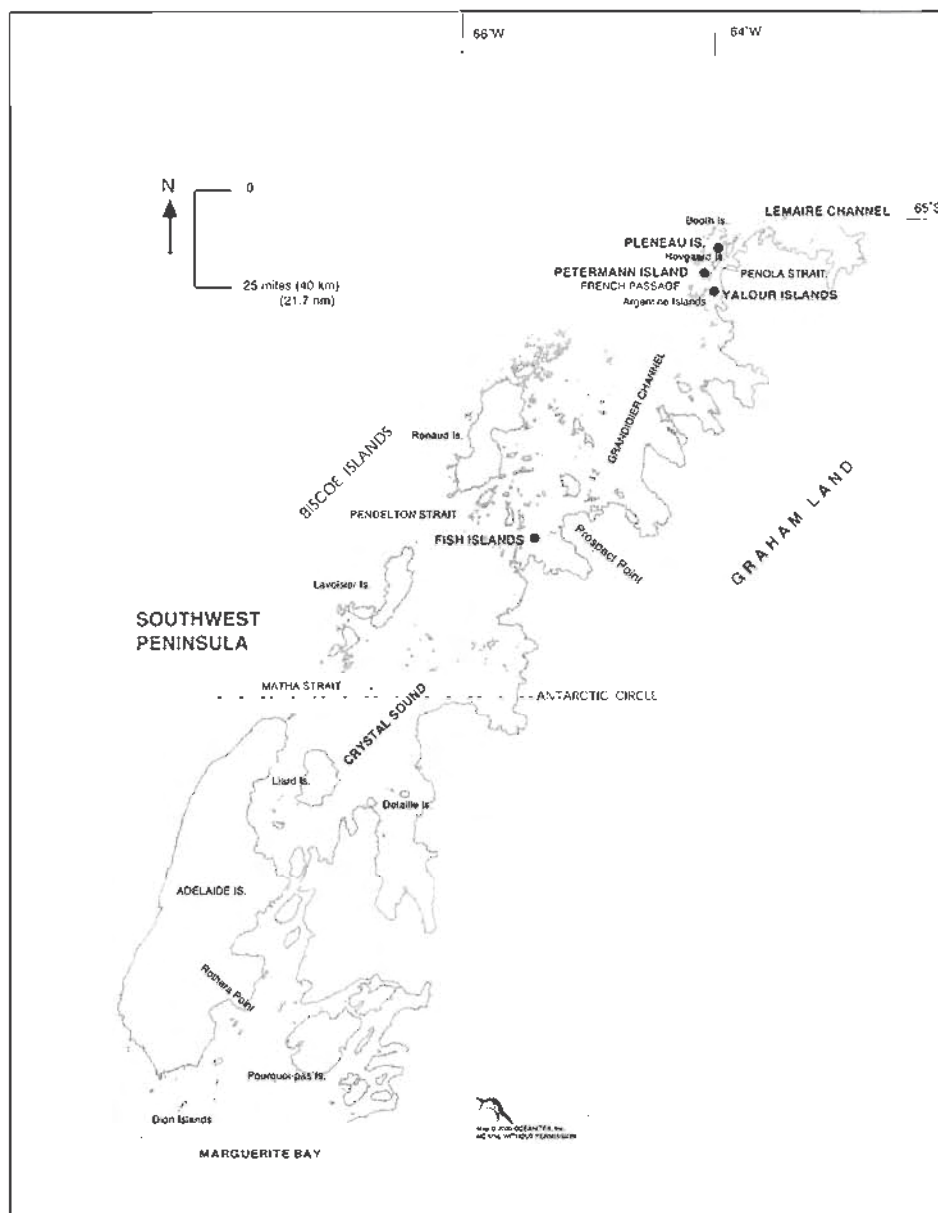


Fig. 5. Map of the Southwest Antarctic Peninsula region, as defined by the Antarctic Site Inventory.

are presented for the first time — Heroína Island, Beagle Island, Darwin Island, Platter Island, Comb Island, Eden Rocks, and Brown Bluff. The Inventory's first nest censuses/estimates at Heroína Island and Eden Rocks add a minimum of 329,364 nests to the known breeding population of Adélie penguins in the Antarctic Peninsula. With respect to historic data compiled in Woehler (1993) and Woehler and Croxall (1996), the Inventory upgraded censuses at four Adélie penguin sites to N1/2 or C1/2 counts — Jonassen Island (NE), Paulet Island (NE), Devil Island (NE), and Gourdin Island (NW). The estimate of 95,000–105,000 breeding pairs at Paulet Island (NE) does not necessarily indicate a population increase. Using a different technique, an estimate was made of 75,000 nests that are relatively contiguous to the historic Nordenskjöld expedition hut on the northwestern tip of the island,

compared to an estimate of 60,000 from 1984. Further, 20,000–30,000 nests were estimated in Paulet Island's northeastern and eastern canyons, which are physically separated from the other, on-site Adélie penguins. It is not clear whether or not these canyons were censused/estimated in 1984.

#### Gentoo penguin

During six field seasons between 1994 and 2000, the Inventory censused or estimated breeding populations at 13 different sites of gentoo penguins (Table 2). Data for three gentoo penguin colonies are presented for the first time — Heroína Island (NE), Brown Bluff (NE), and Fort Point (SH) — and add a minimum of 1064 nests to the known breeding population of gentoos in the Antarctic Peninsula. With respect to historic data compiled in Woehler (1993) and Woehler and Croxall (1996), the Inventory upgraded censuses at four gentoo sites to N1/2 or C1/2 counts — Yankee Harbor (SH), Aitcho Islands (SH), Jonassen Island (NE), and Gourdin Island (NW). The newly discovered Heroína Island

population represents the easternmost location where gentoo penguins have been found breeding in the Peninsula.

#### Chinstrap penguin

In six field seasons from 1994 to 2000, the Inventory censused or estimated breeding populations at seven different chinstrap penguin sites (Table 3). With respect to historic data compiled in Woehler (1993) and Woehler and Croxall (1996), the Inventory upgraded censuses at five chinstrap penguin sites to N1/2 or C1/2 counts — Aitcho Islands (SH), Hannah Point (SH), Hydrurga Rocks (SH), Fort Point (SH), and Gourdin Island (NW).

#### Macaroni penguin

The census at Fort Point, Greenwich Island (SH), adds a macaroni penguin nesting site not previously reported (Table 4).

Table 1. Antarctic Site Inventory censuses for Adélie penguin (*Pygoscelis adeliae*), 1994–2000. N1 = nests individually counted, accurate to better than  $\pm 5\%$ ; N2 = nests counted in known area then extrapolated over total colony area, accurate up to 5–10%; N3 = accurate estimate, accurate to 10–15%; N4 = rough estimate, accurate to 25–50%; C1 = chicks individually counted, accurate to better than  $\pm 5\%$ ; C2 = chicks counted in known area then extrapolated over total area, accurate to 5–10%; C3 = accurate estimate, accurate to 10–15%; A3 = estimates based on counts of total birds or adults individually counted, accurate to 10–15%; EL = extra large, >100,000 breeding pairs; VL = very large, 20,000–99,999 breeding pairs; L = large, 7500–19,999 breeding pairs; M = medium, 1000–7499 breeding pairs; S = small, 100–999 breeding pairs.

Census	Date	Notes
Penguin Island (SH) – 62°06'S, 57°54'W		
1966 N1	Nov 1996	Recent historic census reported in Woehler (1993) = 3114 (N1/3, 1980)
2441 N1	Dec 1997	
Turret Point, King George Island (SH) – 62°05'S, 57°55'W		
1077 N1	Nov 1997	Recent historic census reported in Woehler (1993) = 1918 (N1, 1980)
Heroína Island, Danger Islands group (NE) – 63°24'S, 54°36'W		
285,115–305,165 N2	Dec 1996	This is the first-reported Adélie penguin census for this site; Woehler (1993) notes $\geq 5$ Adélie colonies at Danger Island group, referring to a 1978 survey that did not estimate the Heroína Island population
Beagle Island, Danger Islands group (NE) – 63°25'S, 54°40'W		
VL to EL N4	Jan 1999	Estimate from aerial photo documentation
Darwin Island, Danger Islands group (NE) – 63°26'S, 54°46'W		
VL to EL N4	Jan 1999	Estimate from aerial photo documentation
Platter (Plato) Island, Danger Islands group (NE) – 63°26'S, 54°40'W		
L N4	Jan 1999	Estimate from aerial photo documentation
Comb (Peine) Island, Danger Islands group (NE) – 63°24'S, 54°42'W		
S to M N4	Jan 1999	Estimate from aerial photo documentation
Eden Rocks (NE) – 63°29'S, 55°40'W		
Western colony		
19,649–20,785 N3	Dec 1996	Western colony only; there are large Adélie colonies on each of the two rocks comprising this site
Eastern colony		
24,600–28,905 N3	Dec 1996	Eastern colony only; there are large Adélie colonies on each of the two rocks comprising this site
Overall		
44,249–49,460 N3	Dec 1996	Total of western and eastern colonies
Brown Bluff, Tabarin Peninsula (NE) – 63°32'S, 56°55'W		
20,000 C3	Jan 1995	
Jonassen Island (NE) – 66°33'S, 56°40'W		
0 C1	Jan 1996	Woehler (1993) lists a 1901 reference to a 'large colony,' which the inventory did not relocate
Pauiet Island (NE) – 63°35'S, 55°27'W		
Northern colony, contiguous to the historic Nordenskjöld expedition hut		
75,000 N2	Jan 1999	An extrapolation from Inventory aerial photo documentation of nests contiguous to the historic Nordenskjöld expedition hut on the north-western part of the island; recent historic nest censuses reported in Woehler (1993) = 100,000 (A3, 1981) and 60,000 (A3, Nov 1984), the latter apparently referring to nests that are relatively contiguous to the Nordenskjöld expedition hut
Northeastern/eastern canyons		
20,000–30,000 N3	Jan 1999	An extrapolation from Inventory aerial photo documentation of Adélies in the northeastern/eastern canyons, which are physically separated from the colonies contiguous to the Nordenskjöld expedition hut
Overall		
95,000–105,000 N2/3	Jan 1999	Revised estimate for entire island, based on an extrapolation from Inventory aerial photo documentation
Devil Island (NE) – 63°48'S, 57°17'W		
10,320 C2	Jan 1996	Woehler (1993) lists a 1945 reference to a 'large colony' at this site
8501 C1	Jan 2000	

Table 1 continued

Census	Date	Notes
Gourdin Island (NW) – 63°12'S, 57°18'W		
Northwestern colony		
14,334	N2	Dec 1997
		Northwestern end of the island; more nests may be present; Woehler (1993) lists a reference to an Adélie population of 300 nests (N4, 1969)
Petermann Island (SW) – 65°10'S, 64°10'W		
862	N1	Nov 1997
		Recent historic censuses reported in Croxall and Kirkwood (1979) and Woehler (1993) = 1540 (N1, Dec 1971) and 1080 (N3, 1988)
1135	C1	Jan 1999

Table 2. Antarctic Site Inventory censuses for gentoo penguin (*Pygoscelis papua*), 1994–2000. N1 = nests individually counted, accurate to better than ±5%; N2 = nests counted in known area then extrapolated over total colony area, accurate up to 5–10%; N3 = accurate estimate, accurate to 10–15%; N4 = rough estimate, accurate to 25–50%; C1 = chicks individually counted, accurate to better than ±5%.

Census	Date	Notes
Yankee Harbor, Greenwich Island (SH) – 62°32'S, 59°47'W		
4751	N1	Nov 1999
		Recent historic census reported in Woehler (1993) = 4000 (N3/4, 1990)
Aitcho Islands visitor site (SH) – 62°24'S, 59°44'W		
Southern and southeastern end of the island		
1177	N1	Dec 1999
		Recent historic census reported in Woehler (1993) = 314 (N3, Jan 1966)
Fort Point, Greenwich Island (SH) – 62°34'S, 59°34'W		
282	N1	Dec 1999
		The inventory census in Dec 1999 totalled 1136 nests of penguin species. Woehler (1993) notes a historic census ascribed fully to chinstrap penguins (1200 nests, N4, 1987)
Hannah Point, Livingston Island (SH) – 62°39'S, 60°37'W		
1123	N1	Dec 1996
1350	N1	Dec 1997
		Recent historic census reported in Woehler (1993) = 1016 (N1, 1987)
Heroína Island, Danger Islands group (NE) – 63°24'S, 54°36'W		
215	N1	Dec 1996
		This colony has not been reported previously, and appears to be the easternmost breeding location for gentoos in the Antarctic Peninsula
Brown Bluff, Tabarin Peninsula (NE) – 63°32'S, 56°55'W		
617	N1	Nov 1999
567	N1	Dec 1999
Jonassen Island (NE) – 66°33'S, 56°40'W		
233	C1	Jan 1996
		Woehler (1993) refers to a 1901 census of 20 nests (N4, 1901)
Gourdin Island (NW) – 63°12'S, 57°18'W		
Northwestern colony		
568	N2	Dec 1997
		Northwest end of the island; more gentoo nests may be present. Woehler (1993) lists a reference to a gentoo population of 50 nests (N3, 1969)
Danco Island (NW) – 64°44'S, 62°37'W		
2300	N2	Nov 1999
		Recent historic censuses reported in Woehler (1993) and Woehler and Croxall (1996) = 800 (C1, 1986) and 1637 (N2, 1994)
Jougla Point/Port Lockroy, Wiencke Island (NW) – 64°49'S, 63°30'W		
1595	N1	Nov 1996
1405	N1	Nov 1997
1545	N1	Dec 1997
1437	N1	Nov 1998
1681	N1	Nov 1999
1501	N1	Dec 1999
		Recent historic census reported in Woehler (1993) = 1616 (N1, 1988)
Neko Harbor (NW) – 64°50'S, 62°33'W		
934	C1	Feb 1996
		Recent historic censuses = 214 (N3, 1971; reported in Croxall and Kirkwood 1979); 250 (C1, 1987; reported in Woehler 1993)
625	C1	Jan 1999
844	N1	Dec 1999
Pléneau Island (SW) – 65°06'S, 64°04'W		
1577	N1	Nov 1999
		Recent historic census reported in Woehler (1993) = 500 (N1, 1982)
Petermann Island (SW) – 65°10'S, 64°10'W		
1224	N1	Dec 1997
		Recent historic census reported in Woehler (1993) = 755 (N2, 1988)

Table 3. Antarctic Site Inventory censuses for chinstrap penguin (*Pygoscelis antarctica*), 1994–2000. N1 = nests individually counted, accurate to better than  $\pm 5\%$ ; N2 = nests counted in known area then extrapolated over total colony area, accurate up to 5–10%; N3 = accurate estimate, accurate to 10–15%; N4 = rough estimate, accurate to 25–50%; C1 = chicks individually counted, accurate to better than  $\pm 5\%$ .

Census	Date	Notes
Aitcho Islands visitor site (SH) – 62°24'S, 59°44'W Southern and southeastern end of the island		
4608	N2	Nov 1997
Not including chinstrap penguins nesting on site's northern, rocky coast; Inventory censuses occur at the regular zodiac landing site in Aitchos, which is an island located northwest of Cecilia Island, that is officially unnamed on US and British Admiralty nautical charts; Woehler (1993) notes a nesting population of 3500–4000 chinstraps (N4, January 1966) for Cecilia Island, a census originally reported in Croxall and Kirkwood (1979), which, based on site maps in Croxall and Kirkwood (1979), should have been ascribed to this visitor site		
Fort Point, Greenwich Island (SH) – 62°34'S, 59°34'W		
853	N1	Dec 1999
Recent historic census reported in Woehler (1993) = 1200 (N4, 1987); the Inventory census in December 1999 totalled 1136 nests of three penguin species		
Hannah Point, Livingston Island (SH) – 62°39'S, 60°37'W		
1158	N1	Dec 1996
1137	N1	Dec 1997
1061	N1	Dec 1999
1341	C1	Jan 2000
Recent historic census reported in Woehler (1993) = 1500 (N3, 1987)		
Gourdin Island (NW) – 63°12'S, 57°18'W Northwestern and eastern colonies		
3282	N2	Dec 1997
Northwestern and eastern ends of the island only; more nesting chinstraps may be present; Woehler (1993) lists a 1969 reference to a 'large colony' of chinstraps. Other Peninsula sites where all three pygoscelid penguins nest contiguously have been designated as Sites of Special Scientific Interest under the Antarctic Treaty: Stranger Point, King George Island; Point Thomas, western shore of Admiralty Bay, King George Island; and Ardley Island		
Hydrurga Rocks (NW) – 64°08'S, 61°37'W		
526		Nov 1996
Recent historic nest census reported in Woehler (1993) = 1000 (N4/5, 1986)		
Georges Point, Rongé Island (NW) – 64°40'S, 62°39'W		
383	N1	Dec 1996
Recent historic nest censuses reported in Woehler (1993) and Woehler and Croxall (1996) = 300 (N3/4, 1984), 600 (N3, 1988), and 414 (N2, 1994)		
327	N1	Nov 1998
Orne Islands (NW) – 64°39'S, 62°40'W		
342	N1	Dec 1996
Recent historic nest censuses reported in Woehler (1993) and Woehler and Croxall (1996) = 860 (N3, 1987) and 420 (N2, 1994)		
370	N1	Nov 1998
361	N1	Dec 1998
421	N1	Nov 1999
332	N1	Dec 1999
484	C1	Jan 2000

#### Blue-eyed shag

Nest counts were obtained sufficient to establish a trend in blue-eyed shag nesting populations at five of 13 sites where the Antarctic Site Inventory has identified nesting shags: the cliffside colonies near Almirante Brown Station, Paradise Bay (NW); Hannah Point, Livingston Island (SH); Jougla Point, Port Lockroy, Wiencke Island (NW); Petermann Island (SW); and the Orne Islands (NW) (Table 5). An analysis of these data for the period January 1994 to January 2000 indicates declines at all of these sites.

However, it was not possible to reject the null hypothesis that the negative slopes of the log-transformed data were the result of chance alone for Petermann Island and Jougla Point (Colton 1974: table 5). Declines at the other sites were either highly significant (Almirante Brown,  $P < .001$ ,  $r = .9786$ , 5 df; Orne Islands,  $P < .001$ ,  $r = .9765$ , 4 df) or significant (Hannah Point,  $P < .05$ ,  $r = .7422$ , 6 df). Collectively, nest counts at the Almirante Brown shag colony declined 51%, from 100 to 49, in the 1994–2000 period. Nest counts at the Orne Islands colony went from



Table 4. Antarctic Site Inventory censuses for macaroni penguin (*Eudyptes chrysolophus*), 1994–2000. N1 = nests individually counted, accurate to better than  $\pm 5\%$ ; N4 = rough estimate, accurate to 25–50%; C1 = chicks individually counted, accurate to better than  $\pm 5\%$ .

Census	Date	Notes
Hannah Point, Livingston Island (SH) – 62°39'S, 60°37'W		
8 N1	Nov 1995	Macaronis nested in three of the chinstrap penguin colonies surveyed by the Inventory; recent historic nest census reported in Woehler (1993) = 8 (N1, 1987)
6 N1	Dec 1995	
6 N1	Dec 1996	
6 N1	Dec 1997	
5 N1	Dec 1999	
3 C1	Jan 1995	
4 C1	Jan 1996	
3 C1	Jan 2000	
Fort Point, Greenwich Island (SH) – 62°34'S, 59°34'W		
1 N1	Dec 1999	The Inventory census in December 1999 totalled 1136 nests of three penguin species; Woehler (1993) notes a historic census ascribed fully to chinstrap penguins (1200 nests, N4, 1987)

15 nests in November 1994 to zero in December 1999.

The Almirante Brown and Orne Islands colonies are either inaccessible to tourists or receive few tourist visits (Naveen 1997a), suggesting that human disturbance is an unlikely cause of the decline at these sites. In December 1999 at the Orne Islands site, one-meter-deep snow on the shags' nesting ledges was noted. At the other three sites (Petermann Island, Jougla Point, Hannah Point), the shag population now may have stabilized or slightly increased since the decline from 1994–1995 levels.

Collectively, the declines observed through seven seasons at different sites throughout the Peninsula suggest that blue-eyed shag numbers should be further monitored. These declines may be indicative of some underlying environmental change affecting shag nest success.

#### Southern giant petrel

The Inventory has begun annual, site-wide censuses of southern giant petrel at three sites in the South Shetland Islands — Aicho Islands, Penguin Island, and Hannah Point, Livingston Island, which are reported here for the first time (Table 6). All three have assemblages of petrels that may be easily accessed by visiting tourists. While it is too early to suggest any population trends, there is considerable concern regarding potential disturbances to this species, which has an extremely lengthy breeding cycle: a single egg is laid in early November, the incubation period lasts for approximately 60 days (until January), and each season's cohort of chicks — if they survive — will not fledge until 100–130 days after hatching, in March and later (Naveen 1997a, 1997b). Extreme care is necessary because nesting southern giant petrels are easily pushed off their eggs during the nesting season, and eggs may be easily predated by skuas. Once an egg is lost, southern giant petrels are unable to relay and breed successfully that season (Emslie 1996).

#### Conclusion

Data collected during the first six seasons of Antarctic Site

Inventory fieldwork suggest approaches and refinements for all assessment and monitoring initiatives in the Antarctic Peninsula. The most critical of these relates to the comparability of census data, enabling trends to be assessed and described more confidently. As noted, the Inventory attempts to collect data according to the *CEMP standard methods*, a standard methodology followed by other long-term research projects in the Peninsula. If, for example, the Inventory detects a population change at a particular site, comparable data from other nearby sites will enable a determination whether the detected change is a site-specific aberration or an area-wide trend.

The *CEMP standard methods* also mandate that nest censuses be achieved as near as possible to the peak of egg-laying, and chick censuses as near as possible to the peak of chick crèching. Ensuring that data are collected during these mandated periods will enable determinations of breeding success/productivity, annual survival, and recruitment. Further, accurate breeding chronologies at key tourism sites will enable comparisons to the visitation chronology of tourists, perhaps to determine how the timing of visits relates to times within each breeding cycle when eggs or chicks are most vulnerable to disturbance.

The population decline detected at a number of blue-eyed shag breeding sites needs continued attention and investigation. The sites exhibiting highly significant declines are either inaccessible to tourists or receive few tourist visits, which potentially implicates other, natural factors like a changing climate or prey availability/distribution. It is hoped that southern giant petrel censuses initiated at three Peninsula locations will assist future determinations of the status of this species, which is easily disturbed by human visitors.

#### Acknowledgements

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Table 5. Antarctic Site Inventory censuses for blue-eyed shag (*Phalacrocorax atriceps*), 1994–2000. N1 = nests individually counted, accurate to better than  $\pm 5\%$ ; N2 = nests counted in known area then extrapolated over total colony area, accurate up to 5–10%; N3 = accurate estimate, accurate to 10–15%; C1 = chicks individually counted, accurate to better than  $\pm 5\%$ .

Census	Date	Notes		
Hannah Point, Livingston Island (SH) – 62°39'S, 60°37'W				
10	N1	Dec 1994		
7	N1	Nov 1995		
5	N1	Dec 1995		
5	N1	Dec 1996		
7	N1	Dec 1997		
5	N1	Dec 1998		
7	N1	Dec 1999		
5	N1	Jan 2000		
2	C1	Dec 1999		
8	C1	Jan 2000		
9	C1	Jan 2000		
Paulet Island (NE) – 63°35'S, 55°27'W				
432	N1	Nov 1995		
326	N1	Nov 1996		
360	N1	Dec 1996		
377	N2	Nov 1999		
Orne Islands (NW) – 64°40'S, 62°40'W				
15	N1	Dec 1994	Colony located on southwestern end of the site, and exposed to Gerlache Strait	
9	N1	Nov 1995		
5	N1	Dec 1996		
3	N1	Dec 1997		
1	N1	Nov 1998		
1	N1	Dec 1998		
0	N1	Dec 1999	One-meter-deep snow on the shag nesting ledges	
0	C1	Jan 2000		
Jougla Point/Port Lockroy, Wiencke Island (NW) – 64°49'S, 63°30'W				
31	N1	Dec 1994	Recent historic censuses include: 60 (N3, Jan 1983; reported in Parmelee 1992); 65 (N1, Dec 1983; reported in Parmelee 1992); 40 (N3, Jan 1984; reported in Parmelee 1992); 60 (N3, Jan 1989; reported in Parmelee 1992); and 43 (N1, Dec 1993; S. Drennan, personal communication)	
22	N1	Nov 1995		
25	N1	Jan 1996		
20	N1	Nov 1997		
20	N1	Dec 1997		
22	N1	Nov 1998		
25	N1	Dec 1999		
26	N1	Jan 2000		R. Downie, personal communication
58	C1	Jan 1995		
50	C1	Jan 1996		
33	C1	Feb 1998	N. Milius, personal communication	
45	C1	Jan 2000	R. Downie, personal communication	
43	C1	Jan 2000		
Cliffs near Almirante Brown Station, Paradise Bay (NW) – 64°53'S, 62°52'W				
Colony #1				
72	N1	Jan 1994		
76	N1	Dec 1994		
60	N1	Nov 1995		
57	N1	Dec 1995		
56	N1	Nov 1996		
53	N1	Dec 1996		
46	N1	Nov 1997		
46	N1	Dec 1997		
43	N1	Jan 2000		
81	C1	Jan 2000		

Table 5 continued

Census	Date	Notes
Colony #2		
18	N1	Jan 1994
24	N1	Dec 1994
16	N1	Nov 1995
14	N1	Dec 1995
10	N1	Nov 1996
6	N1	Nov 1997
8	N1	Dec 1997
6	N1	Jan 2000
11	C1	Jan 2000
Colonies #1 and #2		
90	N1	Jan 1994
100	N1	Dec 1994
76	N1	Nov 1995
71	N1	Dec 1995
66	N1	Nov 1996
52	N1	Nov 1997
54	N1	Dec 1997
49	N1	Jan 2000
92	C1	Jan 2000
Petermann Island (SW) – 65°10'S, 64°10'W		
34	N1	Dec 1994
27	N1	Nov 1995
33	N1	Dec 1995
29	N1	Dec 1996
29	N1	Jan 1997
29	N1	Nov 1997
30	N1	Dec 1997
67	C1	Jan 1995
50	C1	Jan 1996
57	C1	Jan 1999
46	C1	Jan 2000

Table 6. Antarctic Site Inventory censuses for southern giant petrel (*Macronectes giganteus*), 1994–2000. N1 = nests individually counted, accurate to better than  $\pm 5\%$ .

Census	Date
Penguin Island (SH) – 62°06'S, 57°54'W	
507	N1 Dec 1997
578	N1 Dec 1998
439	N1 Jan 1999
634	N1 Dec 1999
Aitcho Islands visitor site (SH) – 62°24'S, 59°44'W	
81	N1 Jan 1999
108	N1 Dec 1999
Hannah Point, Livingston Island (SH) – 62°39'S, 60°37'W	
117	N1 Dec 1997
110	N1 Jan 1999
126	N1 Dec 1999
111	N1 Jan 2000

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# CENSUSES OF PENGUIN, BLUE-EYED SHAG *PHALACROCORAX ATRICEPS* AND SOUTHERN GIANT PETREL *MACRONECTES GIGANTEUS* POPULATIONS ON THE ANTARCTIC PENINSULA, 2001–2007

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## SUMMARY

LYNCH, H.J., NAVEEN, R. & FAGAN, W.F. 2008. Censuses of penguin, Blue-eyed Shag *Phalacrocorax atriceps* and Southern Giant Petrel *Macronectes giganteus* populations on the Antarctic Peninsula, 2001–2007. *Marine Ornithology* 36: 83–97.

Here, we report census results for Adélie Penguin *Pygoscelis adeliae*, Gentoo Penguin *P. papua*, Chinstrap Penguin *P. antarctica*, Blue-eyed Shag *Phalacrocorax atriceps*, and Southern Giant Petrel *Macronectes giganteus* collected as part of the Antarctic Site Inventory project during 2001–2007. We report on new breeding populations of Gentoo Penguins in the Yalour Islands, Galindez Island and Cape Tuxen (Antarctic Peninsula), which reflect the southernmost known breeding colonies of this species. We also document range expansion and population increases for Gentoo Penguins throughout the Antarctic Peninsula. Further, we report on the continuing population decline of Adélie Penguins in the Antarctic Peninsula, and present records of all three pygoscelid penguins breeding at Booth Island, the fifth known site where these species nest contiguously on the Antarctic Peninsula.

Key words: Censuses, Antarctic Peninsula, penguins, Blue-eyed Shag, Southern Giant Petrel

## INTRODUCTION

Fieldwork by the Antarctic Site Inventory (ASI) began in November 1994, examining whether opportunistic visits can be used to

- effectively and economically detect possible visitor-caused changes in the physical features, flora and fauna of sites on the Antarctic Peninsula being visited repeatedly by ship-based tourists;
- collect baseline information necessary to detect possible changes in the physical and biologic variables being monitored; and
- determine how best to minimize or avoid the potentially negative effects of tourism and governmental and non-governmental activities in the Antarctic Peninsula area.

The ASI has collected information on Antarctic Peninsula visitor sites frequently and cost-effectively, relying opportunistically on expedition tour vessels and, occasionally, the United Kingdom ice patrol vessel *HMS Endurance* for logistics support. Well-timed visits by trained researchers have proved an effective means of characterizing sites and collecting relevant biologic data (Naveen 1997, Naveen *et al.* 2001, Naveen 2003).

Data collected by the Inventory are intended to assist the implementation of the 1991 Protocol on Environmental Protection to the Antarctic Treaty, which, among other things, requires *a priori* environmental impact assessments for all human activities, including tourism, and monitoring to assess and verify predicted environmental impacts. The goal is to develop a baseline against which changes in the ecosystem can be assessed and, if possible,

determine whether any detected changes are naturally occurring or are anthropogenic, perhaps caused by tourism or other human activities (Naveen 1996). Potential impacts may be short-term or long-term, immediate or cumulative (Benninghoff & Bonner 1985, Abbott & Benninghoff 1990, Emslie 1997, Hofman & Jatko 2002).

In this paper we report on the last six years' worth of census data collected to update earlier efforts reported in Naveen *et al.* (2000). The ASI is conducted by researchers placed on tour ships, and site censuses are taken during zodiac landings or, occasionally, during zodiac tours. The advantages of this approach include wide spatial coverage of the western Antarctic Peninsula, and a negligible footprint on the landscape. The disadvantage is that the timing of censuses is opportunistic, and census counts are not always timed with the peak of egg laying or chick crèching as required by the Commission for the Conservation of Antarctic Marine Living Resources Ecosystem Monitoring Program (SCCAML 2004). Off-peak bias corrections are currently being developed (Lynch *et al.* in prep.), but even uncorrected census counts, as reported in this paper, add tremendous spatial and temporal coverage to existing census records and can be used in population analyses (e.g. Woehler *et al.* 2001, Sander *et al.* 2007).

## STUDY AREA

As reported elsewhere (Naveen *et al.* 2000), the Inventory divides the Antarctic Peninsula into six subareas (Fig. 1), designations that are followed here.

- South Orkneys (SO), including Laurie, Coronation, and Signy Islands

- Elephant Island and nearby islands (EI)
- South Shetland Islands (SH), including Deception, Low, and Smith Islands (see Fig. 2)
- Northeast Antarctic Peninsula (NE), from Cape Dubouzet (63°16'S, 64°00'W) and Joinville Island (63°15'S, 55°45'W) to James Ross Island (64°10'S, 57°45'W) (see Fig. 3)
- Northwest Antarctic Peninsula (NW), from Cape Dubouzet (63°16'S, 64°00'W) to northern end of the Lemaire Channel (65°04'S, 63°57'W) (see Fig. 4)
- Southwest Antarctic Peninsula (SW), from the northern end of the Lemaire Channel to the northern part of Marguerite Bay (68°18'S, 67°11'W) (see Fig. 5)

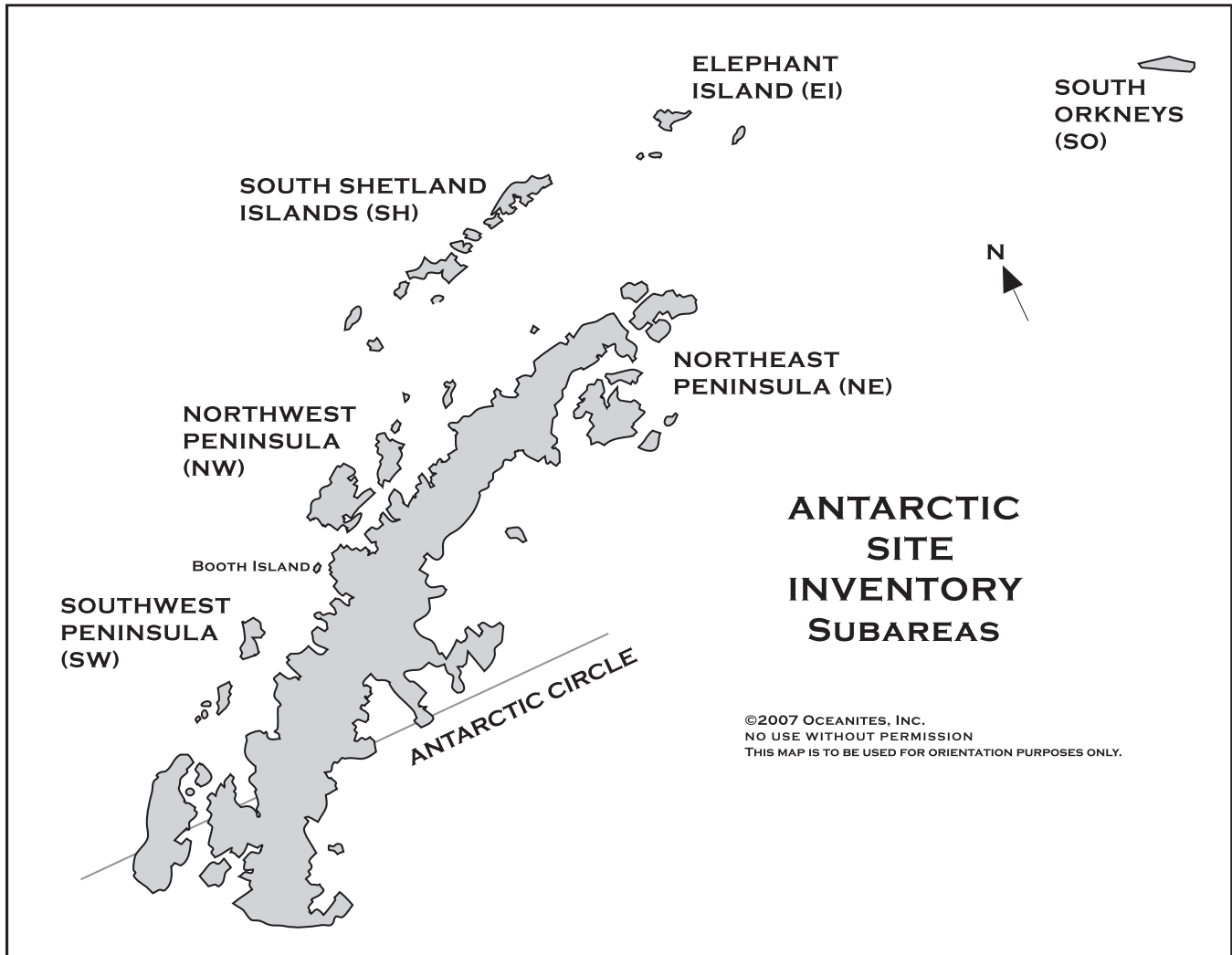
In 13 seasons from November 1994 through February 2007, the Inventory has made 758 visits and collected data at 115 Antarctic Peninsula locations. Inventory researchers have repeatedly visited all those sites that are most heavily visited by expedition tourists, and all sites that exhibit high species diversity or are especially prone to environmental disturbance from human visitors (Naveen 1997, Naveen *et al.* 2001, Naveen 2003).

The present paper provides new census data from each of the six subareas for Adélie Penguin *Pygoscelis adeliae*, Gentoo Penguin *P. papua*, Chinstrap Penguin *P. antarctica*, Blue-eyed Shag *Phalacrocorax atriceps*, and Southern Giant Petrel *Macronectes giganteus*. These long-term data are particularly important now that Antarctic Treaty parties have begun to adopt site specific management guidelines for key visitor locations.

#### CENSUS DATA

The census data reported in Tables 1-5 have been reported in a manner consistent with the census compilations of Woehler (1993) and Woehler and Croxall (1997):

- N1 Nests individually counted, accurate to better than  $\pm 5\%$
- N2 Nests counted in a known area, and then extrapolated over total colony area, accurate to 5% 10%
- N3 Accurate estimate, accurate to 10% 15%
- N4 Rough estimate, accurate to 25% 50%
- C1 Chicks individually counted, accurate to better than  $\pm 5\%$
- C2 Chicks counted in a known area, and then extrapolated over total area, accurate to 5% 10%



**Fig.1.** Map of the Antarctic Peninsula region, indicating the six subareas and their abbreviations, as divided by the Antarctic Site Inventory: the South Orkney islands, Elephant Island and nearby islands, the South Shetland Islands, the Northeast Antarctic Peninsula, the Northwest Antarctic Peninsula, and the Southwest Antarctic Peninsula.

- C3 Accurate estimate, accurate to 10% 15%
- C4 Rough estimate, accurate to 25% 50%
- A1 Estimates based on counts of total birds or adults individually counted, accurate to better than ±5%
- A2 Estimates based on counts of total birds or adults individually counted, accurate to 5% 10%
- A3 Estimates based on counts of total birds or adults individually counted, accurate to 10% 15%
- A4 Estimates based on counts of total birds or adults individually counted, accurate to 25% 50%

The site censuses represent all the birds at a particular site, except where indicated by a map. Where multiple nest or chick censuses (or both) are available for a site in any given year, we report the largest December nest count and the largest January chick count available. If no December nest count is available, we give January nest counts priority over November nest counts, and February chick counts priority over December chick counts.

We report on 81 censuses taken at 52 different sites. Among these are 24 census reports that are new to the ASI project. In addition, we note changes from the most recent available census before 2001, and use census that to estimate the annual rate of population change

$\lambda$  between the baseline count in year  $t_1$  and the most recent count in year  $t_1 + T$  (Ebert 1999),

$$\lambda = \left( \frac{N_{t_1+T}}{N_{t_1}} \right)^{1/T}, \quad [1]$$

and its error  $\delta\lambda$  (see Taylor 1982),

$$\delta\lambda = \frac{\lambda}{T} \sqrt{\left( \frac{\delta N_{t_1}}{N_{t_1}} \right)^2 + \left( \frac{\delta N_{t_1+T}}{N_{t_1+T}} \right)^2}, \quad [2]$$

where  $\delta N/N$  represents the fractional error of the census (e.g. 0.05 for N1, 0.10 for N2) and  $T$  represents the time difference between the two censuses.

## RESULTS AND DISCUSSION

With respect to Adélie Penguins (Table 1), the Inventory continues to document the population decline of this species in the western Antarctic Peninsula region, most strikingly in the southwestern region subarea (Fig. 6). Inventory data suggest population declines at the Berthelot Islands (65°20'S, 64°09'W), Booth Island (65°05'S, 64°00'W), Petermann Island (65°10'S, 64°10'W), and the Yalour Islands (65°14'S, 64°10'W).

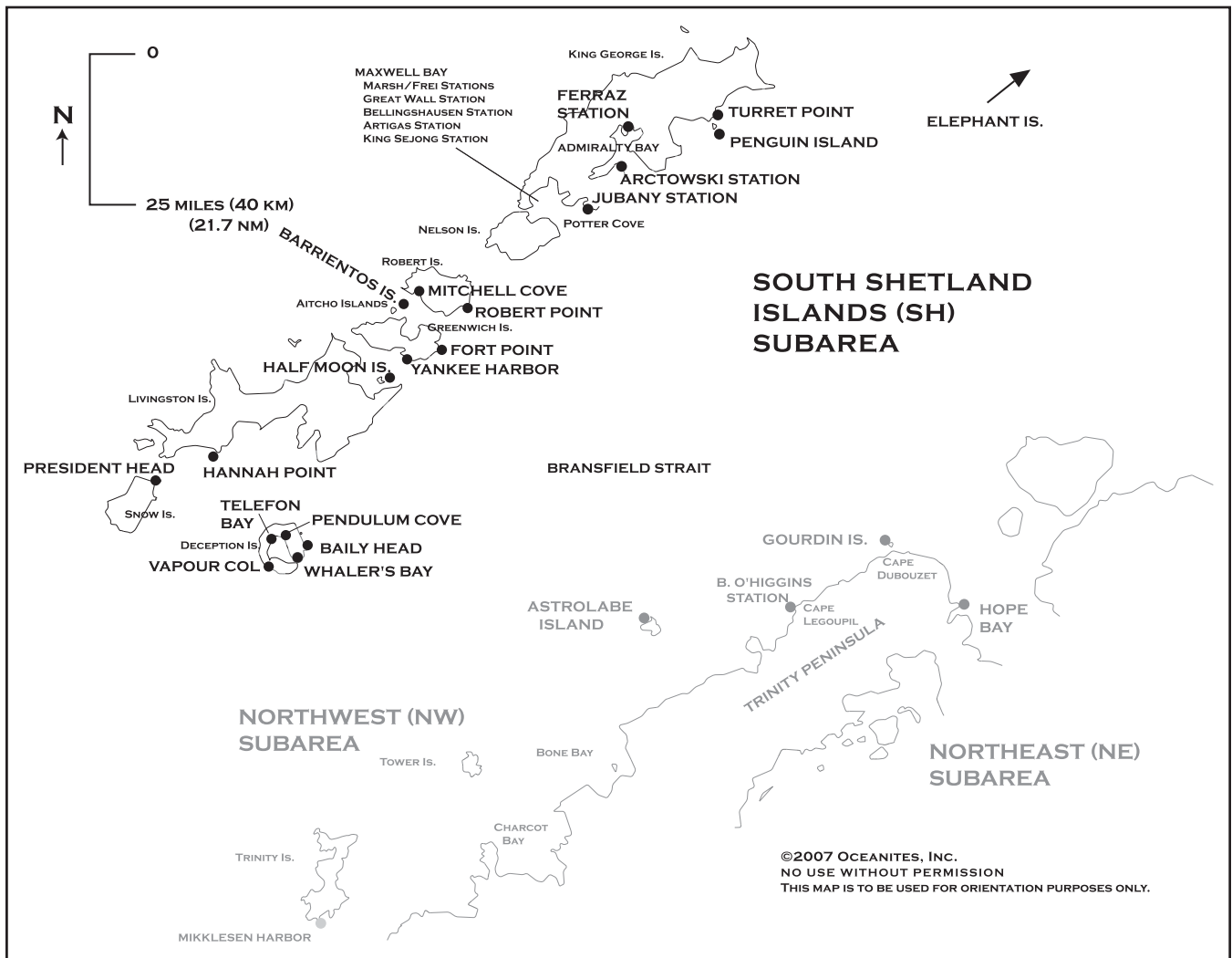


Fig. 2. Map of the South Shetland Islands and parts of the Northwest Antarctic Peninsula region.

With respect to Gentoo Penguins, the Inventory continues to document the population increase of this species in the Antarctic Peninsula (Naveen *et al.* 2000), and for the first time we report the expansion of this species south of their historic range into the Yalour Islands (65°14'S, 64°10'W), Galindez Island (65°15'S, 64°15'W), and Cape Tuxen (65°16'S, 64°08'W). Previously, the southern end of this species' breeding range was believed to be Petermann Island (65°10'S, 64°10'W) (Croxall & Kirkwood 1979). In 2005, one pair of Gentoos made an unsuccessful attempt to breed at Vernadsky Station on Galindez Island (A. Zalizovsky, pers. comm.), and in November 2007, the ASI recorded 21 Gentoo nests at this location. In 2006/07, the Inventory documented 15 Gentoo nests at the Yalour Islands, and in November 2007, there were approximately 100 Gentoo nests at Cape Tuxen (V. Timofeev & V. Trohymets, pers. comm.), which is currently the southernmost known breeding location for Gentoo penguins. This southward expansion of the Gentoo range is consistent with the rapid population growth reported here and elsewhere (Naveen *et al.* 2000), particularly at the southern end of the range (see Fig. 6).

Chinstrap Penguins declined at all sites for which data were available to assess change, with the sole exception of a small increase on Booth Island. Unlike the Adélie Penguins, which are declining principally in the southwestern region subarea, Chinstraps

declined significantly throughout their range. We report declines at Cecilia Island (62°25'S, 59°43'W), Entrance Point (63°00'S, 60°33'W), Georges Point, Ronge Island (64°40'S, 62°40'W) and Hydrurga Rocks (64°08'S, 61°37'W).

Several authors have noted that sea-ice loss, with subsequent effects on krill recruitment, is likely to affect the three pygoscelid species differentially, leading to range expansions and contractions, and a reorganization of the relative proportion of each of these species (Fraser *et al.* 1992, Smith *et al.* 1999, Forcada *et al.* 2006). In years of abundant prey availability, sympatrically breeding species are able to forage and breed successfully; in years of low prey availability, interspecific competition and differential foraging success favors some species over others (Lynnes *et al.* 2002).

Our results are largely consistent with the most recent literature on pygoscelid population dynamics which, taken collectively, report on widespread and long-term Adélie declines along the Antarctic Peninsula, recent but significant declines in Chinstrap populations, and a stable or increasing population of Gentoos in all but the northwestern region of the Peninsula. Sander *et al.* (2007) report a decline in both Adélies and Chinstraps at Penguin Island in the South Shetland Islands. Forcada *et al.* (2006) report on Adélie and Chinstrap declines coincident with significant increases in the Gentoo

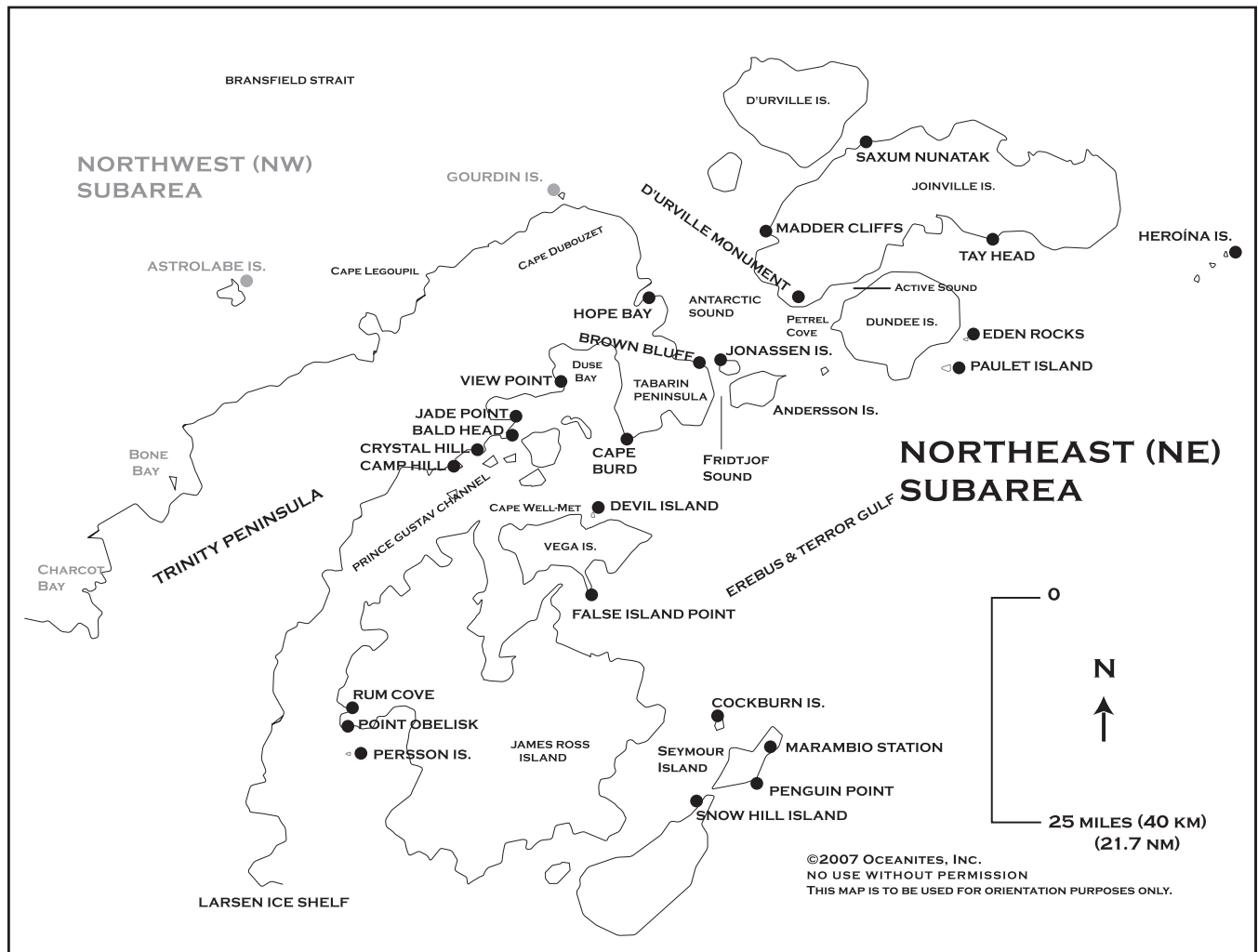


Fig. 3. Map of the Northeast Antarctic Peninsula region subarea, as defined by the Antarctic Site Inventory.



population at the South Orkney Islands (see also Woehler *et al.* 2001). Hinke *et al.* (2007) report significant declines in the breeding population of Adélie and Chinstrap penguins at Admiralty Bay, King George Island, since the early 1980s, and declines in breeding Chinstraps at Cape Shirreff, Livingston Island, since the late 1990s. Hinke *et al.* (2007) find no trend in the Gentoo populations of either site, and our results indicate a mix of zero and positive trends in the Gentoo populations we monitored in the South Shetland Islands.

High site-to-site variability in population trends makes it difficult to synthesize the Chinstrap Penguin population data from the last two decades. Poncet and Poncet (1987) report increasing populations in the South Orkneys and the South Shetlands, and a mix of increasing (e.g. Georges Point, Orne Island) and decreasing [e.g. Waterboat Point, Cuverville Island] populations on the Peninsula. Fraser *et al.* (1992) report increases in Chinstraps citing, among others, an increase by a factor of five at Signey Island, South Orkneys, reported by Rootes (1988). Woehler and Croxall (1997) report a general downward trend in Chinstrap populations on the Peninsula since 1990, with Livingston Island and the Palmer Station area cited as two exceptions. In an earlier report of data from the ASI Project, we reported several declining Chinstrap populations on the Peninsula and no increasing populations (Naveen *et al.* 2000). The available data, although complex and difficult to interpret, suggest

a shift in Chinstrap populations over the last two decades from generally increasing to generally decreasing populations. Smith *et al.* (1999) note that optimum sea ice conditions no longer exist in the western Antarctic Peninsula for Adélie Penguins, but it may be that conditions are also becoming less optimum even for their less ice-dependent counterpart, the Chinstrap Penguin.

With respect to Blue-eyed Shags, the Inventory identified a downward population trend during the 1990s throughout the Antarctic Peninsula, regardless of whether sites experienced many or few tourist visits (Naveen *et al.* 2000). That observation was consistent with other studies showing that increases up to the mid-1980s had peaked and that many populations (e.g. Signy Island, Cuverville Island, Half Moon Island) experienced significant declines throughout the late 1980s and 1990s (Woehler & Croxall 1997). The Blue-eyed Shag population in the Palmer area also experienced significant declines during this period, although it is difficult to disentangle long-term declines from those that may have resulted from the *Bahia Paraiso* oil spill in 1989 (Woehler & Croxall 1997).

The downward trend of the Blue-eyed Shag population on the Antarctic Peninsula appears to have leveled off, with Shag populations stabilizing throughout the Peninsula. In fact, several sites saw population increases during the seven years reported in this paper.

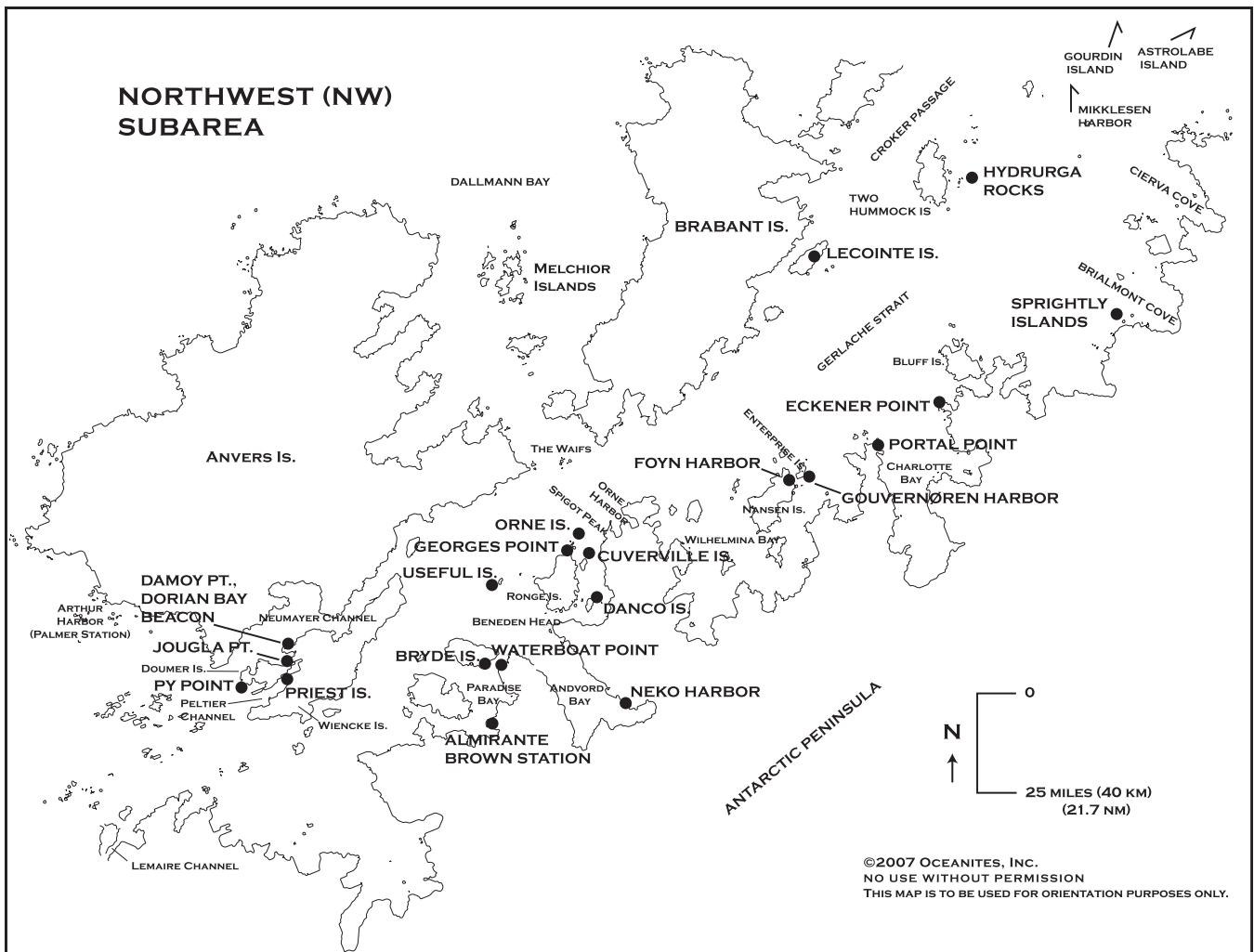


Fig. 4. Map of the Northwest Antarctic Peninsula region subarea, as defined by the Antarctic Site Inventory.

The population of Blue-eyed Shags roughly doubled at Cuverville Island (64°41'S, 62°38'W) between December 2001 and December 2004 and at Pléneau Island (65°06'S, 64°04'W) between January 2000 and January 2006, and more than doubled at Paulet Island (63°35'S, 55°47'W) between November 1999 and November 2007.

With respect to Southern Giant Petrels, we report increasing populations at two sites in the South Shetland Islands (Barrientos Island [Aitcho Islands] 62°24'23"S, 59°45'00"W, and Hannah Point [Livingston Island] 62°39'S, 60°37'W). These trends are consistent with reports of stable or increasing Southern Giant Petrel populations elsewhere on the Peninsula (Woehler & Croxall 1997), but with only two sites at which we can assess changes, we are unable to assess overall trends for this species. We note, however, that at the 2006 and 2007 Antarctic Treaty Consultative Meetings, there was vigorous discussion about listing this species as a Specially Protected Species under Annex II of the Protocol on Environmental Protection to the Antarctic Treaty ( $\lambda$ Xth Antarctic Treaty Consultative Meeting 2006, XXXth Antarctic Treaty Consultative Meeting 2007). The International Union for Conservation of Nature (IUCN) has expressed concern about this species because of longline fishing in the Southern Ocean, but the status of Southern Giant Petrels in the Antarctic Peninsula remains unclear. The Inventory is uniquely positioned to monitor this species and will continue to do so.

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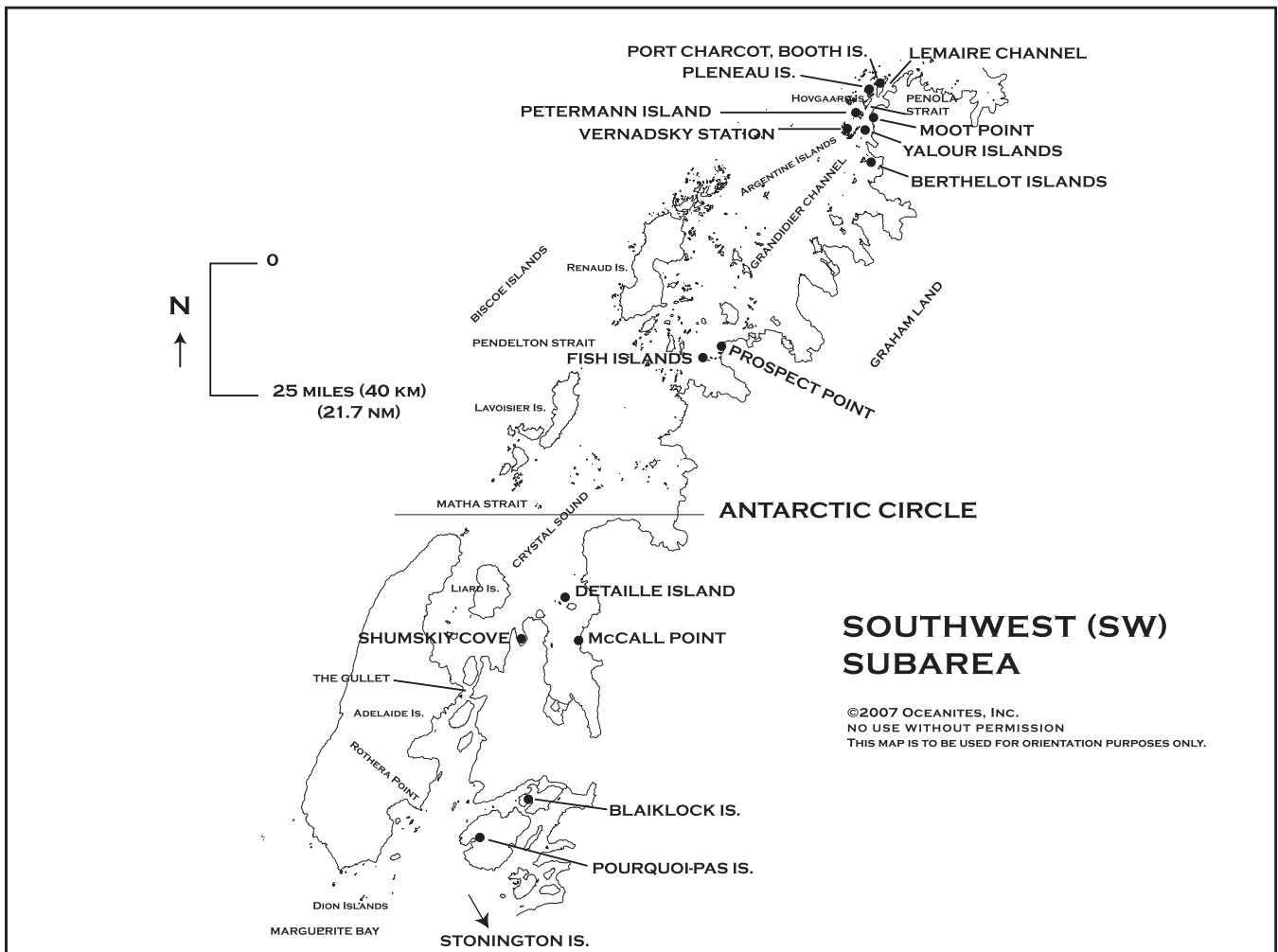
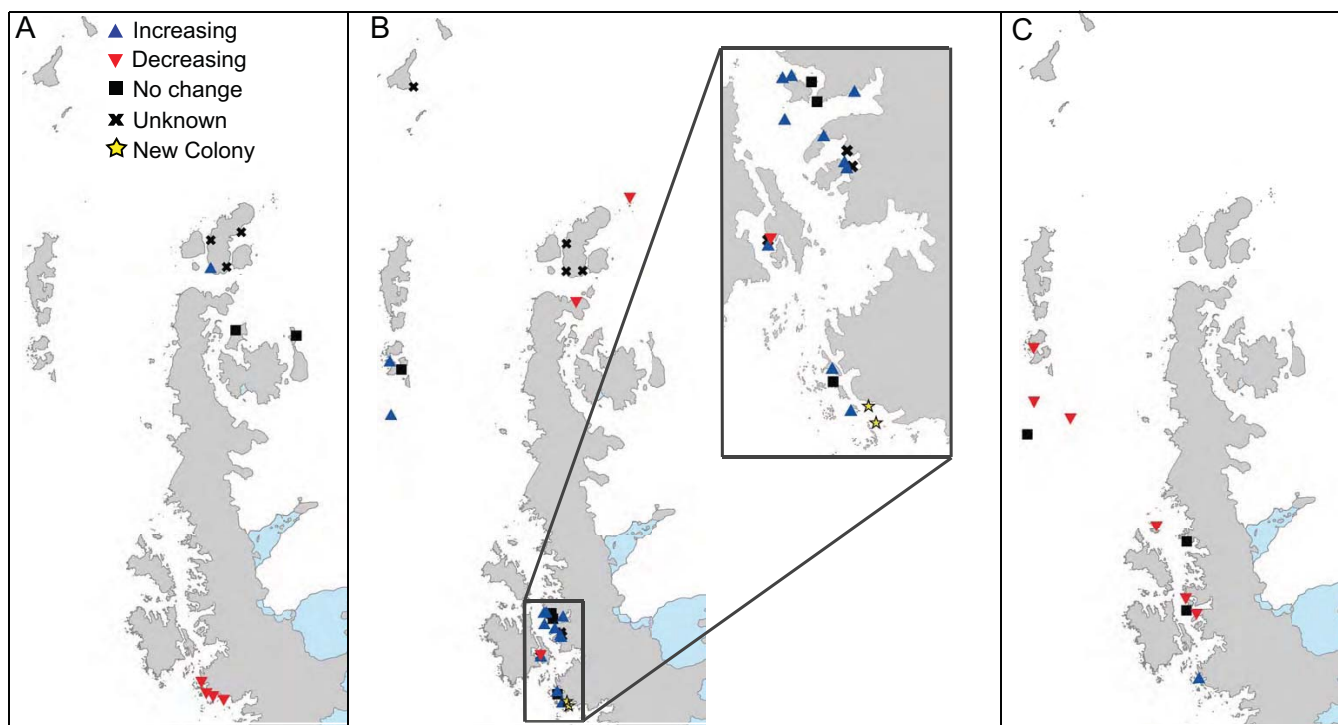


Fig. 5. Map of the Southwest Antarctic Peninsula region subarea, as defined by the Antarctic Site Inventory.

Adventures; Hapag Lloyd Kreuzfahrten; Hurtigruten Group ASA; and Polar Star Expeditions).

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**Fig. 6.** (A) Changes in Adélie Penguin *Pygoscelis adeliae* populations. (B) Changes in Gentoo Penguin *Pygoscelis papua* populations. The southwestern region has been expanded in the inset to provide greater detail. (C) Changes in Chinstrap Penguin *Pygoscelis antarctica* populations. Filled triangle = increasing; filled inverted triangle = decreasing; filled square = no change; cross = unknown; filled star = new colony.

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**TABLE 1**  
**Antarctic Site Inventory (ASI) censuses for the Adélie Penguin *Pygoscelis adeliae*, 2001–2007**

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Marshall Bay, Coronation Island (SO) 60°39'S, 45°38'W 13 381 N3	17 Dec 2003	To be confirmed. New site for the ASI. Appears to be the first reported census at this site.	NA
Shingle Cove, Coronation Island (SO) 60°39'S, 45°34'W 3205 N1 3041 N1/N2/N3	17 Dec 2003 9 Dec 2006	No change since N4 count of 3000 in 1978 (Woehler 1993). New site for the ASI.	1.0±0.02
Devil Island (NE) 63°48'S, 57°17'W 5880 C3 8500 C3 8802 N1/N2/N3 18 000 C3	12 Jan 2002 20 Jan 2003 31 Dec 2004 13 Jan 2007	No clear trend since C3 count of 10 320 in 1996 (Naveen, unpub. data; reported in Woehler & Croxall 1997).	NA
d Urville Monument (NE) 63°25'S, 56°18'W 10 000 N4	24 Jan 2006		NA
Penguin Point, Seymour Island (NE) 64°17'42"S, 56°41'24"W 26 400 N4	22 Dec 2006	No change since N2 count of 21 954 in 1985 (Woehler 1993). New site for the ASI.	1.01±0.02
Saxum Nunatak (NE) 63°10'S, 56°02'W 150 N4	22 Dec 2005	To be confirmed. New site for the ASI. Appears to be the first reported census at this site.	NA
Tay Head, Joinville Island (NE) 63°21'S, 55°33'W 6450 N4	21 Dec 2006	New site for the ASI. Appears to be the first reported census at this site.	NA
Berthelot Islands (SW) 65°20'S, 64°09'W 402 N1 548 C1	25 Dec 2006 16 Jan 2007	N1 count of 402 is down 69% since N1 count of 1300 in 1982 (Woehler 1993).	0.952±0.003
Booth Island (SW) 65°05'S, 64°00'W 18 N1 34 N1 17 N1 23 C1	14 Jan 2001 24 Dec 2001 4 Jan 2006 26 Jan 2006	Down >95% from estimate of >1208 (A5,C1,C3,B) in 1903–1909 (Woehler 1993). (We assume a C4 count of 1208 in 1906 to estimate $\lambda$ .)	0.961±0.005
Detaille Island (SW) 66°52'S, 66°48'W 925 C3	13 Jan 2003	No change between C3 count of 925 and C1 count of 900 in 1986 (Woehler 1993). New site for the ASI.	1.00±0.01
Fish Islands (SW) 66°02'S, 65°25'W 1634 C1/C2	13 Jan 2003	Down 59% from C3/C4 count of 4000 in 1984 (Woehler 1993).	0.95±0.03
Pléneau Island (SW) 65°06'S, 64°04'W 1 N1 1 N1	3 Jan 2003 4 Jan 2004	Further monitoring of this site is required to determine if this stray nesting pair represents a new colony of Adélie penguins at this site.	N/A
Petermann Island (SW) 65°10'S, 64°10'W 485 N1 553 N1 731 C1 532 N1 580 C1 505 N1 589 C1 410 N1 458 C1	10 Dec 2002 21 Nov 2003 24 Jan 2004 21 Nov 2004 4 Feb 2005 16 Nov 2005 27 Jan 2006 21 Nov 2006 4 Feb 2007	N1 count of 410 is down 52% from N1 count of 862 in 1997 (Naveen <i>et al.</i> 2000).	0.921±0.007
Yalour Islands (SW) 65°14'S, 64°10'W 4246 <sup>c</sup> N1 5558 C1	30 Nov 2003 27 Jan 2004	N1 count of 4246 is down 47% from N1 count of 8000 in 1982 (Woehler 1993).	0.970±0.003

<sup>a</sup> Codes: N1 = nests individually counted, accurate to better than ±5%; N2 = nests counted in a known area, and then extrapolated over total colony area, accurate to 5%–10%; N3 = accurate estimate, accurate to 10%–15%; N4 = Rough estimate, accurate to 25%–50%; C1 = chicks individually counted, accurate to better than ±5%; C2 = chicks counted in a known area, and then extrapolated over total area, accurate to 5%–10%; C3 = accurate estimate, accurate to 10%–15%; C4 = rough estimate, accurate to 25%–50%; A1 = estimates based on counts of total birds or adults individually counted, accurate to better than ±5%; A2 = estimates based on counts of total birds or adults individually counted, accurate to 5%–10%; A3 = estimates based on counts of total birds or adults individually counted, accurate to 10%–15%; A4 = estimates based on counts of total birds or adults individually counted, accurate to 25%–50%.

<sup>b</sup> Where census error is larger than the difference between two censuses, we assume no change in population size. The annual rate of population change  $\lambda$  (and its error) is calculated as described in the text.

<sup>c</sup> Does not include approximately 25 nests on Island 11.

SO = South Orkney islands; NA = not applicable; NE = Northeast Antarctic Peninsula; SW = Southwest Antarctic Peninsula.



**TABLE 2**  
**Antarctic Site Inventory censuses for the Gentoo Penguin *Pygoscelis papua*, 2001–2007**

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Barrientos Island, Aitcho Islands (SH) 62°24'23"S, 59°45'00"W		Up 39% since N1 count of 1177 in Dec 1999 (Naveen <i>et al.</i> 2000).	1.05±0.01
1236 C1	11 Jan 2002		
1486 N1	20 Dec 2003		
1998 N1	18 Nov 2005		
2483 C1/C2	22 Jan 2006		
1639 N1	20 Dec 2006		
Hannah Point, Livingston Island (SH) 62°39'S, 60°37'W		Up 40% since N1 count of 1350 in Dec 1997 (Naveen <i>et al.</i> 2000).	1.05±0.01
1885 N1	23 Dec 2004		
Yankee Harbor, Greenwich Island (SH) 62°32'S, 59°47'W		No change since N1 count of 4751 in 1999 (Naveen <i>et al.</i> 2000).	1.01±0.02
3974 N1	24 Dec 2000		
3804 N1	29 Dec 2002		
4918 N1	20 Dec 2003		
Point Lookout (EI) 61°17'S, 55°13'W			NA
313 C1	22 Jan 2007		
Brown Bluff, Tabarin Peninsula (NE) 63°32'S, 56°55'W		N1 count of 444 is down 28% from N1 count of 617 in 1999 (Naveen <i>et al.</i> 2000).	0.95±0.01
756 N1	11 Dec 2000		
511 C1	9 Jan 2001		
450 N1	11 Dec 2001		
409 C1	24 Jan 2002		
490 N1	31 Dec 2002		
764 C1	10 Jan 2003		
200 N1	29 Nov 2003		
370 N1	24 Dec 2004		
589 C1	11 Jan 2005		
247 N1	22 Dec 2005		
118 C1	13 Jan 2006		
444 N1	19 Nov 2006		
d'Urville Monument (NE) 63°25'S, 56°18'W			NA
671 C1/C2	24 Jan 2006		
Heroina Island, Danger Islands (NE) 63°24'S, 54°36'W		Probably down from N1 count of 215 in 1996 (Naveen <i>et al.</i> 2000).	N/A
142 C1	3 Feb 2006		
Madder Cliffs, Joinville Island (NE) 63°18'S, 56°29'W		To be confirmed. New site for the ASI. Appears to be the first reported census at this site.	NA
304 N1	12 Jan 2005		
455 C1	12 Jan 2005		
Saxum Nunatak (NE) 63°10'S, 56°02'W		New site for the ASI. Appears to be the first reported census at this site.	NA
540 N4	22 Dec 2005		
Almirante Brown Station Vicinity (NW) 64°53'S, 62°52'W			NA
111 N1	16 Jan 2006		
121 C1	6 Feb 2006		
128 N1	19 Nov 2006		
Beneden Head (NW) 64°46'S, 62°42'W		No change since C1/C3 count of 500 in 1986 (Woehler 1993). New site for the ASI.	NA
640 N3	13 Dec 2006		
Bryde Island (NW) 64°52'S, 63°02'W			
See Bryde Island East and South below			
Bryde Island East (NW) 64°53'21"S, 62°55'31"W		Bryde Island South is actually a small island off the coast in the region indicated by the red box. Up 103% since N1 count of 240 in 1986 (Woehler 1993). New site for the ASI.	1.036±0.006
486 N1/N2	24 Dec 2006		
Bryde Island South (NW) 64°54'3"S, 62°57'2"W		Possibly up from C1 count of 500 in 1987 (Woehler 1993). New site for the ASI.	NA
818 N1	24 Dec 2006		
Cuverville Island (NW) 64°41'S, 62°38'W		N1 count of 6294 is up 31% since N1 count of 4818 in 1994 (Woehler and Croxall 1997).	1.025±0.007
5990 N1	21 Dec 2003		
6294 N1	2 Dec 2005		
4420 N3	4 Jan 2007		
Dorian Bay/Damoy Point (NW) 64°49'S, 63°32'W		N1 count of 2273 is up 37% since N1 count of 1658 in 1990 (Woehler 1993).	1.021±0.005
1928 N1	12 Dec 2002		
2022 N1	4 Jan 2005		
2273 N1	26 Dec 2005		
2990 C1	5 Feb 2006		
Danco Island (NW) 64°44'S, 62°37'W		No change since N2 count of 2300 in Nov 1999 (Naveen <i>et al.</i> 2000).	1.01±0.02
2506 N1	8 Dec 2006		

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Dori Beacon (NW) 64°48'42"S, 63°30'42"W		New site for the ASI. Appears to be the first reported census at this site.	NA
132 N1	15 Jan 2005		
181 N1	26 Dec 2005		
257 C1	5 Feb 2006		
Georges Point, Rongé Island (NW) 63°12'S, 57°18'W		N1 count of 2464 is up 41% since N2 count 1752 in 1994 (Woehler and Croxall 1997).	1.03±0.01
1995 N1	20 Dec 2004		
2464 N1	26 Dec 2005		
Jougla Point/Port Lockroy (NW) 64°49'S, 63°30'W		N1 count of 1282 is down 24% since N1 count of 1681 in 1999 (Naveen <i>et al.</i> 2000).	0.96±0.01
1556 N1	9 Dec 2002		
1621 C1	25 Jan 2003		
1540 N1	5 Jan 2004		
2043 C1	16 Feb 2004		
1306 N1	20 Dec 2004		
1409 N1	26 Dec 2005		
1925 C1	27 Jan 2006		
1282 N1	22 Nov 2006		
1684 C1	28 Jan 2007		
Neko Harbor, Andvord Bay (NW) 64°50'S, 62°33'W		N1/N2/N3 count of 1153 is up 37% since N1 count of 844 in 1999 (Naveen <i>et al.</i> 2000).	1.05±0.02
1072 N1	11 Dec 2002		
1088 N1	21 Dec 2003		
1096 N1	14 Dec 2004		
1301 N1	3 Dec 2005		
1726 C1	28 Jan 2006		
1153 N1/N2/N3	13 Dec 2006		
Paradise Harbor Beacon, Paradise Bay (NW) 64°54'40"S, 62°55'52"W		New site for the ASI. Appears to be the first reported census at this site.	NA
3 N1	24 Dec 2006		
Useful Island (NW) 64°43'S, 62°52'W		Up >1500% over N3N/4 count of 150 in 1984 (Woehler 1993). New site for the ASI.	1.13±0.03
1861 N1	3 Jan 2005		
Waterboat Point, Paradise Bay (NW) 64°49'S, 62°51'W		This represents a significant increase since C1 count of 750 in 1986 (Woehler 1993).	NA
2122 N2	4 Dec 2004		
Port Charcot, Booth Island (SW) 65°05'S, 64°00'W		N3 count of 1200 is up 300% since N1 count of 400 in 1983 (Woehler 1993).	1.063±0.009
1200 N3	13 Jan 2001		
1151 N1/N3	4 Jan 2006		
Moot Point (SW) 65°12'S, 64°06'W		This represents a new breeding colony of Gentoos. New site for the ASI. Appears to be the first reported census at this site.	NA
74 N1	24 Nov 2005		
101 N1	25 Dec 2006		
Pléneau Island (SW) 65°06'S, 64°04'W		No change since N1 count of 1577 in 1999 (Naveen <i>et al.</i> 2000).	1.00±0.01
1579 N1	13 Dec 2000		
1639 N1	3 Jan 2003		
2170 N1	22 Dec 2003		
2135 N1	4 Jan 2005		
1574 N1	5 Jan 2007		
Petermann Island (SW) 65°10'S, 64°10'W		N1 count of 2293 is up 47% since N1 count of 1224 in 1997 (Naveen <i>et al.</i> 2000).	1.072±0.008
2212 N1	17 Jan 2004		
3260 C1	24 Jan 2004		
2301 N1	4 Dec 2004		
2781 C1	23 Jan 2005		
2438 N1	2 Dec 2005		
3453 C1	25 Jan 2006		
2293 N1	24 Nov 2006		
3344 C1	2 Feb 2007		
Yalour Islands (SW) 65°14'S, 64°10'W		This represents a new breeding colony of Gentoos and the southernmost location ever reported for Gentoos along the Antarctic Peninsula.	NA
15 N1	25 Dec 2006		

<sup>a</sup> Codes: N1 = nests individually counted, accurate to better than ±5%; N2 = nests counted in a known area, and then extrapolated over total colony area, accurate to 5%–10%; N3 = accurate estimate, accurate to 10%–15%; N4 = Rough estimate, accurate to 25%–50%; C1 = chicks individually counted, accurate to better than ±5%; C2 = chicks counted in a known area, and then extrapolated over total area, accurate to 5%–10%; C3 = accurate estimate, accurate to 10%–15%; C4 = rough estimate, accurate to 25%–50%; A1 = estimates based on counts of total birds or adults individually counted, accurate to better than ±5%; A2 = estimates based on counts of total birds or adults individually counted, accurate to 5%–10%; A3 = estimates based on counts of total birds or adults individually counted, accurate to 10%–15%; A4 = estimates based on counts of total birds or adults individually counted, accurate to 25%–50%.

<sup>b</sup> Where census error is larger than the difference between two censuses, we assume no change in population size. The annual rate of population change  $\lambda$  (and its error) is calculated as described in the text.

SH = South Shetland Islands; EI = Elephant Island and nearby islands; NE = Northeast Antarctic Peninsula; NW = Northwest Antarctic Peninsula; SW = Southwest Antarctic Peninsula.

**TABLE 3**  
**Antarctic Site Inventory (ASI) censuses for the Chinstrap Penguin *Pygoscelis antarctica*, 2001–2007**

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Sandefjord Bay (SO) 60°37'S, 46°03'W 125000 A4	28 Nov 2003	New site for the ASI. Appears to be the first reported census at this site.	NA
Cecilia Island, Aitcho Islands (SH) 62°24'43"S, 59°43'53"W 14 N1	11 Jan 2006	Down >99% from N4 count of 3500 in 1966 (Woehler 1993). New site for the ASI.	0.87±0.01
Entrance Point (SH) 63°00'S, 60°33'W 566 N1 736 C1 902 N1	23 Dec 2005 25 Jan 2006 21 Nov 2006	N1 count of 902 is down 55% since N3 count of 2010 in 1967 (Woehler 1993). New site for the ASI.	0.980±0.004
Hannah Point, Livingston Island (SH) 62°39'S, 60°37'W 759 N1	23 Dec 2004	Down 49% since N3 count of 1500 in 1987 (Woehler 1993).	0.961±0.009
President Head, Snow Island (SH) 62°44'S, 61°12'W 23 N1	21 Nov 2005	No change since A4 count of 50 in 1987 (Woehler 1993). New site for the ASI.	1.00±0.03
Point Wild/Cape Belsham (EI) 61°06'S, 54°52'W 10000 N3	10 Dec 2006	Count includes all of Point Wild and Cape Belsham together.	NA
Eckener Point (NW) 64°26'S, 61°36'W 30 N1	13 Dec 2006	No change since N3/N4 count of 40 in 1987 (Woehler 1993). New site for the ASI.	0.98±0.02
Georges Point, Ronge Island (NW) 64°40'S, 62°40'W 356 N1 269 N1 246 N1 399 C1 260 N1 354 C1	12 Jan 2001 20 Dec 2004 26 Dec 2005 5 Feb 2006 22 Nov 2006 26 Jan 2007	N1 count of 260 is down 20% since N1 count of 327 in 1998 (Naveen <i>et al.</i> 2000).	0.972±0.009
Hydrurga Rocks (NW) 64°08'S, 61°37'W 417 N1 448 N1	26 Dec 2000 1 Jan 2003	N1 count of 448 is down 15% since N1 count of 526 in 1996 (Naveen <i>et al.</i> 2000).	0.97±0.01
Orne Islands (NW) (All on island 2) 64°39'S, 62°40'W 396 N1 634 C1 106 N1 111 C1 338 N1 472 C1 350 N1 489 C1 447 C1	14 Dec 2000 23 Jan 2001 24 Dec 2001 15 Feb 2002 9 Dec 2002 14 Feb 2003 22 Nov 2005 5 Feb 2006 26 Jan 2007	N1 count of 350 in Nov 2005 is down 17% since N1 count of 421 in Nov 1999 (Naveen <i>et al.</i> 2000).	0.97±0.01
Useful Island (NW) 64°43'S, 62°52'W 160 N1	3 Jan 2005	No change since N3/N4 count of 100 in 1984 (Woehler 1993). New site for the ASI.	1.02±0.03
Waterboat Point, Paradise Bay (NW) 64°49'S, 62°51'W 0 N1	3 Jan 2005	This represents the local disappearance of Chinstraps at this site, which recently has had a declining population over the last two decades: N1 = 4 in 1998 (Naveen, unpub. data); N1 = 28 in 1989 (Woehler 1993).	NA
Booth Island (SW) 65°05'S, 64°00'W 12 N1 17 C1 24 N1 9 N1 12 C1 13 C1	13 Jan 2001 24 Jan 2001 24 Dec 2001 4 Jan 2006 26 Jan 2006 15 Feb 2007	Generally up since C1 count of 3 in 1983 and N1 count of 3 in 1990 (Woehler 1993).	1.076±0.005

<sup>a</sup> Codes: N1 = nests individually counted, accurate to better than ±5%; N2 = nests counted in a known area, and then extrapolated over total colony area, accurate to 5%–10%; N3 = accurate estimate, accurate to 10%–15%; N4 = Rough estimate, accurate to 25%–50%; C1 = chicks individually counted, accurate to better than ±5%; C2 = chicks counted in a known area, and then extrapolated over total area, accurate to 5%–10%; C3 = accurate estimate, accurate to 10%–15%; C4 = rough estimate, accurate to 25%–50%; A1 = estimates based on counts of total birds or adults individually counted, accurate to better than ±5%; A2 = estimates based on counts of total birds or adults individually counted, accurate to 5%–10%; A3 = estimates based on counts of total birds or adults individually counted, accurate to 10%–15%; A4 = estimates based on counts of total birds or adults individually counted, accurate to 25%–50%.

<sup>b</sup> Where census error is larger than the difference between two censuses, we assume no change in population size. The annual rate of population change  $\lambda$  (and its error) is calculated as described in the text.

SO = South Orkney islands; NA = not applicable; SH = South Shetland Islands; EI = Elephant Island and nearby islands; NW = Northwest Antarctic Peninsula.



**TABLE 4**  
**Antarctic Site Inventory (ASI) censuses for the Blue-eyed Shag *Phalacrocorax atriceps*, 2001–2007**

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Hannah Point, Livingston Island (SH) 62°39'S, 60°37'W		Down 20% since N1 count of 5 in 1999 (Naveen <i>et al.</i> 2000).	0.96±0.0
3 N1	15 Dec 2000		
4 N1	23 Dec 2004	1	
Whalers Bay, Deception Island (SH) 62°59'S, 60°34'W			NA
10 N1	13 Jan 2005		
17 C1	13 Jan 2005		
8 N1	23 Dec 2005		
Active Reef, Active Sound (NE) 63°23'S, 55°52'W		New site for the ASI.	NA
20 A5	21 Dec 2006		
Cockburn Island (NE) 64°12'S, 56°51'W		New site for the ASI.	NA
800 N5	19 Nov 2006		
Almirante Brown Station Vicinity (NW) 64°53'S, 62°52'W		N1 count of 75 is up 53% since N1 count of 49 in 2000 (Naveen <i>et al.</i> 2000). After declining for several years in the 1990s (Naveen <i>et al.</i> 2000), the N1 count of 45 in 2001 was the lowest point for this population, and the population has been generally increasing over the period we report here.	1.06±0.01
45 N1	13 Dec 2001		
63 N1	11 Dec 2002		
114 C1	25 Jan 2003		
73 N1	2 Dec 2003		
78 N1	14 Dec 2004		
104 C1	14 Jan 2005		
71 N1	2 Dec 2005		
75 N1	22 Nov 2006		
Paulet Island (NE) 63°35'S, 55°47'W		N1/N2 count of 804 in Nov. 2006 is up 113% since N2 count of 377 in Nov. 1999 (Naveen <i>et al.</i> 2000).	1.11±0.02
291 N1	25 Dec 2000		
279 C1	9 Jan 2001		
321 N1	21 Dec 2001		
273 N1	10 Jan 2003		
524 C2	20 Jan 2003		
534 N1	24 Dec 2004		
413 N1	20 Nov 2005		
327 A1	13 Jan 2006		
804 N1/N2	19 Nov 2006		
465 C2	18 Feb 2007		
Beneden Head (NW) 64°46'S, 62°42'W		New site for the ASI.	NA
20 N3	22 Nov 2006		
Cuverville Island (NW) 64°41'S, 62°38'W		N1 count of 29 in Nov 2006 is up 141% from N1 count of 12 in Dec 2001.	1.19±0.02
13 N1	23 Jan 2001		
33 C1	23 Jan 2001		
12 N1	13 Dec 2001		
28 N1	2 Jan 2003		
40 C1	14 Feb 2003		
26 N1	21 Dec 2003		
21 N1	13 Dec 2004		
30 C1	14 Jan 2005		
23 N1	26 Dec 2005		
29 N1	22 Nov 2006		
Hydrurga Rocks (NW) 64°08'S, 61°37'W			NA
11 N1	3 Jan 2002		
13 C1	3 Jan 2002		
12 N1	11 Jan 2003		
Jougla Point/Port Lockroy (NW) 64°50'S, 63°30'W		No change between N1 count of 26 in Jan. 2007 and N1 count of 26 in Jan. 2000.	1.01±0.01
26 N1	13 Dec 2000		
43 C1	4 Feb 2001		
23 N1	25 Dec 2001		
26 C1	28 Jan 2002		
32 N1	9 Dec 2002		
62 C1	25 Jan 2003		
28 N1	1 Dec 2003		
46 C1	16 Feb 2004		
29 N1	13 Dec 2004		
43 C1	16 Jan 2005		
20 N1	26 Dec 2005		
46 C1	27 Jan 2006		
26 N1	28 Jan 2007		
44 C1	28 Jan 2007		

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Lecointe Island (NW) 64°16'S, 62°03'W		New site for the ASI.	NA
7 N1	23 Dec 2001		
4 N1	12 Dec 2002		
Orne Islands (NW) 64°39'S, 62°40'W		Although there were 15 active nests in Dec 1994 (Naveen <i>et al.</i> 2000), the Blue-eyed Shag population on the Orne Islands went extinct in 1999 and, as reported here, has not been reestablished.	NA
0 N1	14 Dec 2000		
0 C1	23 Jan 2001		
0 N1	15 Feb 2002		
0 C1	15 Feb 2002		
0 N1	22 Nov 2005		
0 N1	22 Nov 2006		
Priest Island, Peltier Channel (NW) 64°52'S, 63°31'W		New site for the ASI.	NA
8 N1	14 Dec 2001		
Useful Island (NW) 64°43'S, 62°52'W		To be confirmed. New site for the ASI.	NA
17 N1	3 Jan 2005		
Berthelot Islands (SW) 65°20'S, 64°09'W			NA
96 N1	25 Dec 2006		
Detaille Island (SW) 66°52'S, 66°48'W		New site for the ASI.	NA
3 C1	13 Jan 2003		
3 N1	3 Jan 2004		
Fish Islands (SW) 66°02'S, 65°25'W			NA
31 N1	13 Jan 2003		
Pléneau Island (SW) 65°06'S, 64°04'W		N1 count of 58 in Dec 2006 is up 115% since N1 count of 27 in Dec 2000.	NA
27 N1	13 Dec 2000		
53 C1	24 Jan 2001		
18 N1	4 Jan 2002		
18 C1	15 Jan 2002		
28 N1	3 Jan 2003		
27 C1	14 Jan 2003		
38 N1	22 Dec 2003		
73 C1	15 Jan 2004		
36 N1	4 Jan 2005		
58 N1	14 Dec 2006		
Petermann Island (SW) 65°10'S, 64°10'W		N1 count of 13 in Nov. 2006 is down 55% since N1 count of 29 in Nov 1997 and C1 count of 29 in Jan 2007 is down 37% since C1 count of 46 in Jan 2000 (Naveen <i>et al.</i> 2000).	0.915±0.007
19 N1	15 Nov 2004		
37 C1	25 Jan 2005		
11 N1	16 Nov 2005		
26 C1	16 Jan 2006		
13 N1	4 Nov 2006		
29 C1	12 Jan 2007		
Stonington Island (SW) 68°11'S, 67°00'W		New site for the ASI.	N/A
135 C1	6 Feb 2007		
Yalour Islands (SW) 65°14'S, 64°10'W			NA
16 N1	27 Jan 2004		
40 C1	27 Jan 2004		
18 N1	25 Dec 2006		

<sup>a</sup> Codes: N1 = nests individually counted, accurate to better than  $\pm 5\%$ ; N2 = nests counted in a known area, and then extrapolated over total colony area, accurate to 5%–10%; N3 = accurate estimate, accurate to 10%–15%; N4 = Rough estimate, accurate to 25%–50%; C1 = chicks individually counted, accurate to better than  $\pm 5\%$ ; C2 = chicks counted in a known area, and then extrapolated over total area, accurate to 5%–10%; C3 = accurate estimate, accurate to 10%–15%; C4 = rough estimate, accurate to 25%–50%; A1 = estimates based on counts of total birds or adults individually counted, accurate to better than  $\pm 5\%$ ; A2 = estimates based on counts of total birds or adults individually counted, accurate to 5%–10%; A3 = estimates based on counts of total birds or adults individually counted, accurate to 10%–15%; A4 = estimates based on counts of total birds or adults individually counted, accurate to 25%–50%.

<sup>b</sup> Where census error is larger than the difference between two censuses, we assume no change in population size. The annual rate of population change  $\lambda$  (and its error) is calculated as described in the text.

SH = South Shetland Islands; NA = not applicable; NE = Northeast Antarctic Peninsula; NW = Northwest Antarctic Peninsula; SW = Southwest Antarctic Peninsula.

**Table 5**  
**Antarctic Site Inventory (ASI) censuses for the Southern Giant Petrel *Macronectes giganteus***

Census <sup>a</sup>	Date	Notes	Annual rate of change ( $\lambda$ ) <sup>b</sup>
Barrientos Island, Aitcho Islands (SH) 62°24'23"S, 59°45'00"W		N1 count of 144 is up 33% since N1 count of 108 in 1999.	1.04±0.01
153	C1	12 Dec 2001	
156	N1	11 Jan 2002	
142	N1	20 Dec 2003	
164	N1	10 Jan 2005	
143	N1	29 Nov 2005	
144	N1	18 Nov 2006	
Cecilia Island, Aitcho Islands (SH) 62°24'43"S, 59°43'53"W		New site for the ASI.	NA
100	N1	11 Jan 2006	
Hannah Point, Livingston Island (SH) 62°39'S, 60°37'W		N1 count of 142 is up 28% since N1 count of 111 in 2000 (Naveen <i>et al.</i> 2000).	1.06±0.02
123	N1	15 Dec 2000	
142	N1	2 Jan 2005	
President Head, Snow Island (SH) 62°44'S, 61°12'W		New site for the ASI.	NA
40	N4	21 Nov 2005	

<sup>a</sup> Codes: N1 = nests individually counted, accurate to better than  $\pm 5\%$ ; N2 = nests counted in a known area, and then extrapolated over total colony area, accurate to 5%–10%; N3 = accurate estimate, accurate to 10%–15%; N4 = Rough estimate, accurate to 25%–50%; C1 = chicks individually counted, accurate to better than  $\pm 5\%$ ; C2 = chicks counted in a known area, and then extrapolated over total area, accurate to 5%–10%; C3 = accurate estimate, accurate to 10%–15%; C4 = rough estimate, accurate to 25%–50%; A1 = estimates based on counts of total birds or adults individually counted, accurate to better than  $\pm 5\%$ ; A2 = estimates based on counts of total birds or adults individually counted, accurate to 5%–10%; A3 = estimates based on counts of total birds or adults individually counted, accurate to 10%–15%; A4 = estimates based on counts of total birds or adults individually counted, accurate to 25%–50%.

<sup>b</sup> Where census error is larger than the difference between two censuses, we assume no change in population size. The annual rate of population change  $\lambda$  (and its error) is calculated as described in the text.

SH = South Shetland Islands; NA = not applicable.

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This bibliography should not be considered a complete listing of relevant papers, but aims to serve as a starting point for research into many of the topics pertinent to Antarctic Peninsula sites, landings, and tourism.

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## **Appendices**

### **ASMA No. 4 Management Plan (Deception Island)**

# **Deception Island Management Package**

## **Introduction**

Deception Island is a unique Antarctic island with important natural, scientific, historic, educational, aesthetic and wilderness values.

Over the years, different parts of the island have been given legal protection under the Antarctic Treaty following piecemeal proposals, but no coherent strategy had been formulated for protecting the whole island. In 2000, an integrated strategy for the management of activities there was agreed by Argentina, Chile, Norway, Spain and the UK.

This strategy recommended an island-wide approach. Deception Island would be proposed as an Antarctic Specially Managed Area (ASMA) comprising a matrix of Antarctic Specially Protected Areas (ASPAs), Historic Sites and Monuments (HSMs), and further zones in which activities would be subject to a code of conduct.

In March 2001, the Instituto Antártico Chileno hosted a workshop in Santiago to progress the Management Plan for Deception Island. The Deception Island working group was widened to include the USA, as well as the Antarctic and Southern Ocean Coalition (ASOC) and the International Association of Antarctica Tour Operators (IAATO) as advisors to the group.

During February 2002, the Dirección Nacional del Antártico (Argentina) hosted an expedition to the island at Decepción Station. Representatives from the six National Antarctic Programmes, as well as ASOC and IAATO, participated. The overall goal of the expedition was to undertake baseline survey fieldwork to assist with the joint preparation by the six Antarctic Treaty Consultative Parties of a Management Package for Deception Island.

Following further extensive consultation, this Management Package for Deception Island was produced. Its aim is to conserve and protect the unique environment of Deception Island, whilst managing the variety of competing demands placed upon it, including science, tourism, and the conservation of its natural and historic values. It also aims to safeguard those working on, or visiting, the island.

Information Papers submitted to the CEP (XII SATCM/IP8, XXIV ATCM/IP63, XXV ATCM/IP28 and XXVI ATCM/IP48) give further detail of the extensive consultation and site investigations which have resulted in the production of this Management Package for Deception Island.

## II. Measures

### Management Plan for Antarctic Specially Managed Area No. 4

## DECEPTION ISLAND, SOUTH SHETLAND ISLANDS

Latitude 62°57'S, longitude 60°38'W

### 1. Values to be protected and activities to be managed

Deception Island (latitude 62°57'S, longitude 60°38'W), South Shetland Islands, is an unique Antarctic island with important natural, scientific, historic, educational, aesthetic and wilderness values.

#### *i. Natural value*

- Deception Island is one of only two volcanoes in the Antarctic at which eruptions have been observed. It was responsible for numerous ash layers dispersed across the South Shetland Islands, Bransfield Strait and the Scotia Sea. Ash from the island has even been recorded in an ice core at the South Pole. The volcano erupted during two short periods during the 20<sup>th</sup> century, most recently between 1967-1970. It contains a restless caldera that is actively deforming. It is therefore likely that Deception Island will witness further eruptions in the future.
- The Area has an exceptionally important flora, including at least 18 species which have not been recorded elsewhere in the Antarctic. No other Antarctic area is comparable. Of particular importance are the very small, unique biological communities associated with the island's geothermal areas, and the most extensive known community of the flowering plant Antarctic pearlwort (*Colobanthus quitensis*).
- Eight species of seabird breed on the island, including the worlds largest colony of chinstrap penguins (*Pygoscelis antarctica*).
- The benthic habitat of Port Foster is of ecological interest due to the natural perturbations caused by volcanic activity.

#### *ii. Scientific value and activities*

- The Area is of outstanding scientific interest, in particular for studies in geoscience and biological science. It offers the rare opportunity to study the effects of environmental change on an ecosystem, and the dynamics of the ecosystem as it recovers from natural disturbance.
- Long term seismological and biological data-sets have been collected at Decepción Station (Argentina) and Gabriel de Castilla Station (Spain).

#### *iii. Historic value*

- The Area has had a long history of human activity since *c.*1820, including exploration, sealing, whaling, aviation and scientific research, and as such has played a significant role in Antarctic affairs.

- At Whalers Bay, the Norwegian Hektor whaling station, the cemetery and other artefacts, some of which pre-date the whaling station, are the most significant whaling remains in the Antarctic. The British 'Base B', which was established in the abandoned whaling station, was the first base of the secret World War II expedition 'Operation Tabarin', the forerunner to the British Antarctic Survey. As such, it was one of the earliest permanent research stations in Antarctica. The whalers remain and Base B are listed as Historic Site and Monument (HSM) No. 71. Appendix 3 contains the Conservation Strategy for HSM No. 71.
- The remains of the Chilean Presidente Pedro Aguirre Cerda Station at Pendulum Cove are listed as HSM No. 76. Meteorological and volcanological studies were undertaken at the base from 1955 until its destruction by volcanic eruptions in 1967 and 1969.

*v. Aesthetic value*

- Deception Island's flooded caldera, its 'horse-shoe' shape and linear glaciated eastern coastline, its barren volcanic slopes, steaming beaches and ash-layered glaciers provide an unique Antarctic landscape.

*iv. Educational and Tourism activities*

- Deception Island is the only place in the world where vessels can sail directly into the centre of a restless volcanic caldera, providing the opportunity for visitors to learn about volcanoes and other aspects of the natural world, as well as early Antarctic exploration, whaling and science. Deception Island is also one of the most frequently visited sites in Antarctica by tourists.

## **2. Aims and objectives**

The main aim of this Management Package is to conserve and protect the unique and outstanding environment of Deception Island, whilst managing the variety of competing demands placed upon it, including science, tourism, and the conservation of its natural and historic values. It also aims to protect the safety of those working on, or visiting the island.

The objectives of management at Deception Island are to:

- assist in the planning and co-ordination of activities in the Area, encourage co-operation between Antarctic Treaty Parties and other stakeholders, and manage potential or actual conflicts of interest between different activities, including science, logistics and tourism;
- avoid unnecessary degradation, by human disturbance, to the unique natural values of the Area;
- minimise the possibility of non-native species being introduced through human activities;
- prevent unnecessary disturbance, destruction or removal of historic buildings, structures and artefacts;
- safeguard those working in or near to, or visiting, the Area from the significant volcanic risk;

## II. Measures

- manage visitation to this unique Island, and promote an awareness, through education, of its significance.

### 3. Management activities

To achieve the aims and objectives of this Management Plan, the following management activities will be undertaken:

- Parties with an active interest in the Area should establish a Deception Island Management Group to:
  - oversee the co-ordination of activities in the Area;
  - facilitate communication between those working in, or visiting, the Area;
  - maintain a record of activities in the Area;
  - disseminate information and educational material on the significance of Deception Island to those visiting, or working there;
  - monitor the site to investigate cumulative impacts;
  - oversee the implementation of this Management Plan, and revise it when necessary.
- a general island-wide Code of Conduct for activities in the Area is included in this ASMA Management Plan (see Section 9). Further site-specific Codes of Conduct are included in the Conservation Strategy for Whalers Bay HSM No.71 (Appendix 3), as well the Code of Conduct for the Facilities Zone (Appendix 4), and the Code of Conduct for Visitors (Appendix 5). These Codes of Conduct should be used to guide activities in the Area;
- National Antarctic Programmes operating within the Area should ensure that their personnel are briefed on, and are aware of, the requirements of this Management Plan and supporting documentation;
- tour operators visiting the Area should ensure that their staff, crew and passengers are briefed on, and are aware of, the requirements of this Management Plan and supporting documentation;
- signs and markers will be erected where necessary and appropriate to show the boundaries of ASPAs and other zones, such as the location of scientific activities. Signs and markers will be well designed to be informative and obvious, yet unobtrusive. They will also be secured and maintained in good condition, and removed when no longer necessary;
- the volcanic alert scheme (as at Appendix 6) will be implemented. It, and the emergency evacuation plan, will be kept under review;
- copies of this Management Plan and supporting documentation, in English and Spanish, will be made available at Decepción Station (Argentina), and Gabriel de Castilla Station (Spain). In addition, the Deception Island Management Group should encourage National Antarctic Operators, tour companies and, as far as practicable, yacht operators visiting the Area, to have available copies of this Management Plan when they visit the Area;
- visits should be made to the Area as necessary (no less than once every 5 years) by members of the Deception Island Management Group to ensure that the requirements of the Management Plan are being met.

### 4. Period of designation

Designated for an indefinite period of time.

## 5. Description of the Area

*i. General description, including geographical co-ordinates, boundary markers and natural features that delineate the area.*

### General description

Deception Island (latitude 62°57'S, longitude 60°38'W) is situated in the Bransfield Strait at the southern end of the South Shetland Islands, off the north-west coast of the Antarctic Peninsula (Figures 1 and 2). The boundary of the ASMA is defined as the outer coastline of the island above the low tide water level. It includes the waters and seabed of Port Foster to the north of a line drawn across Neptunes Bellows between Entrance Point and Cathedral Crags (Figure 3). No boundary markers are required for the ASMA, as the coast is clearly defined and visually obvious.

### Geology, geomorphology and volcanic activity

Deception Island is an active basaltic volcano. It has a submerged basal diameter of approximately 30 km and rises to 1.5 km above the sea floor. The volcano has a large flooded caldera, giving the island a distinctive horseshoe shape broken only on the south-eastern side by Neptunes Bellows, a narrow shallow passage about 500 m wide.

The eruption which formed the caldera occurred possibly 10,000 years ago. A large scale, violently explosive eruption evacuated about 30 km<sup>3</sup> of molten rock so rapidly that the volcano summit region collapsed to form the Port Foster caldera. Associated ashfalls and tsunamis had a significant environmental impact on the northern Antarctic Peninsula region. The volcano was particularly active during the late 18<sup>th</sup> and 19<sup>th</sup> centuries, when numerous eruptions occurred. By contrast, 20<sup>th</sup> century eruptions were restricted to two short periods, around 1906–1910 and 1967–1970. In 1992, seismic activity on Deception Island was accompanied by ground deformation and increased groundwater temperatures around Decepción Station.

The volcano has since returned to its normal, essentially quiescent state. However, the floor of Port Foster is rising at a geologically rapid rate (approximately 30 cm per annum). Together with the record of historical eruptions and the presence of long lived areas of geothermal activity, it is classified as a restless caldera with a significant volcanic risk.

Approximately 57% of the island is covered by permanent glaciers, many of which are overlain with volcanic ash. Mounds and low ridges of glacially transported debris (moraines) are present around the margins of the glaciers.

An almost complete ring of hills, rising to 539 m at Mount Pond, encircles the sunken interior of Port Foster, and is the principal drainage divide on the island. Ephemeral springs flow toward the outer and inner coast. Several lakes are located on the inner divide of the watershed.

### Climate

The climate of Deception Island is polar maritime. Mean annual air temperature at sea level is – 2.9°C. Extreme monthly temperatures range from 11°C to – 28 °C. Precipitation, which falls on more than 50% of summer days, is high, with a mean annual equivalent of rainfall of approximately 500 mm. Prevailing winds are from the north-east and west.

## II. Measures

### Marine ecology

The marine ecology of Port Foster has been significantly influenced by volcanic activity and sediment deposition. ASPA No. 145, comprising two sub-sites, is located in the Area. The Management Plan for ASPA 145, contained in Appendix 2, gives further detail of the marine ecology of Port Foster.

### Flora

Deception Island is an unique and exceptionally important botanical site. The flora includes at least 18 species of moss, liverwort and lichen which have not been recorded elsewhere in the Antarctic. Small communities, which include rare species and unique associations of taxa, grow at a number of geothermal areas on the island, some of which have fumaroles. Furthermore, the most extensive known concentration of Antarctic pearlwort (*Colobanthus quitensis*) is located between Baily Head and South East Point.

In many areas, ground surfaces created by the 1967-70 eruptions are being colonized rapidly, probably enhanced by the increasing summer temperatures now occurring in the Antarctic Peninsula.

ASPA No. 140, comprising 11 sub-sites, is located in the Area. The Management Plan for ASPA No. 140 is contained in Appendix 1. This gives further detail of the flora of Deception Island.

### Invertebrates

Recorded terrestrial and freshwater invertebrates on Deception Island include 18 species of *Acarina* (mite), 1 species of *Diptera* (fly), 3 species of *Tardigrada* (tardigrade), 9 species of *Collembola* (springtail), 3 freshwater *Crustacea* (crustacean), 14 *Nematoda* (nematode), 1 *Gastrotricha* (gastrotrich) and 5 *Rotifera* (rotifer).

### Birds

Eight species of bird breed within the Area. The most numerous is the chinstrap penguin (*Pygoscelis antarctica*), with an estimated 140,000 to 191,000 breeding pairs. The largest rookery is at Baily Head, with an estimated 100,000 breeding pairs. Macaroni penguins (*Eudyptes chrysolophus*) occasionally nest in small numbers on the island, their southernmost breeding limit. Brown skuas (*Catharacta antarctica lonnbergi*), kelp gulls (*Larus dominicanus*), cape petrels (*Daption capensis*), Wilson's storm-petrels (*Oceanites oceanicus*), Antarctic terns (*Sterna vittata*) and snowy sheathbills (*Chionis alba*) also breed within the Area.

### Mammals

Deception Island has no breeding mammals. Antarctic fur seals (*Arctocephalus gazella*), Weddell seals (*Leptonychotes weddelli*), crabeater seals (*Lobodon carcinophagus*), southern elephant seals (*Mirounga leonina*) and leopard seals (*Hydrurga leptonyx*) haul out on the beaches of the inner and outer coast.

#### ii. Structures within the Area

Decepción Station (Argentina) (latitude 62°58'20"S, longitude 60°41'40"W) is situated on the southern shore of Fumarole Bay. Gabriel de Castilla Station (Spain) (latitude 62°58'40"S, longitude



60°40'30"W) is located approximately 1km to the south-east. Further details on both stations are contained in the Facilities Zone Code of Conduct (Appendix 4).

The remains of Hektor Whaling Station (Norway) and other remains which pre-date the whaling station, the Whalers Cemetery and the former British 'Base B' (Historic Site and Monument (HSM) No. 71) are located at Whalers Bay (see Appendix 3). A number of steam boilers from the whaling station can be found washed up on the southwest coast of Port Foster. The remains of the Chilean Presidente Pedro Aguirre Cerda Station (HSM No. 76) is located at Pendulum Cove. A derelict wooden refuge hut is located approximately 1 km to the south-west of HSM No.76.

A light beacon, maintained by the Chilean Navy, is located on Collins Point. A collapsed light tower, dating from the whaling era, is below it. The remains of a further light tower dating from the whaling era is located at South East Point.

The stern of the *Southern Hunter*, a whale-catcher belonging to the Christian Salvesen Company, which foundered on Ravn Rock, Neptunes Bellows in 1956, remains on the unnamed beach to the west of Entrance Point.

A number of beacons and cairns marking sites used for topographical survey are present within the Area.

## 6. Protected areas and managed zones within the Area

Figure 3 shows the location of the following ASPAs, HSMs, Facility Zone and other sites with special management provisions within the Area.

- ASPA No. 140, comprising 11 terrestrial sites;
- ASPA No. 145, comprising 2 marine sites within Port Foster;
- HSM No. 71, the remains of Hektor Whaling Station and other remains which pre-date the whaling station, the Whalers Cemetery and 'Base B', Whalers Bay;
- HSM No. 76, the remains of Pedro Aguirre Cerda Station, Pendulum Cove;
- A Facilities Zone, located on the west side of Port Foster, which includes Decepción Station and Gabriel de Castilla Station;
- Three further sites requiring special management provisions are also located at Pendulum Cove, Baily Head and an unnamed beach at the eastern end of Telefon Bay.

## 7. Maps

**Map 1:** The location of Deception Island ASMA No. 4 in relation to the Antarctic Peninsula.

**Map 2:** Deception Island - topography

**Map 3:** Deception Island Antarctic Specially Managed Area No 4

## 8. Supporting Documents

This Management Plan includes the following supporting documents as appendices:

## II. Measures

- [Management Plan for Antarctic Specially Protected Area No. 140](#) (Appendix 1)
- [Management Plan for Antarctic Specially Protected Area No. 145](#) (Appendix 2)
- [Conservation Strategy for HSM No. 71, Whalers Bay](#) (Appendix 3)
- [Code of Conduct for Facilities Zone](#) (Appendix 4)
- [Code of Conduct for visitors at Deception Island](#) (Appendix 5)
- [Alert Scheme and Escape Strategy for volcanic eruptions on Deception Island](#) (Appendix 6)

### 9. General Code of Conduct

#### *i. Volcanic risk*

All activities undertaken within the Area should be planned and conducted taking into account the significant risk to human life posed by the threat of volcanic eruption (see Appendix 6).

#### *ii. Access to and movement within the Area*

Access to the Area is generally by ship or yacht, with landings usually taking place by small boat, or less frequently by helicopter.

Vessels arriving in or departing from Port Foster should announce over VHF Marine Channel 16 the intended time and direction of passage through Neptunes Bellows.

Ships may transit ASPA 145, but anchoring within either of the two sub-sites should be avoided except in compelling circumstances.

There are no restrictions on landings on any beaches outside the protected areas covered in Section 6, although recommended landing sites are shown in Figure 3. Boat landings should avoid disturbing birds and seals. Extreme caution should be exercised when attempting landings on the outer coast owing to the significant swell and submerged rocks.

Recommended landing sites for helicopters are shown in Figure 3.

Movement within the area should generally be on foot. All-Terrain Vehicles may also be used with care for scientific support or logistical purposes along the beaches outside of ASPA 140. All movement should be undertaken carefully to minimise disturbance to animals, soil and vegetated areas, and not damage or dislodge flora.

#### *iii. Activities that are or may be conducted within the Area, including restrictions on time or place*

- scientific research, or the logistical support of scientific research, which will not jeopardise the values of the Area;
- management activities, including the restoration of historic buildings, clean-up of abandoned work-sites, and monitoring the implementation of this Management Plan;
- tourist or private expedition visits consistent with the Codes of Conduct for Visitors (Appendix 5) and the provisions of this Management Plan;

Further restrictions apply to activities within ASPA 140 and ASPA 145 (see Appendices 1 and 2).

#### *iv. Installation, modification or removal of structures*

Site selection, installation, modification or removal of temporary refuges, hides, or tents should be undertaken in a manner that does not compromise the values of the Area.

Scientific equipment installed in the Area should be clearly identified by country, name of principal investigator, contact details, and date of installation. All such items should be made of materials that pose minimal risk of contamination to the area. All equipment and associated materials should be removed when no longer in use.

*v. Location of field camps*

Field camps should be located on non-vegetated sites, such as on barren ash plains, slopes or beaches, or on thick snow or ice cover when practicable, and should also avoid concentrations of mammals or breeding birds. Field camps should also avoid areas of geothermally heated ground or fumaroles. Similarly, campsites should avoid dry lake or stream beds. Previously occupied campsites should be re-used where appropriate.

Figure 3 shows the recommended sites for field camps within the Area.

*vi. Taking or harmful interference with native flora or fauna*

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the *Protocol on Environmental Protection to the Antarctic Treaty* (1998). Where taking or harmful interference with animals for scientific purposes is involved, the *SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica* should be used as a minimum standard.

*vii. Collection or removal of anything not brought into the Area*

Material should only be removed from the area for scientific, management, conservation or archeological purposes, and should be limited to the minimum necessary to fulfill those needs.

*viii. The disposal of waste*

All wastes other than human wastes and domestic liquid waste shall be removed from the Area. Human and domestic liquid wastes from stations or field camps may be disposed of to Port Foster below the high water mark, and not within the boundaries of ASPA No. 145. Freshwater streams or lakes, or vegetated areas, shall not be used to dispose of human wastes.

*ix. Requirement for reports*

Reports of activities within the Area, which are not already covered under existing reporting requirements should be made available to the Chair of the Deception Island Management Group.

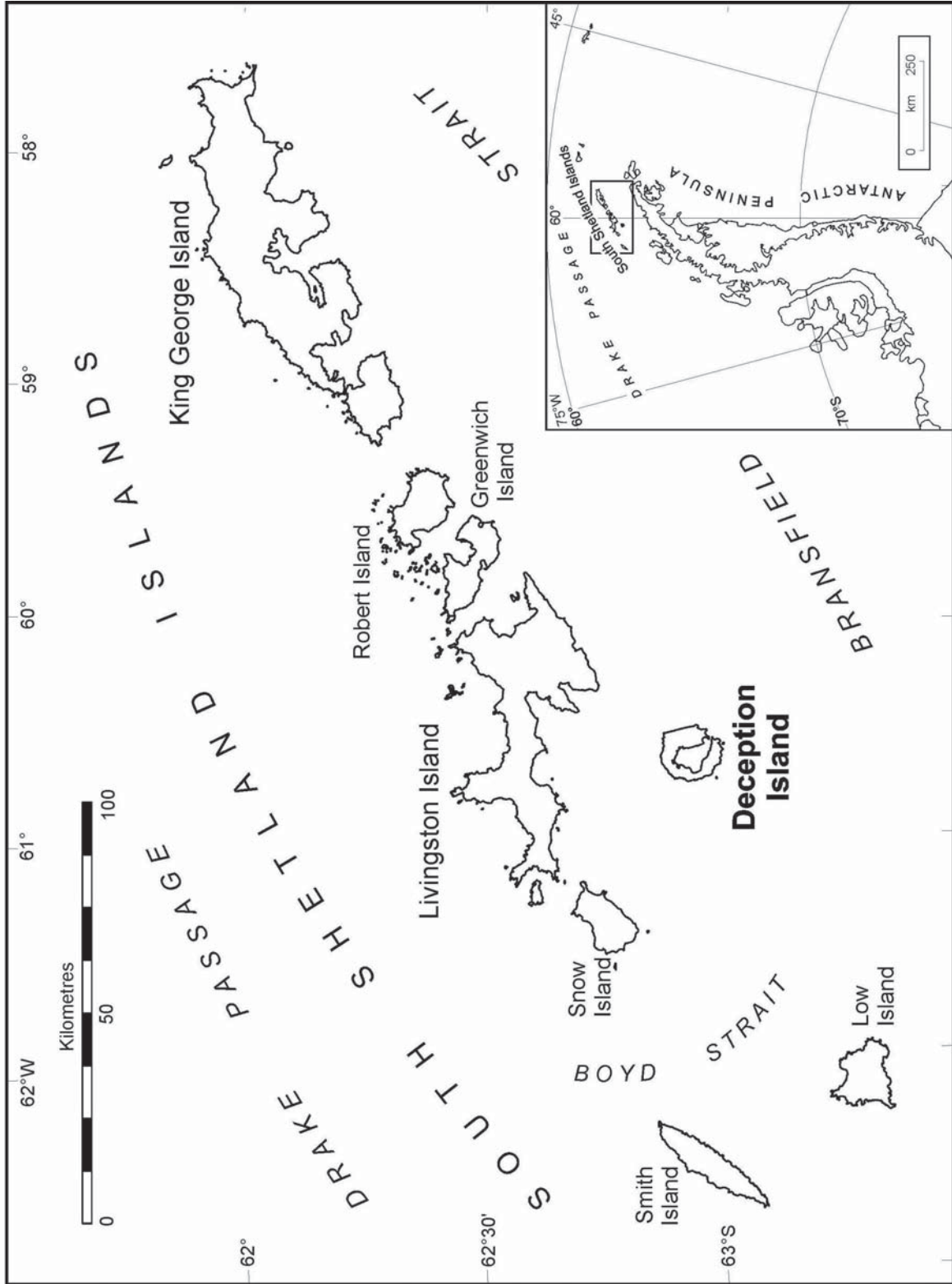
**10. Advance exchange of information**

- IAATO should, as far as practicable, provide the Chair of the Deception Island Management Group with details of scheduled visits by IAATO-registered vessels. Tour operators not affiliated to IAATO should also inform the Chair of the Deception Island Management Group of planned visits.

## II. Measures

- All National Antarctic Programmes should, as far as practicable, notify the Chair of the Deception Island Management Group of the location, expected duration, and any special considerations related to the deployment of field parties, scientific instrumentation or botanical quadrats at the four sites commonly visited by tourists (Whalers Bay, Pendulum Cove, Baily Head or the eastern end of Telefon Bay). This information will be relayed to IAATO (and as far as practicable to non-IAATO members).

Figure 1. The location of Deception Island in relation to the South Shetland Islands and the Antarctic Peninsula



## II. Measures

Figure 2. Deception Island - Topography

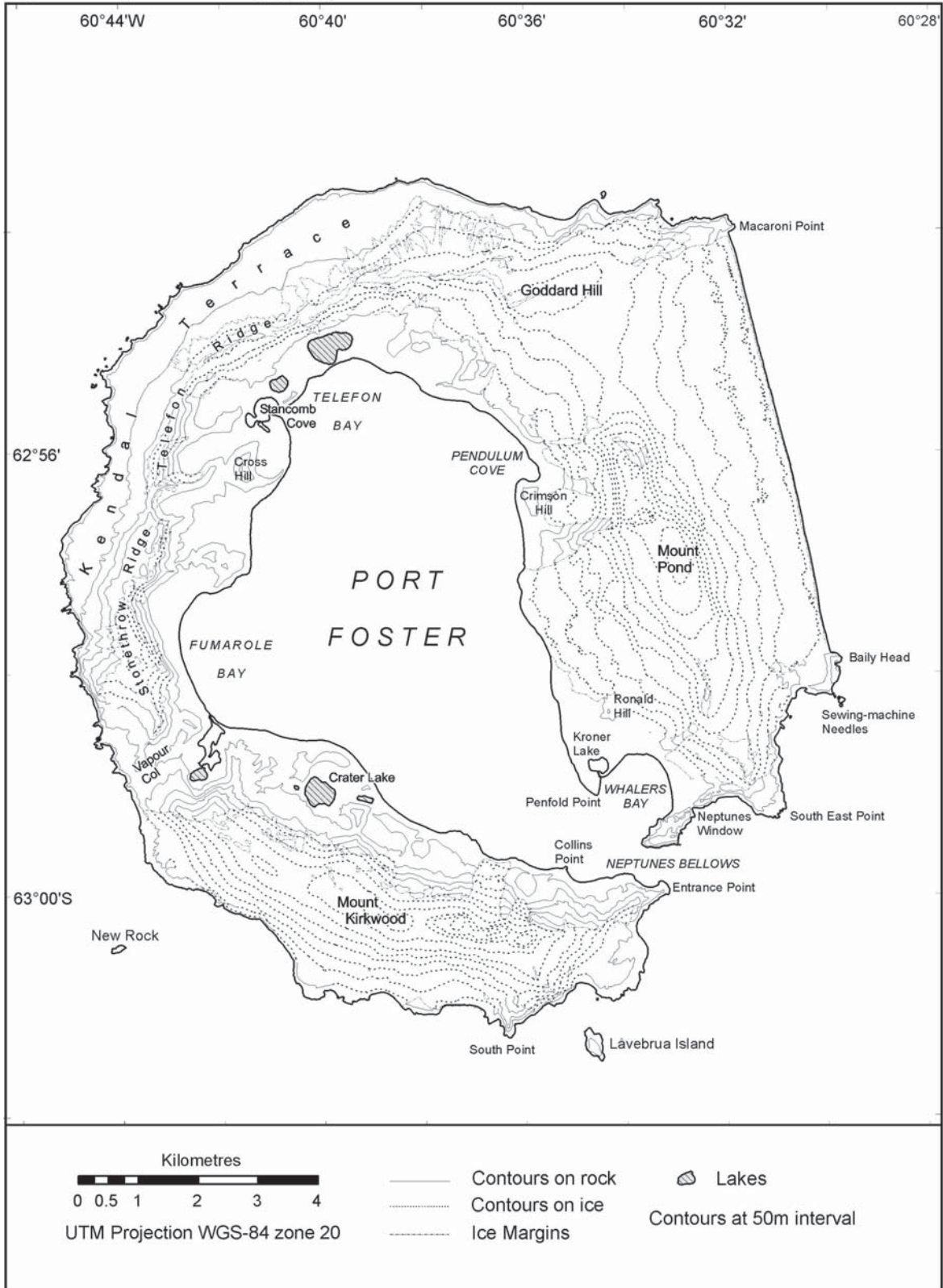
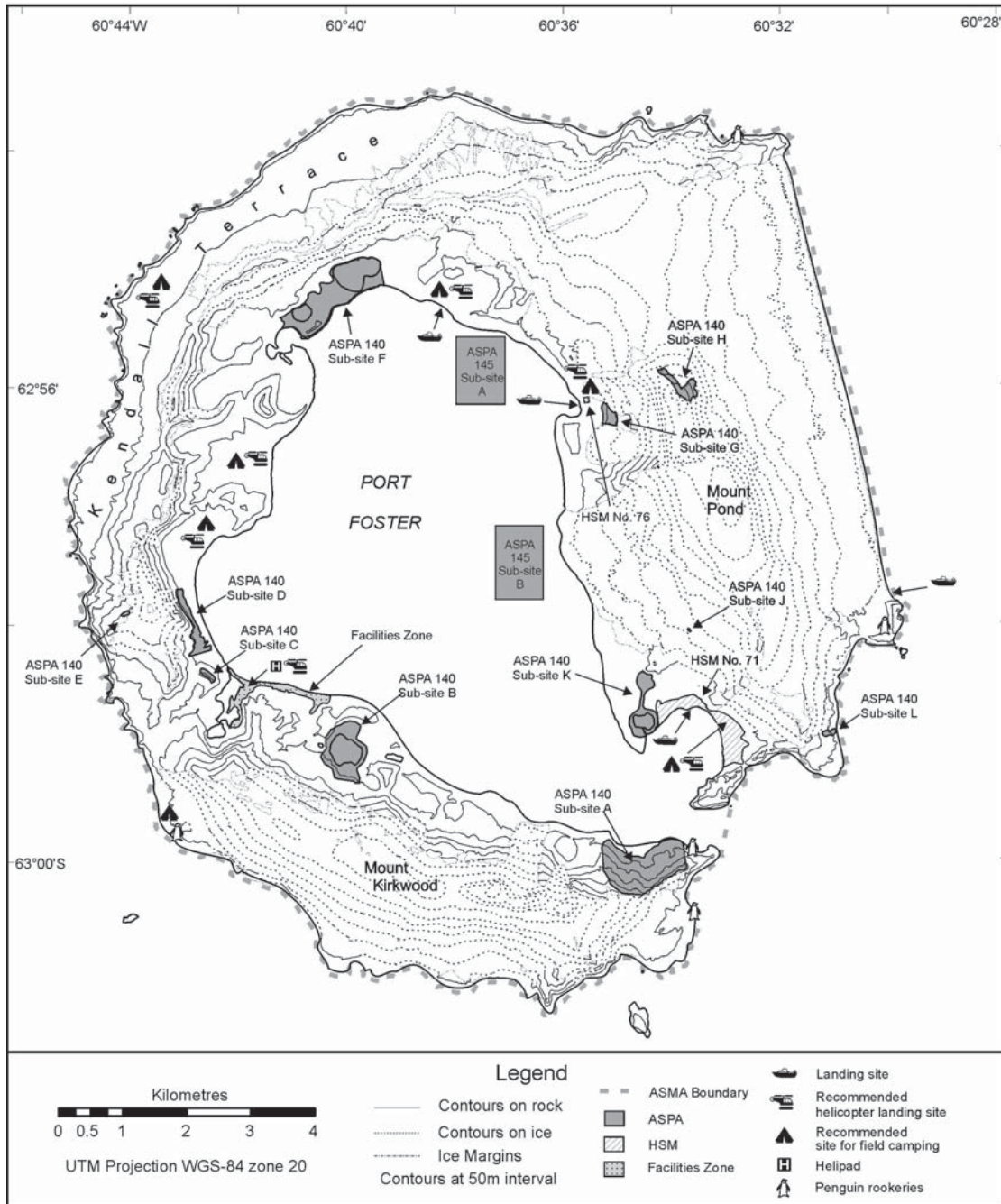




Figure 3. Deception Island Antarctic Specially Managed Area No. 4



**ASPA No. 108 Management Plan (Green Island)**



**Management Plan for Antarctic Specially Protected Area No. 108  
GREEN ISLAND, BERTHELOT ISLANDS, ANTARCTIC PENINSULA**

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

Green Island (Latitude 65°19' S, Longitude 64°09' W, approximately 0.2 km<sup>2</sup>), Berthelot Islands, Grandidier Channel, Antarctic Peninsula, was originally designated as a Specially Protected Area through Recommendation IV-9 (1966, SPA No. 9) after a proposal by the United Kingdom. It was designated on the grounds that the vegetation “is exceptionally rich, [and] is probably the most luxuriant anywhere on the west side of the Antarctic Peninsula”. The Recommendation noted: “in some places the humus is 2 metres thick and that this area, being of outstanding scientific interest, should be protected because it is probably one of the most diverse Antarctic ecosystems”. A Management Plan for the site was prepared by the United Kingdom and adopted through Recommendation XVI-6 (1991). The original reasons for designation were extended and elaborated, although following comparisons to other sites in the vicinity, Green Island was no longer considered to be particularly diverse. The vegetation on the island was described as extensive on the north-facing slopes, with well-developed continuous banks of moss turf formed by *Chorisodontium aciphyllum* and *Polytrichum strictum* that, over much of their extent, overlie peat of more than one metre in depth. Antarctic hair grass (*Deschampsia antarctica*), one of only two native vascular plants that grow south of 56°S, was noted as frequent in small patches near a blue-eyed cormorant (*Phalacrocorax atriceps*) colony. The colony of blue-eyed cormorants, located on the steep, rocky northwestern corner of the island, was noted as being possibly one of the largest along the Antarctic Peninsula.

The present management plan reaffirms the values of the rich *Chorisodontium-Polytrichum* moss turf as being the primary reason for special protection of Green Island. The *Polytrichum strictum* moss banks, with associated *Chorisodontium aciphyllum*, are considered to be the most extensive examples of this vegetation feature in the west Antarctic Peninsula region, occupying an area of over 0.5 ha. Moreover, in recent years many comparable moss banks on more northerly islands have suffered damage as a result of an increase in Antarctic fur seals (*Arctocephalus gazella*). The vegetation at Green Island has thus far escaped any significant damage. In addition, *Chorisodontium aciphyllum* is close to the southern-most limit of its range at the Berthelot Islands. The blue-eyed cormorant colony was one of the largest along the Antarctic Peninsula in 1981, when 500-600 individuals were present, and, until more recent data confirm otherwise, the value of this colony as one of the largest known, is included as an additional value and thus a further reason for special protection of Green Island.

Green Island has been afforded protection throughout most of the period of scientific activity in the region, with entry permits having been issued for only the most compelling scientific reasons. The island has not been subjected to intensive visitation, research or sampling and is potentially valuable as a baseline site for future studies. Due to the lack of visits and scientific studies, detailed information on the island's geography and ecology is lacking.

The coastline boundary of the original Area has not been changed, but the boundary is defined more precisely to include the whole island above the low tide water level, excluding offshore islets and rocks.

## **2. Aims and objectives**

Management at Green Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance and sampling in the Area;
- preserve the ecosystem of the Area for its potential as a largely undisturbed reference area;
- allow scientific research on the ecosystem in the Area provided it is for compelling reasons which cannot be served elsewhere, in particular research which is expected to improve knowledge of the features and communities identified of special value, and which gathers baseline data on the island's features for which information is poor or not available;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes only in support of the aims of the management plan.

## **3. Management activities**

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

- A map showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at Akademik Vernadsky Station (Ukraine), where copies of this Management Plan shall be made available.
- Markers, signs or other structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition.
- Visits should be made as necessary (preferably at least once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.

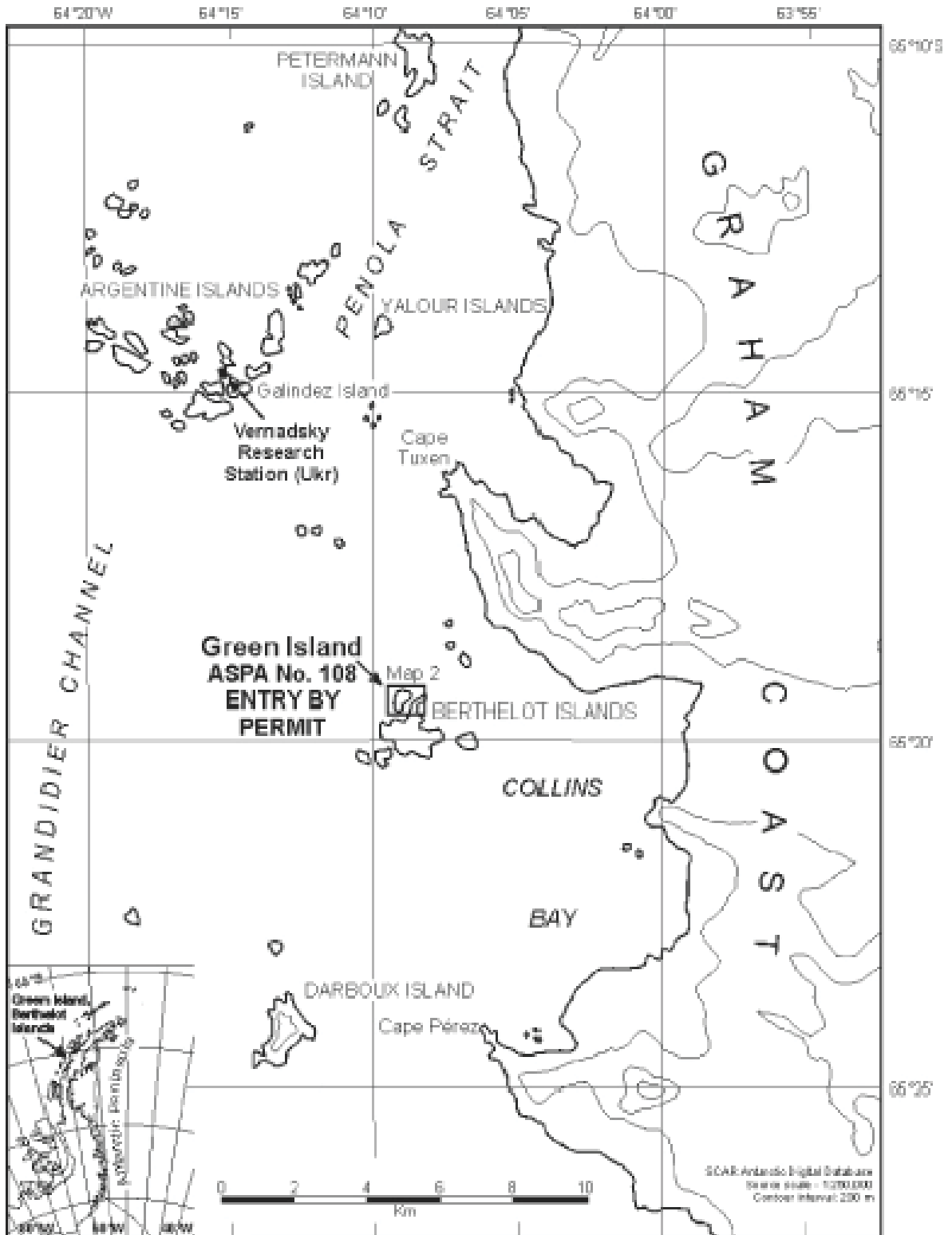
## **4. Period of designation**

Designated for an indefinite period.

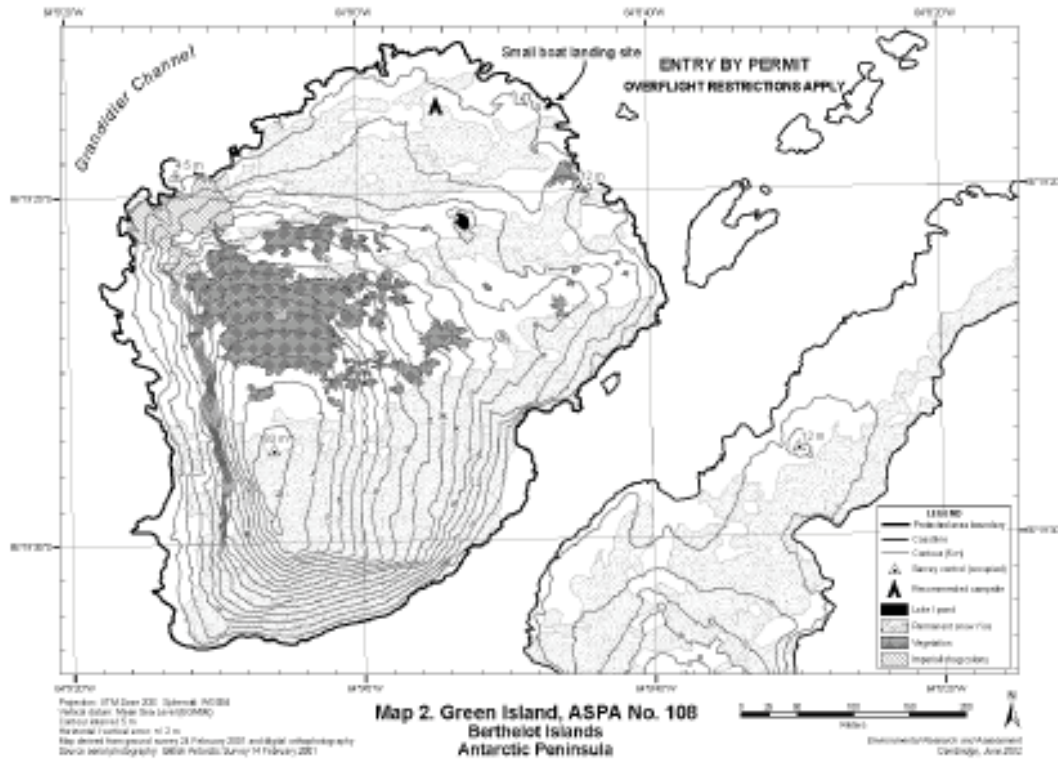
## **5. Maps and photographs**

Map 1: Green Island, ASPA No. 108, in relation to the Graham Coast, showing the location of Akademik Vernadsky Station (Ukraine). Inset: location of the Berthelot Islands on the Antarctic Peninsula.

Map 2: Green Island, ASPA No. 108, topographic map. Map derived from ground survey 24 February 2001 and digital orthophotography (ground pixel resolution 12 cm; source aerial photography taken 14 February 2001 by the British Antarctic Survey). Ground features (vegetation, permanent snow, colony, coastline and ponds) are digitised from the orthophotograph. Vegetation distribution indicates the principal moss banks, dominated by *Polytrichum strictum*. Map specifications – Projection: UTM Zone 20S; Spheroid: WGS84; Datum: mean sea level (EGM96). Vertical contour interval 5 m. Horizontal and vertical accuracy:  $\pm 2.0$  m.



**Map 1.** Green Island, Berthelot Islands, ASPA No. 108, location map. Inset location of Green Island on the Antarctic Peninsula.



## 6. Description of the Area

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

#### GENERAL DESCRIPTION

Green Island (65°19' S, 64°09' W, approximately 0.2 km<sup>2</sup>) is a small island situated 150 m north of the largest of the Berthelot Islands group, Grandidier Channel, approximately 3 km off the Graham Coast of the Antarctic Peninsula (Map 1). Green Island is 520 m from north to south and 500 m from east to west, rising to a rounded peak at a height of 83 m. The island rises steeply on all sides, with high precipitous cliffs on the south and east side. The largest extent of low ground occurs above the northern coast, which comprises a gently sloping rock platform. There are several permanent snow patches with the largest occurring around the summit and to the south and east of the summit.

#### BOUNDARIES

The designated area comprises the entire island, with the boundary defined as the low tide level. Offshore islets and rocks are not included within the Area. Boundary markers have not been installed. The coast itself is a clearly defined and visually obvious boundary feature.

#### CLIMATE

No climate data are available for Green Island but conditions are expected to be similar to those at Akademik Vernadsky Station (Ukraine) on Galindez Island, Argentine Islands 8 km to the

## *From Measure 1 (2002)*

north. The mean summer temperature at Vernadsky is 0°C while the extreme maximum summer temperature is 11.7°C. In winter, the mean temperature is -10°C and the extreme minimum temperature is -43.3°C. The mean wind speed is 7.5 knots.

### GEOLOGY AND SOILS

Green Island, together with the rest of the Berthelot Islands, is composed of gabbro of Lower Jurassic to Lower Tertiary age (British Antarctic Survey 1981). No further information is available on the geology of Green Island. Excluding the large peat deposits, soil is sparse and seldom exceeds 20 cm in depth, except occasionally in rock depressions and gullies. This is predominantly an ahumic coarse mineral soil derived from weathering of the parent rock. Ledges and gullies close to the Blue-eyed Cormorant colony contain an organically richer soil derived in part from decayed moss and guano. Over much of the steep northern slopes the mosses *Chorisodontium aciphyllum* and *Polytrichum strictum* have developed a deep turf of living moss overlying at least 1 m of barely altered or decomposed moss peat (Smith 1979, Fenton and Smith 1982). The permafrost layer is found 20-30 cm below ground level. Elsewhere on the island, notably the northeastern side, there are small areas of scree. There are no well-developed periglacial features, although a few small stone circles are occasionally evident.

### VEGETATION

The most significant feature of the vegetation is the extensive continuous stand of *Polytrichum strictum* (= *Polytrichum alpestre*) on the northern slopes of the island (Map 2). The stand is approximately 140 m wide, extends from an elevation of approximately 25 m up to 70 m, and covers over 0.5 ha (Bonner and Smith 1985). Growth is lush and the permanently frozen peat in places reaches two metres deep. The surface of the hard compact moss is stepped, which is thought to be a result of slumping of the active layer on the steep slope. *Chorisodontium aciphyllum* (= *Dicranum aciphyllum*) is abundant at the edges of the bank and around the periphery of small gullies in the bank, where there is some shelter and moisture available from drifted snow. Both these tall turf-forming mosses are usually intimately intermixed in such communities further north in the maritime Antarctic; however, in the Granddier Channel region the more xeric *P. strictum* often occurs alone. *C. aciphyllum* is close to its southernmost limit on Green Island (Smith 1996). Amongst the *C. aciphyllum*, *Pohlia nutans* is frequent, together with the liverworts *Barbilophozia hatcheri* and *Cephaloziella varians*. Epiphytic lichens are not abundant on the live *Polytrichum* and *Chorisodontium*, but *Sphaerophorus globosus* is frequent in the more exposed northwestern area. Several species of *Cladonia* are widespread on the moss banks. The white encrusting epiphyte *Ochrolechia frigida* is present but not abundant here; black crustose species occur on moribund moss.

Wet hollows among rocks and melt runnels support small stands of the mosses *Warnstorfia laculosa* (= *Calliergidium austro-stramineum*), *Brachythecium austro-salebrosum* and *Drepanocladus uncinatus*. Elsewhere lichens dominate the vegetation. On rocks and boulders away from the shore and the influence of seabirds, a community dominated by *Usnea antarctica* and species of *Umbilicaria* (*U. antarctica*, *U. decussata* and *U. propagulifera*) prevail, with the mosses *Andreaea depressinervis* and *A. regularis* and various crustose lichens associated. Cliffs above the shore possess the most diverse and heterogenous communities, composed predominantly of lichens. These are a modification of the *Usnea-Umbilicaria* community with various nitrophilous taxa, especially close to seabird nests, including species of *Acarospora*, *Buellia*, *Caloplaca*, *Lecanora*, *Mastodia*, *Omphalodina*, *Physcia* and *Xanthoria*.

## *From Measure 1 (2002)*

The only flowering plant thus far recorded on Green Island is Antarctic hair grass (*Deschampsia antarctica*), which is frequent in small patches above the cormorant colony and on rock ledges on the western side of the island.

### BREEDING BIRDS

A sizeable colony of blue-eyed cormorants (*Phalacrocorax atriceps*) is present on the steep, rocky northwestern flank of the island (Map 2). This is one of the largest known blue-eyed cormorant colonies along the Antarctic Peninsula (Bonner and Smith 1985), although numbers may vary substantially from year to year. Approximately 50 pairs were estimated as present in 1971 (Kinneer 1971), while 112 birds were recorded in 1973 (Schlatter and Moreno 1976). 500-600 individuals (of which 300-400 were immatures) were present when visited in March 1981. Harris (2001) recorded 71 chicks on 24 February 2001.

Brown skuas (*Catharacta loennbergi*) are numerous over much of the island, particularly on the extensive moss banks. South polar skuas (*C. maccormicki*) are also present, along with a few possible hybrids. Over 80 birds were noted in March 1981, but only ten breeding pairs were confirmed, most of which were rearing two chicks. No other breeding birds were noted.

### INVERTEBRATES, FUNGI AND BACTERIA

There is little information on the invertebrate fauna at Green Island, although 15 species were recorded in a study that suggested the invertebrate fauna on Green Island was comparatively diverse for the region (Usher and Edwards 1986). The most abundant species were *Cryptopygus antarcticus*, *Belgica antarctica* and *Nanorchestes gressitti*. Larval *B. antarctica* were particularly abundant on Green Island compared to neighbouring Darboux Island. Other species recorded in the Area are: *Alaskozetes antarcticus*; *Ereynetes macquariensis*; *Eupodes minutus*; *Eupodes parvus grahamensis*; *Friesea grisea*; *Gamasellus racovitzai*; *Halozetes belgicae*; *N. berryi*; *Oppia loxolineata*; *Parisotoma octo-oculata*; *Rhagidia gerlachei*; and *Stereotydeus villosus*. A definitive characterisation of the arthropod fauna on Green Island cannot be given until more site-specific research has been conducted. Information on fungal and bacterial communities is not available. There are no permanent freshwater bodies on the island, and there is no information available on seasonal freshwater communities.

### HUMAN ACTIVITIES AND IMPACTS

There have been few reported visits to Green Island. The first recorded landing on the island was by the Premièrre Expédition Antarctiques Française in 1903-05. The Deuxième Expédition Antarctiques Française visited Green Island several times during the winter in 1909. The British Graham Land Expedition landed on the island on 18 March 1935. Vegetation studies were undertaken on Green Island by Lewis-Smith in 1981 (Bonner and Smith 1985) and Komárková in 1982-83 (Komárková 1983). Numerous 30 cm lengths of 2.5 mm diameter iron wire, marking the corners of 50 m square quadrats of the *Polytrichum strictum* moss turf overlying the peat banks, were recorded (and left *in situ*) by an inspection team in January 1989 (Heap 1994). It is not known precisely when these markers were installed. The number of markers, their distribution and the nature of any possible contamination these may have had on the moss is unknown. In recent years a number of important vegetation sites in the Antarctic Peninsula region have been subjected to damage from trampling and nutrient enrichment by increasing numbers of Antarctic



*From Measure 1 (2002)*

fur seals (*Arctocephalus gazella*). While no Antarctic fur seals were observed on Green Island during a site visit made on 24 February 2001, there was some evidence of recent trampling and nutrient enrichment on parts of the lower moss banks. However, damage appeared limited and most of the extensive moss banks remained in tact.

*6(ii) Restricted and managed zones within the Area*

None.

*6(iii) Structures within and near the Area*

There are no structures present in the Area. The nearest scientific research station is Akademik Vernadsky (Ukraine) (65°15'S, 64°16'W), approximately 9 km north of the Area on Galindez Island.

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

The nearest protected areas to Green Island are Biscoe Point (ASPA No. 139), 62 km north, and Litchfield Island (ASPA No. 113), 63 km north, both near the southern coast of Anvers Island.

## **7. Permit conditions**

Entry into 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:

- it is issued only for compelling scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardise the ecological or scientific values of the Area;
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period;
- the appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit

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

- Subject to the following restrictions, access to the Area shall be by boat, or over sea ice by vehicle or foot.
- Vehicles are prohibited within the Area and all movement within the Area shall be on foot.
- Access to the island should be made on the rocky northern coast (Map 2). No special restrictions apply to the routes used to move to and from the Area.
- Aircraft are prohibited from landing within the Area year-round, and restrictions apply to overflight (see Table 1 below).
- Vehicle or boat crew, or other people on vehicles or boats, are prohibited from moving on

*From Measure 1 (2002)*

foot beyond the immediate vicinity of their landing site unless specifically authorised by Permit.

- All movement should be undertaken carefully so as to minimise disturbance to the soil and vegetated surfaces and birds present, walking on snow or rocky terrain if practical.
- Pedestrian traffic should be kept to the minimum consistent with the objectives of any permitted activities and every reasonable effort should be made to minimise trampling effects.

**Table 1:** Aircraft overflight restrictions applying year-round at Green Island.

Aircraft type	Number of engines	Minimum approach distance (m)	
		Vertical (above ground) <i>Feet</i>	<i>Metres</i>
Helicopter	1	2461	750
Helicopter	2	3281	1000
Fixed-wing	1 or 2	1476	450
Fixed-wing	4	3281	1000

*7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place*

Scientific research that will not jeopardise the ecosystem or scientific values of the Area, and which cannot be served elsewhere;

Essential management activities, including monitoring;

*7(iii) Installation, modification or removal of structures*

Structures shall not be erected within the Area except as specified in a Permit and permanent structures or installations are prohibited. All scientific equipment installed in the Area must be approved by Permit 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 of the Area. Removal of specific equipment for which the Permit has expired shall be a condition of the Permit.

*7(iv) Location of field camps*

When necessary for purposes specified in the Permit, temporary camping is allowed within the Area on the low platform on the northern coast (Map 2). Camps should preferably be located on snow surfaces, which typically persist in this locality, or on gravel / rock when snow cover is absent. Camping on continuously covered vegetated surfaces is prohibited.

*7(v) Restrictions on materials and organisms, which can be brought into the Area*

No living animals, plant material or microorganisms shall be deliberately introduced into the Area and the precautions listed in 7(ix) below shall be taken to prevent accidental introductions. In view of the presence of breeding bird colonies on the island, no poultry products, including products containing uncooked dried eggs, including wastes from such products, shall be released into the Area or into the adjacent sea. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for



*From Measure 1 (2002)*

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 is not to be stored in the Area, unless specifically authorised by Permit for specific scientific or management purposes. Anything introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of any introduction into the environment is minimised. 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*. The appropriate authority should be notified of anything released and not removed that was not included in the authorised Permit.

*7(vi) Taking or harmful interference with native flora or fauna*

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Where taking 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(vii) Collection or removal of anything not brought into the Area by the Permit holder*

Collection or removal of anything not brought into the Area by the Permit holder shall only be in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Permits shall not be granted in instances where it is proposed to take, remove or damage such quantities of soil, native flora or fauna that their distribution or abundance on Green Island would be significantly affected. Anything of human origin likely to compromise the values of the Area, 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(viii) Disposal of waste*

All wastes, including all human wastes, shall be removed from the Area. Human wastes may be disposed of into the sea.

*7(ix) Measures that are necessary to ensure that the aims and objectives of the Management Plan can continue to be met*

Permits may be granted to enter the Area to carry out monitoring and site inspection activities, which may involve the small-scale collection of samples for analysis or review, or for protective measures. Any specific long-term monitoring sites shall be appropriately marked. To help maintain the ecological and scientific values of Green Island special precautions shall be taken against introductions. Of concern are microbial, invertebrate or plant introductions from other Antarctic sites, including stations, or from regions outside Antarctica. All sampling equipment or markers brought into the Area shall be cleaned or sterilised. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks, carry-bags and tents) shall be thoroughly cleaned before entering the Area. Poultry products and other introduced avian products, which may be a vector of avian diseases, shall not be released into the Area.

*7(x) Requirements for reports*

Parties should ensure that the principal holder for each Permit issued submits to the appropriate

authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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 be in sufficient detail to allow 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 maintain a record of usage, to be used both in any review of the management plan and in organising the scientific use of the Area.

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**ASPA No. 117 Management Plan (Avian Island)**

**Management Plan for Antarctic Specially Protected Area No. 117  
AVIAN ISLAND, MARGUERITE BAY, ANTARCTIC PENINSULA**

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

Avian Island (Latitude 67°46' S, Longitude 68°54' W, 0.49 km<sup>2</sup>), is situated in northwestern Marguerite Bay, 400 m south of Adelaide Island on the western side of the central Antarctic Peninsula. It was originally designated as Site of Special Scientific Interest (SSSI) No. 30 under Recommendation XV-6 in 1989 after a proposal by the United Kingdom. Included was the island together with its littoral zone, but excluded was a small area near a refuge on the northwestern coast of the island. Values protected under the original designation were described as the abundance and diversity of breeding seabirds present on the island, that the southern giant petrel (*Macronectes giganteus*) colony is one of the most southerly known breeding population of this species, and that the blue-eyed cormorants (*Phalacrocorax atriceps*) are breeding close to the southern limit of their range. The Area was therefore considered of outstanding ornithological importance, meriting protection from unnecessary human disturbance.

Designation as an SSSI was terminated with redesignation of Avian Island as a Specially Protected Area (SPA) through Recommendation XVI-4 (1990, SPA No. 21) after a proposal by the United Kingdom. The boundaries were similar to the original SSSI, but included the entire island and the littoral zone without the exclusion zone near the refuge on the northwestern coast. The values protected were the same as for the SSSI, but with attention drawn to the additional important values of:

- “35,600 pairs of Adélie penguins (*Pygoscelis adeliae*), which is the largest Adélie colony on the Antarctic Peninsula, containing a third of the total breeding population of the region”;
- “670 pairs of blue-eyed cormorants, which are close to the southern limit of their breeding range, and one of the largest known breeding colonies in the Antarctic, representing approximately 85% of the total population breeding south of the Antarctic Circle”.

While the size of the Avian Island Adélie penguin colony on the Antarctic Peninsula is not substantiated by recent data, this colony and those of several other resident species are nonetheless some of the largest in the region, and the values noted in the original SSSI and subsequent SPA designations are generally reaffirmed in the present management plan. Further values evident from scientific descriptions of Avian Island are also considered important reasons for special protection of the Area. These values are:

- the outstanding and unique attribute of being the only known site on the Antarctic Peninsula where seven seabird species are breeding in such close proximity to each other within the confined space of a single, small island, with unusually high population densities and virtually the whole island occupied by breeding birds throughout the summer;
- Representation of seven of the seabird species breeding along the Antarctic Peninsula;
- the southern giant petrel colony is one of the two largest on the Antarctic Peninsula, comprising about one-fifth of the population south of the South Shetland Islands, and these birds are extremely vulnerable to disturbance;

- the kelp gull (*Larus dominicanus*) colony is also large and is breeding near the southern extent of its range;
- the southernmost record of breeding brown skuas (*Catharacta loennbergi*) in the Antarctic Peninsula region was noted on Avian Island in 1978-79;
- the moss *Warnstorfia laculosa* (= *Calliergidium austro-stramineum*) on Avian Island is at the southern limit of its known range.

The boundaries of the Area designated under Recommendation XVI-4 have been changed in this management plan to include offshore islets and rocks previously excluded.

## **2. Aims and objectives**

Management at Avian Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance;
- allow scientific research on the ecosystem and physical environment, particularly on the avifauna, provided it is for compelling reasons which cannot be served elsewhere;
- minimise the risk of introduction of pathogens which may cause disease in bird or mammal populations within the Area;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- gather data on the population status of the seabirds on the island on a regular basis, preferably for all resident breeding species at least once every five years;
- allow visits for management purposes in support of the aims of the management plan.

## **3. Management activities**

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

- A map showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at the stations Teniente Luis Carvajal (Chile), Rothera (UK) and General San Martín (Argentina), where copies of this management plan shall also be made available.
- Signs showing the location and boundaries of the Area with clear statements of entry restrictions shall be placed in prominent positions on the northwestern and eastern coasts of the island (Map 2), to help avoid inadvertent entry.
- Markers, signs or other structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition or removed.
- Visits shall be made as necessary (no less than once every five years) to assess whether the Area continues to serve the purposes for which it was designated, and in particular to conduct bird censuses, and to ensure management and maintenance measures are adequate.

## **4. Period of designation**

Designated for an indefinite period.

## **5. Maps and photographs**

Map 1: Avian Island, ASPA No. 117, in relation to Marguerite Bay, showing the locations of the stations Teniente Luis Carvajal (Chile), Rothera (UK) and General San Martín (Argentina). The location of other protected areas within Marguerite Bay (ASPA No. 107 at Emperor Island (Dion Islands), ASPA No. 115 at Lagotellerie Island, and ASPA No. 129 at Rothera Point) are also shown. Inset: the location of Avian Island on the Antarctic Peninsula.

Map 2: Avian Island, ASPA No. 117, topographic map. Map specifications – Projection: Lambert Conformal Conic; Standard parallels: 1st 67°30'00"S; 2nd 68°00'00"S; Central Meridian: 68°55'00"W; Latitude of Origin: 68°00'00"S; Spheroid: WGS84; Datum: Mean sea level; Vertical contour interval 5 m; Horizontal accuracy: ± 5 m; vertical accuracy ±1.5 m.

Map 3: Avian Island, ASPA No. 117, distribution of breeding wildlife. Map derived from ground survey and digital orthophotography (ground pixel resolution 25cm; source aerial photography taken 15 December 1998 by the British Antarctic Survey). Adélie penguin (*Pygoscelis adeliae*) and elephant seal (*Mirounga leonina*) distributions are digitised from the orthophotograph. Nests of other species are derived from a sketch map and ground survey conducted in 1978 (Poncet 1982), with positions approximate. Note: data on distributions for other breeding species are unavailable. Map specifications are the same as for Map 2.

## **6. Description of the Area**

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

#### GENERAL DESCRIPTION

Avian Island (Latitude 67°46' S, Longitude 68°54' W, 0.49 km<sup>2</sup>), is situated in the northwest of Marguerite Bay, 400 m south of the southwestern extremity of Adelaide Island (Map 1). The island is 1.45 km long by 0.8 km at its widest, and is of roughly triangular shape. It is rocky with a low relief of generally less than 10 m in the north, rising to about 30 m at the centre, and 40 m in the south where several rock and ice slopes of up to 30 m drop steeply to the sea. The coastline is irregular and rocky with numerous offshore islets, although there are several accessible beaches on the northern and eastern coasts. The island is usually ice-free in summer. It contains habitat particularly suitable for a variety of breeding birds: well-drained north-facing slopes suitable for blue-eyed cormorants (*Phalacrocorax atriceps*); broken rock and boulders with crevices suitable for small nesting birds such as Wilson's storm petrels (*Oceanites oceanicus*); elevated rocky heights suitable for southern giant petrels (*Macronectes giganteus*); extensive expanses of snow-free ground for Adélie penguins (*Pygoscelis adeliae*). The presence of the latter attracts skuas (*Catharacta maccormicki* and *C. loennbergi*) and kelp gulls (*Larus dominicanus*). For a detailed description of the geology and biology of the Area see Annex 1.

#### BOUNDARIES

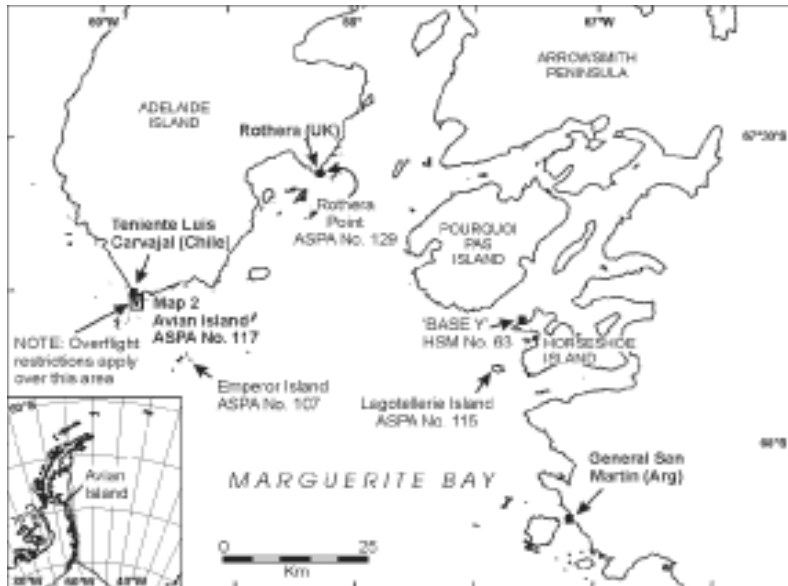
The designated Area comprises the whole of Avian Island and the littoral zone, offshore islets and rocks, and a buffer zone of the surrounding marine environment (including sea ice when present) within 100 m of the shoreline of the main island (Map 2). Boundary markers have not been installed because the coast forms a visually obvious reference for the marine boundary.



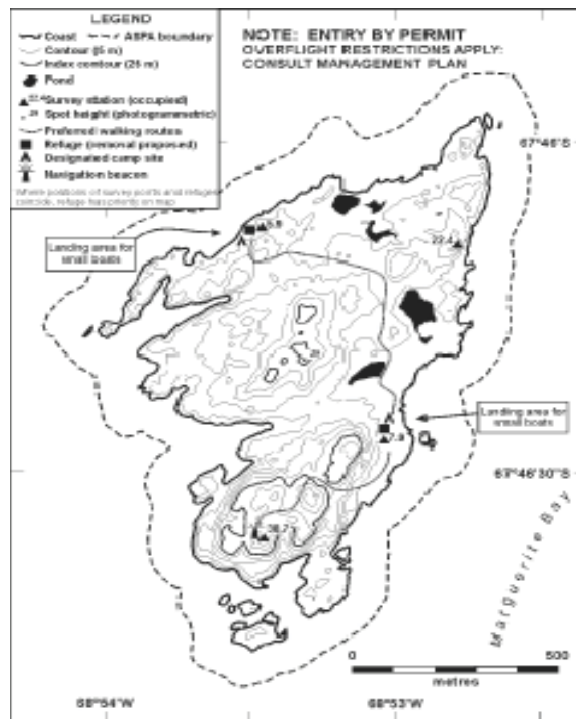
6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

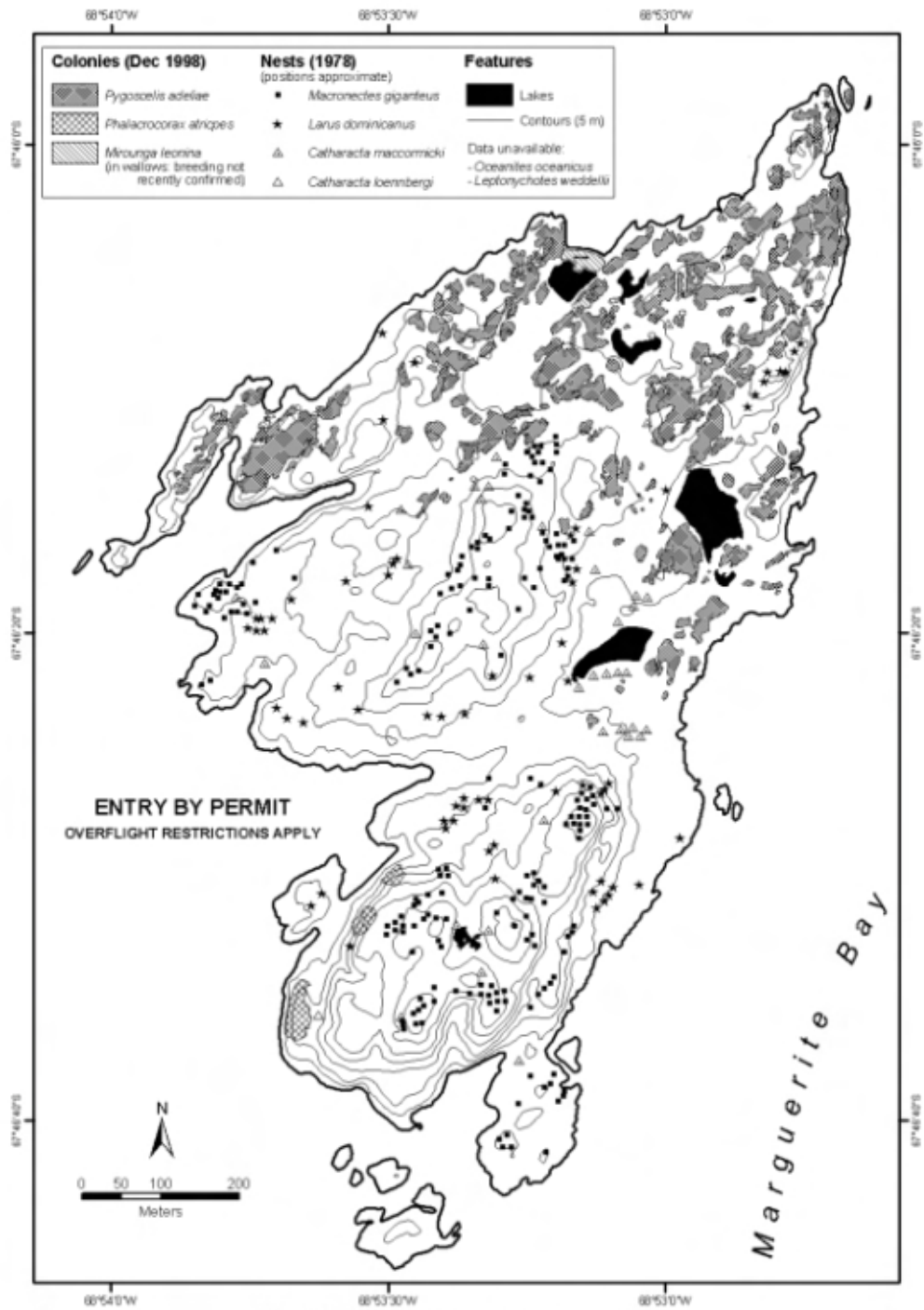


Map 1. Avian Island, ASPA No. 117, Marguerite Bay, Antarctic Peninsula, location map.



Map 2. Avian Island, ASPA No. 117, Marguerite Bay, Antarctic Peninsula, Topographic map.





Data sources:  
Ponsat, S. 1982. Le Grand fillet.  
BAS aerial photography Dec 1998.

**Map 3. Avian Island, ASPA No. 117**  
**Distribution of breeding wildlife**

Prepared by:  
Environmental Research and Assessment  
Cambridge, July 2002

*From Measure 1 (2002)*

Two small abandoned refuges and two beacon structures are present within the Area. A refuge erected by Chile in 1962 is located on the northwestern coast of the island at latitude 67°46'16" S, longitude 68°54'00" W. A refuge constructed by Argentina in 1957 is 650 m SE of this position, on the eastern coast at latitude 67°46'39" S, longitude 68°53'35" W. Both refuges were in a poor state of repair in February 2001. Further deterioration of the huts has potential to impact on nesting birds.

An old iron frame structure, believed to have been erected by the UK during the operation of Adelaide Base, and used as a navigational aid, is located at approximately 38 m near the highest point of the island. The structure remains standing, although it is rusting.

A new beacon was constructed by Chile in February 1998 on an adjacent site at a similar elevation. This structure is a solid cylindrical painted iron tower of approximately 2 m diameter and 2.5 m in height, set in a concrete pad of approximately 2.5 x 2.5 m. A lit beacon, protective rails and solar panels are affixed to the top of the structure. No other structures are known to exist on the island.

Four survey control markers were installed on the island on 31 January 1999 (Map 2). The southernmost marker is located adjacent to the navigation beacon and consists of a survey nail in bedrock covered by a cairn. A similar marker is installed on the high point of the low ridge on the northeastern coast of the island, also covered by a cairn. The remaining two markers are survey nails affixed to the roof of each of the refuges. Two signs marking the Area shall be installed in prominent positions on the northwestern and eastern coasts of the island.

The nearest scientific research station is 1.2 km northwest at Teniente Luis Carvajal (Chile), on southern Adelaide Island (latitude 67°46' S, longitude 68°55' W). Since 1982 this has been operated as a summer-only facility, open from October until March. Over this period the station has generally accommodated up to 10 personnel. Formerly, this facility was established and operated continuously by the UK from 1961 until 1977.

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

The nearest protected areas to Avian Island are the Dion Islands (ASPA No. 107) about 12.5 km SSE, Rothera Point (ASPA No. 129) 40 km to the NE, and Lagotellerie Island (ASPA No. 115) 65 km east (Map 1).

**7. Permit conditions**

Entry into 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:

- it is issued only for compelling scientific reasons that cannot be served elsewhere, in particular for scientific study of the avifauna and ecosystem of the Area, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardise the values of the Area;
- any management activities are in support of the objectives of the management plan;
- the actions permitted are in accordance with the management plan;
- the Permit, or an authorised copy, shall be carried within the Area;

*From Measure 1 (2002)*

- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period;
- the appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

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

Vehicles are prohibited on land within the Area. All movement on land within the Area shall be on foot. Movement within the Area on foot shall be by routes that minimise any disturbance to breeding birds, and to achieve this it may be necessary to take a longer route to the destination than would otherwise be the case. A preferred walking route, which avoids the most sensitive bird breeding sites, should be used when traversing across the central part of the island where movement in this area is necessary (Map 2). The designated route extends from the central eastern coast up the eastern slopes of the hill (Map 2). Visitors should bear in mind that specific nest sites may vary from year to year, and some variations on the recommended route may be preferable: the route is intended as a guide, and visitors are expected to exercise good judgement to minimise the effects of their presence. In other areas, and where practical and safe, it is usually preferable to adopt a route that follows the coastline of the Area.

Access into areas where southern giant petrels are nesting (Map 3) shall only be undertaken for purposes specified in the Permit. When access to the beacon is necessary (e.g. for maintenance), visitors shall follow the designated access route as closely as possible, trying to avoid nesting birds. Much of the area leading up to and surrounding the beacon is occupied by breeding petrels, so great care must be exercised.

Movements should be slow, noise kept to a minimum, and the maximum distance practicable should be maintained from nesting birds.

Visitors shall watch carefully for signs of agitation and preferably retreat from approach if significant disturbance is observed.

Small boat landings should be made at the designated locations on the central northwestern coast or on the central eastern coast of the island (Map 2). If sea or ice conditions render this impractical, small boat landings may be made elsewhere along the coast as conditions allow.

Access by vehicle to the coast when sea ice is present should also use these access points, and vehicles shall be parked at the shore.

Travel by small boat or vehicle within the marine part of the Area is not confined to specific routes, but shall be by the shortest route consistent with the objectives and requirements of the permitted activities. Vehicle or boat crew, or other people on vehicles or boats, are prohibited from moving on foot beyond the immediate vicinity of the landing site unless specifically authorised by Permit.

Aircraft should avoid landing within the Area throughout the year. Restrictions on overflight also apply (see Table 1 below). A Permit may be granted for helicopter use when this is considered necessary for essential purposes and where there is no practical alternative, such as for the installation, maintenance or removal of structures. In such instances the need for helicopter access, including alternatives, and the potential disturbance to breeding birds shall be adequately assessed before a Permit may be granted. Such a Permit shall clearly define the conditions for helicopter access based on the findings of the assessment.

**Table 1:** Aircraft overflight restrictions applying year-round at Avian Island.

Aircraft type	Number of engines	Minimum approach distance (m)			
		Vertical (above ground)		Horizontal	
		<i>Feet</i>	<i>Metres</i>	<i>Feet</i>	<i>Metres</i>
Helicopter	1	2460	750	2460	750
Helicopter	2	3300	1000	3300	1000
Fixed-wing	1 or 2	1480	450	1480	450
Fixed-wing	4	3300	1000	3300	1000

*7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place*

- Scientific research that will not jeopardise the avifauna or ecosystem of the Area, and which is for compelling reasons that cannot be served elsewhere;
- Essential management activities, including monitoring;
- Restrictions on times at which activities may be conducted apply within the Area, and are specified in the relevant sections of this management plan.

*7(iii) Installation, modification or removal of structures*

Structures shall not be erected within the Area except as specified in a Permit. Any new or additional permanent structures are prohibited. Existing abandoned or dilapidated structures should be removed or renovated. Small temporary hides, blinds or screens may be constructed for the purpose of scientific study of the avifauna. Before a Permit may be granted for the installation, modification or removal of structures, an adequate environmental impact assessment shall be undertaken. Installation, modification, maintenance or removal of structures shall be undertaken in a manner that minimises disturbance to breeding birds. Such activities shall be undertaken between 1 February and 30 September inclusive to avoid the main breeding season. All structures, scientific equipment, hides or markers installed within the Area must be approved by Permit for a specified period, 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 harm to bird populations or of contamination of the Area. Removal of specific equipment, hides or markers for which the period specified in the Permit has expired shall be a condition of the Permit.

*7(iv) Location of field camps*

Camping should be avoided within the Area. However, when necessary for purposes specified in the Permit, temporary camping is allowed at two designated campsites: one on the central eastern coast of the island, the other on the central northwestern coast of the Area (Map 2).

*7(v) Restrictions on materials and organisms that can be brought into the Area*

No living animals, plant material or microorganisms shall be deliberately introduced into the Area and the precautions listed in 7(ix) below shall be taken to prevent accidental introductions. In view of the presence of significant breeding bird colonies on the island, poultry products,

*From Measure 1 (2002)*

including products containing uncooked dried eggs, are prohibited within the Area. 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. Fuel is not to be stored in the Area, unless specifically authorised by Permit for specific scientific or management purposes. Refuelling of aircraft or vehicles is prohibited on land within the Area. Anything introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of any introduction into the environment is minimised. 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*. The appropriate authority should be notified of anything released and not removed that was not included in the authorised Permit.

*7(vi) Taking or harmful interference with native flora or fauna*

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Where taking 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(vii) Collection or removal of anything 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 a reasonable concern that the sampling proposed would take, remove or damage such quantities of soil, native flora or fauna that their distribution or abundance on Avian Island would be significantly affected. Samples of flora or fauna found dead within the Area may be removed for analysis or audit without prior authorisation by Permit. Material of recent human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder, or is not otherwise authorised, shall 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(viii) Disposal of waste*

All wastes, except human wastes, shall be removed from the Area. Human wastes shall be removed from the Area or disposed of into the sea.

*7(ix) Measures that are necessary to ensure that the aims and objectives of the Management Plan can continue to be met*

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

6. Any specific long-term monitoring sites shall be appropriately marked.

7. To help maintain the ecological and scientific values found at Avian Island visitors shall take special precautions against introductions. Of concern are pathogenic, microbial or plant



introductions sourced from other Antarctic sites, including stations, or from regions outside Antarctica. Visitors shall ensure that sampling equipment or markers brought into the Area are cleaned or sterilised. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks, carry-bags and tents) shall be thoroughly cleaned before entering the Area.

8. Poultry products and other introduced avian products, which may be a vector of avian diseases, are prohibited within the Area.

*7(x) Requirements for reports*

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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 be in sufficient detail to allow 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 maintain a record of usage, to be used both in any review of the management plan and in organising the scientific use of the Area.

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ANNEX 1

*6(i) Additional information on the natural features of the Area.*

CLIMATE AND SEA ICE

No extended meteorological records are available for Avian Island, but records from 1962-74 for Adelaide Base (formerly UK; now Teniente Luis Carvajal, Chile), 1.2 km distant, show a mean daily maximum temperature of 3°C in February (extreme maximum 9°C) and a mean daily minimum of -8°C in August (extreme minimum -44°C). The same general pattern was observed in year-round observations made on the island in 1978-79 (Poncet and Poncet 1979). Precipitation on the island in this year was usually as snow, most of which fell between August and October, but with occasional snowfalls and some rain in the summer.

Marguerite Bay usually freezes in winter, although the extent and character of sea ice shows considerable inter-seasonal variation. Occasionally Marguerite Bay may not clear of ice completely until February or March, at which time the sea may again begin to freeze. Despite the extent and frequent persistence of regional sea ice, a recurrent polynya has been observed near Avian Island, which can provide locally ice-free conditions from October onward. In addition, strong tidal currents around Avian Island help to keep surrounding waters ice-free for much of the year, which facilitates easy access to feeding grounds for several species. The island is not particularly windy, with an annual average of 10 knots in 1978-79. However, the strong katabatic winds that descend from Adelaide Island, perhaps for 1-3 days a few times every month, reduce snow accumulation on the island and push sea ice away from the coast, helping to form the polynya. The relatively snow-free conditions are important for bird colonisation.

GEOLOGY, GEOMORPHOLOGY AND SOILS

The bedrock of Avian Island forms the eastern limb of a NNE – SSW trending synclinal structure at the southwestern end of Adelaide Island and is composed of interbedded lithic-rich and

feldspar-rich volcanoclastic sandstones. Bedded tuffaceous sandstones, pebbly sandstones rich in volcanic lithics, and a volcanic granule breccia also occur. The latter is probably a primary volcanic deposit, while the rest of the sequence is largely composed of reworked volcanic material. The sequence forms part of the Antarctic Peninsula Volcanic Group and is of Jurassic to early Tertiary age (Griffiths 1992, Moyes *et al* 1994). Apart from rock outcrop, the surface consists mainly of frost-shattered rock with permafrost. Ornithogenic soils are widespread, particularly in the north; organic peat soil is virtually absent, but where present is not well developed and is associated with moss growth. Several raised beaches have been noted on Avian Island, but the geomorphology has not otherwise been described.

#### STREAMS AND LAKES

Avian Island has several ephemeral freshwater ponds of up to 10,000 m<sup>2</sup> and of about 40 cm in depth, the largest being on the eastern coast, at about 5 m altitude, and on the north-western coast near sea level. Numerous small pools and meltwater channels develop from seasonal snow melt, and small streams drain valleys in the vicinity of the ponds. Both the ponds and melt-pools freeze solid in winter. Freshwater bodies on the island are organically enriched by guano, a source of nutrients, and in summer a number of the ponds show a rich benthic flora and fauna of algae, phyllo pods, copepods, Nematoda, Protozoa, Rotifera, and Tardigrada. Large numbers of the crustacean *Branchinecta* sp. have also been observed (Poncet and Poncet 1979). The freshwater ecology of the island has not been studied in detail.

#### BREEDING BIRDS

Seven species of birds breed on Avian Island, which is a relatively high number compared to other sites on the Antarctic Peninsula. Several species have unusually high populations, being some of the largest for their species in the Antarctic Peninsula region (Map 3). Detailed year-round data for all species were collected in 1978-79 (Poncet and Poncet 1979), while data are otherwise sporadic. Descriptions below are thus often based on a single season's observations and it should be emphasised that these data are therefore not necessarily representative of longer-term population trends. However, this is the best information that is presently available.

The most recent data available for Adélie penguins (*Pygoscelis adeliae*) on Avian Island indicated a population of 35,600 breeding pairs (11/11/78) (Poncet and Poncet 1979, Woehler 1993). The colony occupies the northern half and central eastern coast of the island (Map 3). The former management plan referred to the Avian Island colony as "the largest on the Antarctic Peninsula [containing] a third of the total population breeding in the region". While this is not substantiated by recent data (e.g. one Antarctic Peninsula colony has over 120,000 pairs and several others have over 30,000 (Woehler 1993)), the Avian Island colony represents one of the largest breeding populations in this region. It contains perhaps as much as 9% of the total Adélie breeding population along the Antarctic Peninsula, excluding the South Shetland Islands.

In 1978-79 Adélie penguins were recorded on the island from October until the end of April, with egg laying occurring through October and November, and the first chicks hatching around mid-December. Chick crèches were observed around mid-January, with the first chicks becoming independent near the end of January. Most of the moulting adults and independent chicks had departed the island by the third week of February, although groups returned periodically throughout March and April.

A large colony of blue-eyed cormorants (*Phalacrocorax atriceps*) has been recorded in three groups located on the southwestern coastal extremity of the island (Map 3). Stonehouse (1949) reported about 300 birds present in October 1948; a similar number were recorded in mid-



November 1968, most of which were breeding (Willey 1969). Poncet and Poncet (1979) observed 320 pairs in 1978, and approximately 670 pairs on 17 January 1989 (Poncet 1990). A count on 23 February 2001 recorded 185 chicks, although it is probable some had departed by the time of the count; approximately 250 nest sites were counted. In 1968 blue-eyed cormorants were observed present on the island from 12 August, with egg laying occurring from November, and chicks hatching in December (Willey 1969). In 1978-79 they were observed from September until June, with egg laying occurring from November through to January, when the first chicks hatched, and chicks started to become independent in the third week of February (Poncet and Poncet 1979).

Of the thirteen southern giant petrel (*Macronectes giganteus*) colonies known south of the South Shetland Islands, Avian Island is one of the two largest, and comprises about one fifth of the breeding population in the southern Antarctic Peninsula region (Patterson *et al* in press). In 1979 the southern giant petrels occupied principally the elevated rocky outcrops of the central and southern half of the island in four main groups (Map 3). Data on the numbers of birds present on the island are shown in Table 2.

**Table 2:** Southern giant petrel (*Macronectes giganteus*) numbers at Avian Island.

Year	Number of birds	Number of pairs	Number of chicks	Source
1948	~100	n/a	n/a	Stonehouse 1949
1965	n/a	160	n/a	Patterson <i>et al</i> 2000 (?)
1968	400	163	n/a	Willey 1969
1979	n/a	197	n/a	Poncet and Poncet 1979
1989	n/a	250	n/a	Poncet 1990
2001	n/a	n/a	237	Harris 2001

n/a - not available.

In 1978-79 the birds were present on Avian Island from mid-September through to as late as June. In this season, egg laying occurred from late October through to the end of November, with hatching occurring throughout January and chicks generally achieving independence by April. In the 1978-79 austral summer up to 100 non-breeders were observed on the island during the courtship period in October, with these numbers decreasing to a few non-breeders as the season progressed.

Approximately 200 adult Kelp gulls (*Larus dominicanus*), of which over 60 pairs were breeding, were recorded on Avian Island in 1978-79. These birds were distributed widely, but principally in the elevated central and southern parts of the island (Poncet and Poncet 1979) (Map 3). In the 1978-79 austral summer the majority of breeders arrived in early October, followed by egg laying around mid-November and hatching a month later. Detailed data are not available because of concern that human disturbance by data collection would seriously impair the breeding performance of this species. However, no more than 12 chicks were observed on the island near the end of January 1979, which would suggest breeding performance in this season was low: the exact cause – whether human disturbance or natural factors – could not be determined. In 1967, 19 pairs and 80-120 birds were recorded (Barlow 1968).

An estimate of at least several hundred pairs of breeding Wilson's storm petrels (*Oceanites oceanicus*) on the island was made in 1978-79 (Poncet and Poncet 1979). Wilson's storm petrels

were observed on the island from the second week of November, with laying and incubation probably occurring through to mid-December. Departure of adults and independent chicks was largely complete by the end of March. Most of the rocky outcrops on the northern half of the island and all of the stable rocky slopes in the south are ideal habitat for this species.

In 1978-79 about 25-30 pairs of south polar skuas (*Catharacta maccormicki*) were breeding on Avian Island. The skua nests were distributed widely over the island, although the majority were on the central and eastern part of the island, especially on slopes overlooking the Adélie penguin colony (Map 3). Large groups of non-breeders (around 150 birds; Poncet and Poncet 1979) were observed to congregate around the shallow lake on the eastern side of the island. Barlow (1968) reported approximately 200 non-breeding birds in 1968. In the 1978-79 austral summer the south polar skuas took up residence around the end of October, with egg laying in early December and hatching complete by the end of January. Independent chicks and adults generally departed by the end of March, with some late-breeders remaining until mid-April. A breeding success of one chick per nest was reported in the 1978-79 austral summer. Barlow (1968) reported 12 breeding pairs of brown (=subantarctic) skuas (*Catharacta loennbergi*), although this number could include south polar skuas. One breeding pair of brown skuas was recorded on the southwest of the island in the 1978-79 austral summer. This is the southernmost record of this species breeding along the Antarctic Peninsula. Several non-breeding brown skuas were also recorded in the same season.

Several other bird species, known to breed elsewhere in Marguerite Bay, are frequent visitors to Avian Island, notably Antarctic terns (*Sterna vittata*), snow petrels (*Pagodroma nivea*), and southern fulmars (*Fulmarus glacialisoides*). These species have not been observed to nest on Avian Island. Small numbers of Antarctic petrels (*Thalassoica antarctica*) have been seen on a few occasions. The cape petrel (*Daption capense*) was observed on Avian Island in October 1948 (Stonehouse 1949). Solitary individuals of king (*Aptenodytes patagonicus*) and chinstrap (*Pygoscelis antarctica*) penguins were observed in 1975 and 1989, respectively.

#### TERRESTRIAL BIOLOGY

Vegetation on Avian Island is generally sparse, and the flora has not been described in detail. Phanerogams are absent from the island and there is a limited range of cryptogams, although there is a rich lichen flora. To date, nine moss and 11 lichen species have been identified within the Area.

Mosses described are *Andreaea depressinervis*, *Brachythecium austro-salebrosum*, *Bryum argenteum*, *B. pseudotriquetrum*, *Pohlia cruda*, *P. nutans*, *Sanionia uncinata* (= *Drepanocladus uncinatus*), *Syntrichia princeps* (= *Tortula princeps*) and *Warnstorfia laculosa* (= *Calliergidium austro-stramineum*). The latter species is at the southern limit of its known range on Avian Island (Smith 1996). Moss development is confined to those parts of the island that are unoccupied by breeding Adélie penguins or blue-eyed cormorants, and occurs in moist depressions or by melt pools. Patches of moss of up to 100 m<sup>2</sup> surround the shore of a small pond on the hill in the south of the Area, at ca. 30 m elevation. The green foliose alga *Prasiola crispa* is widespread in wet areas of the island.

Lichens identified on Avian Island are *Acarospora macrocyclos*, *Cladonia fimbriata*, *C. gracilis*, *Dermatocarpon antarcticum*, *Lecanora dancoensis*, *Lecidea brabantica*, *Physcia caesia*, *Rinodina egentissima*, *Siphulina orphnina*, *Thamnolecania brialmontii*, and *Usnea antarctica*. The most extensive communities are on the rocky outcrops in the south of the island.

The micro-invertebrate fauna, fungi and bacteria on Avian Island have yet to be investigated in

detail. Thus far only one mesostigmatid mite (*Gamasellus racovitzai*) (BAS Invertebrate Database 1999) has been described, although a Collembollan (springtail) and several species of Acari (mites) have been observed but not identified (Poncet 1990). A number of nematode species (dominated by *Plectus* sp.) (Spaull 1973) and one fungus (*Thyronectria hyperantarctica*) (BAS Invertebrate Database 1999) have been recorded on the island.

#### BREEDING MAMMALS AND MARINE ENVIRONMENT

Weddell seals (*Leptonychotes weddellii*) were common on and around Avian Island in 1978-79. During the winter more than a dozen remained, hauled out on coastal ice (Poncet 1990). Several pups were born on the shores of the island in the last week of September 1978. An elephant seal (*Mirounga leonina*) was reported pupping on the northeastern coast of Avian Island on 10 October 1969 (Bramwell 1969). Aerial photography taken on 15 December 1998 revealed 182 elephant seals hauled out in groups, mostly close to the ponds. Leopard seals (*Hydrurga leptonyx*) have been observed around the shoreline, and one was observed ashore in winter 1978. A number of non-breeding Antarctic fur seals (*Arctocephalus gazella*) were reported on the island in March 1997 (Gray and Fox 1997), and again at the end of January 1999 (Fox pers comm 1999). At least several hundred were present on 23 February 2001 (Harris 2001), particularly on beaches and low-lying ground in the central and northern parts of the island. Crabeater seals (*Lobodon carcinophagus*) are regularly seen in Marguerite Bay, but have not been reported on Avian Island. The marine environment surrounding Avian Island has not been investigated.

#### HUMAN ACTIVITIES / IMPACTS

Human activity at Avian Island has been sporadic. The first record of a visit was made in October 1948, when members of the UK Stonington Island expedition discovered the large Adélie penguin colony on Avian Island (then referred to as one of the Henkes Islands). Subsequent visits have comprised a mixture of science, base personnel recreation, tourism and logistic activity (survey etc.). Refuges were constructed on the island in 1957 and 1962 by Argentina and Chile respectively (see Section 6(iii)).

A geological field party of two camped for about 10 days on the southeast of the island in November 1968 (Elliott 1969). In the same year, a UK Naval hydrographic survey team camped on the eastern coast of Avian Island over the summer. Permanent chains and rings for mooring lines to the survey vessel were installed in a small bay on the northwestern coast, and were still present in 1989 (Poncet 1990).

In 1969, a field party camped on the island for a month conducting research on the common cold virus: accompanying dogs were inoculated with a virus and then returned to base (Bramwell 1969). Dogs often accompanied personnel on the regular visits to Avian Island during the period of operation of the UK base on Adelaide Island, but impacts are unknown.

A two-person party spent a year on the island in 1978-79, based on the yacht *Damien II*, making detailed observations of the avifauna and other aspects of the biology and natural environment of the island (Poncet and Poncet 1979, Poncet 1982, Poncet 1990). The yacht was moored in a small cove on the NW coast. This yacht party regularly visited the island over the next decade before SPA designation.

Map survey work and aerial photography was conducted on and over the island in 1996-98 (Fox and Gray 1997, Gray and Fox 1997), and 1998-99 (Fox pers. comm.1999).

The impacts of these activities have not been described and are not known, but are believed to

*From Measure 1 (2002)*

have been relatively minor and limited to transient disturbance to breeding birds, campsites, footprints, occasional litter, human wastes, scientific sampling and markers. Despite the likely transient nature of most disturbances, it has been reported that human visits have caused loss of eggs and chicks, either through nest abandonment or by opportunistic predation. Several species, such as southern giant petrels and kelp gulls are particularly vulnerable to disturbance, and have been observed to abandon nests at particular periods of the nesting cycle, perhaps at the sight of people as much as 100 m distant (Poncet 1990). Approximately 140 people, including a tour vessel of 100, were reported to have visited Avian Island in the 1989-90 summer. Growing concern over the number and unregulated nature of visits prompted SPA designation.

The most lasting and visually obvious impacts are associated with the two refuges and beacon structures described in Section 6(iii), which are situated close to breeding birds. Both refuges were in poor repair in February 2001, with rubbish such as rusting cans, glass, wood, roofing iron and empty fuel drums nearby. Birds and seals were observed among this rubbish in February 2001. The older of the two beacon structures is disused and its iron structure, while standing, is rusting and deteriorating. The new beacon, erected in February 1998, was in good repair in February 2001.

**ASPA No. 134 Management Plan (Cierva Point)**

## **Management Plan for Antarctic Specially Protected Area No. 134**

### **CIERVA POINT AND OFFSHORE ISLANDS, DANCO COAST, ANTARCTIC PENINSULA**

#### **1. Description of Values to be Protected**

This area was originally designated as SSSI No. 15 in ATCM Recommendation XIII-8, after a proposal by Argentina, as an important example of well developed maritime vegetation having breeding colonies of at least five 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 and Measure 3 (1997). During the XXV Antarctic Treaty Consultative Meeting (Warsaw, 2002), Annex V having entered into force, the *Site of Special Scientific Interest* No. 15 became, by Decision 1 (2002), *Antarctic Specially Protected Area* No. 134.

The original reasons for the designation of the Area are still relevant. 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 the vegetation create highly favourable conditions for the formation of numerous microhabitats which, in turn, support the development of biodiversity and give the Area exceptional aesthetic value.

Long-term research programs could be endangered by accidental human interference, destruction of vegetation and soil, pollution of water bodies, and perturbation of birds, especially during reproductive periods.

#### **2. Aims and Objectives**

Management of ASPA No. 134 aims to:

- Protect the biodiversity of the Area, avoiding major changes in the structure and composition of communities of flora and 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 Area is protected;
- 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:

- The Primavera Base staff will be specifically instructed as to the conditions of the Management Plan;
- 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;

## II. Measures

- 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.

### 4. Period of Designation

Designated for an indefinite period.

### 5. Maps

Map 1 shows the general location of ASPA No. 134. Map 2 shows the ASPA in relation to Danco Coast. The shaded area indicates the group of areas that make up ASPA No. 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

#### 6.1. Geographical co-ordinates, limits, and natural features

Cierva Point (lat. 64° 09' 23''S, lon. 60° 57' 17''W<sup>1</sup>) 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 and José Hernández Islands and the Moss and Penguin Islands, 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.

The Area has high species richness of animals and plants, and the abundance of some of these is, in some cases, exceptional.

The cover of mosses, lichens, and grasses is very extensive. The most conspicuous vegetal communities are the associations of dominant lichens, the moss turf dominated by *Polytrichum-Chorisodontium* and the *Deschampsia-Colobanthus* subformation. The moss turves cover areas of more than 100 square metres, with an average depth of about 80 cm. The present flora 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 Islands, 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.

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

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

A summary of the estimated number of nesting pairs by species and nesting site is presented in Table 1.

Species / Nesting Site	Cierva Point	Apéndice Island	José Hernández Island	Penguin Island	Moss Island
<i>Pygoscelis Antarctica</i>	-	-	550	1500	-
<i>Pygoscelis papua</i>	600	900	-	-	-
<i>Macronectes giganteus</i>		<10	-	-	35
<i>Daption capense</i>	<10	23	-	<5	30
<i>Pagodroma nivea</i>	<5	-	-	-	-

<sup>1</sup> Data corresponding to Primavera Base



<i>Oceanites oceanicus</i>	1000	1000	100	100	100
<i>Phalacrocorax bransfieldensis</i>	-	-	21	<10	-
<i>Chionis alba</i>	<5	<5	<5	<5	<5
<i>Catharacta sp.</i>	450	<5	<5	<5	10
<i>Larus dominicanus</i>	160	70	15	<10	120
<i>Sterna vittata</i>	45	15	35	-	15

Table 1: Estimated number of nesting pairs by species an Base d nesting site.

As well, the Area has great aesthetic value. The great diversity in relief and coastal forms, due to the presence of different geologies and a pronounced system of fractures, in addition to an extensive and varied vegetation cover, provide unusual scenic diversity in the Antarctic environment.

6.2. *Restricted zones within the Area*

None.

6.3. *Location of structures within the Area*

There are no structures within the Area. Primavera Base (Argentina), located to the northwest of Cierva Point and adjacent to the Area, is only open during the Summer. It is composed of eight buildings and a place delimited for helicopter landings.

6.4. *Location of other Protected Areas within close proximity*

ASPA No. 152, western portion of the Bransfield Strait (Mar de la Flota), in front of Low Island, South Shetland Islands, 90 kilometres northwest of ASPA No. 134; and ASPA No. 153, eastern portion of the Dallmann Bay, in front of the western coast of Brabant Island, Palmer Archipelago, 90 kms west of ASPA No. 134.

**7. Permit Conditions**

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

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

- It is only issued for a scientific purpose, in accordance with the objectives of the Management Plan, that cannot be met elsewhere;
- The actions permitted will not jeopardize the natural ecological system of the Area;
- Any management activities (inspection, maintenance, or revision) are in support of the objectives of the Management Plan;
- The actions permitted are in accordance with this Management Plan;
- The permit, or authorised copy, must be 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.

7.1. *Access to and movements within the Area*

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.

There is only one access for helicopters outside 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 aircraft 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 aircraft security.



## II. Measures

Marine access is allowed from any point of the islands included in the Area. Vehicle traffic of any type is not permitted.

Tourism or any other recreational activity is not permitted. Movements within the Area will be carried out avoiding disturbance to the flora and fauna, especially during the breeding season.

### *7.2. Activities which are or may be conducted within the Area, including restrictions on time and place*

- Scientific research activities that cannot be conducted elsewhere and that do not jeopardise 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.

### *7.3. 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 appropriate permits.

Any scientific equipment installed in the Area, as well as any sign of the investigation, should be approved by permit and clearly indicated, showing the country, the name of the principal investigator, and the year of installation. All the installed materials should pose the minimum risk of pollution to the Area or the minimum risk of causing disturbance to the vegetation or to the fauna.

Signs of investigation should not remain after the permit expires. If a specific project cannot be finished within the allowed time period, an extension should be sought that authorizes the continued presence of any object in the Area.

### *7.4. Location of field camps*

The Parties that utilize the Area will normally have Primavera Base available for lodging. Only tents shall be installed, with the purpose of housing instrumentation or scientific material, or for employees as a base for observation.

### *7.5. Restriction on material and organisms which may be brought into the Area*

No living animals or plant material shall be deliberately introduced into the Area.

No uncooked poultry 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 the knowledge of other researchers.

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.

### *7.6. Taking or harmful interference with native flora and fauna*

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

Information on taking or harmful interference will be exchanged through the System of Information Exchange of the Antarctic Treaty, and its record should be incorporated, at the least, into the *Antarctic Master Directory* or, in Argentina, into the *National Antarctic Data Centre*. The researchers that take samples of any kind will show that they are familiar with previous collections to minimize the risk of possible duplication.

### *7.7. Collection or removal of anything 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.

*7.8. Disposal of waste*

Any non-physiological waste shall be removed from the Area. Residual waters and domestic residual liquids 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 until it is removed. Said storage should be carried out in compliance with Annex III to the Madrid Protocol, marked as trash, and appropriately closed to avoid accidental losses.

*7.9. Measures that may be necessary to ensure that the aims and objectives of the Management Plan continue to be met*

Permits may be granted to enter the Area 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 markings 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. All signs and structures should be removed when, or before, the permit expires. If a specific project cannot be finished within the allowed time period, an extension should be solicited to leave objects in the Area.

*7.10. Requirements for reports*

The main permit holder, for each permit and once the activity has finished, shall submit a report of the activities conducted in the Area, using the format previously turned in together 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 rest of the 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, COMNAP, so as to provide necessary information of human activities in the Area to ensure adequate management.

## II. Measures

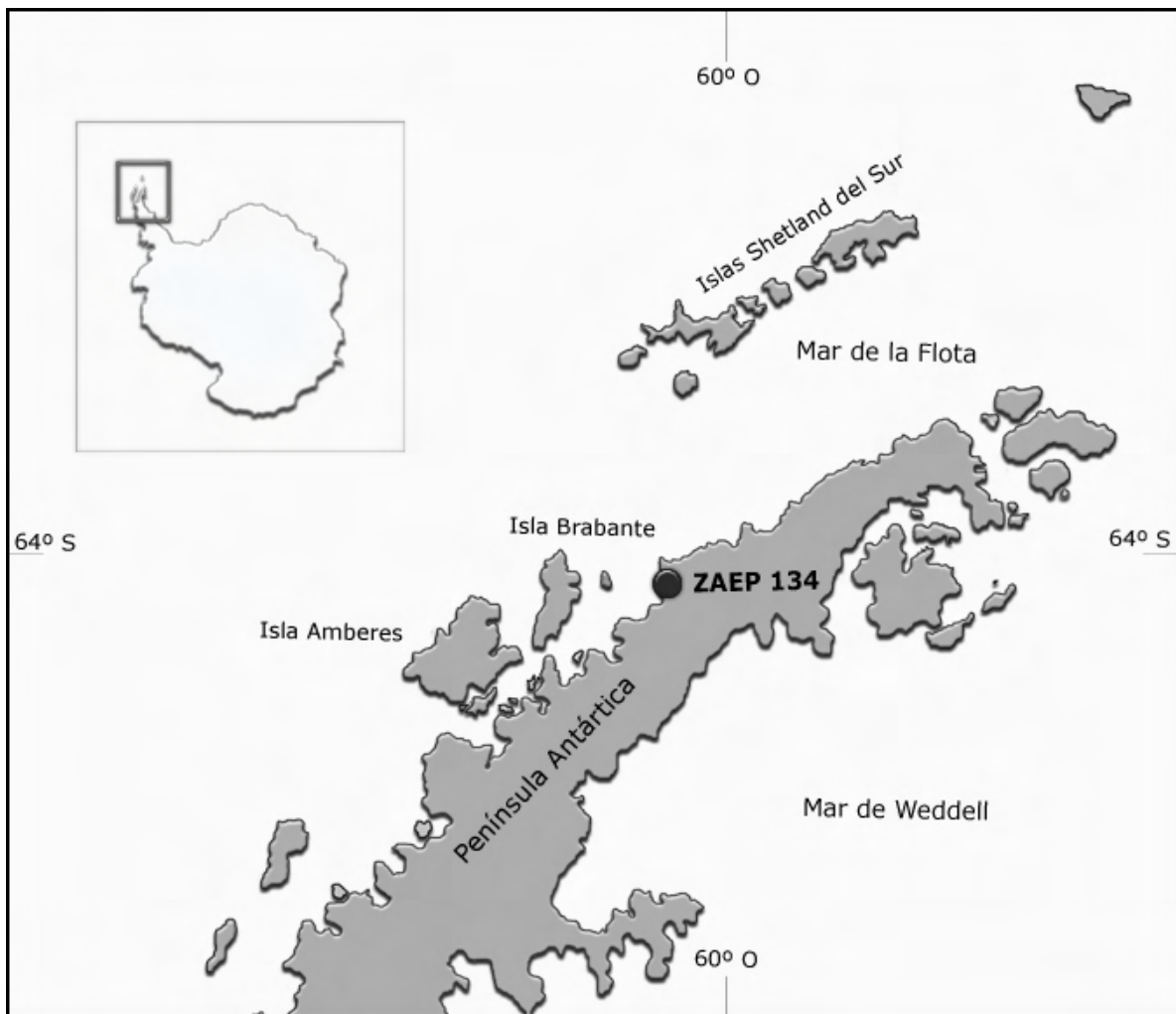


Figure 1: General location of Antarctic Specially Protected Area No. 134, Cierva Point and offshore islands, Danco Coast, Antarctic Peninsula.

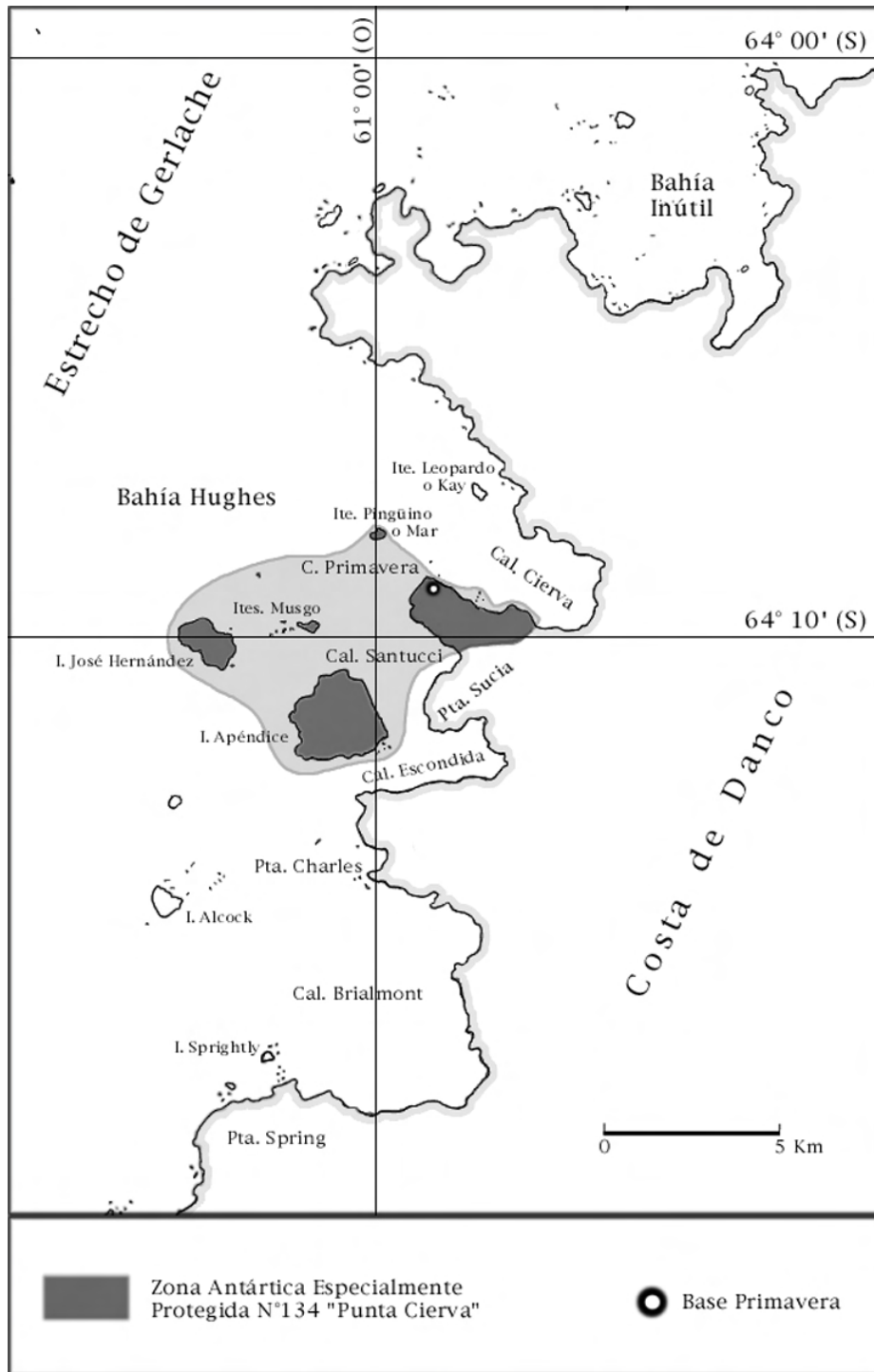


Figure 2: Antarctic Specially Protected Area No. 134, Cierva Point and offshore islands, Danco Coast, Antarctic Peninsula. In shading, the group of areas that make up ASPA 134 (the subtidal marine environment between the continental and insular portions is not included in the ASPA).

## II. Measures

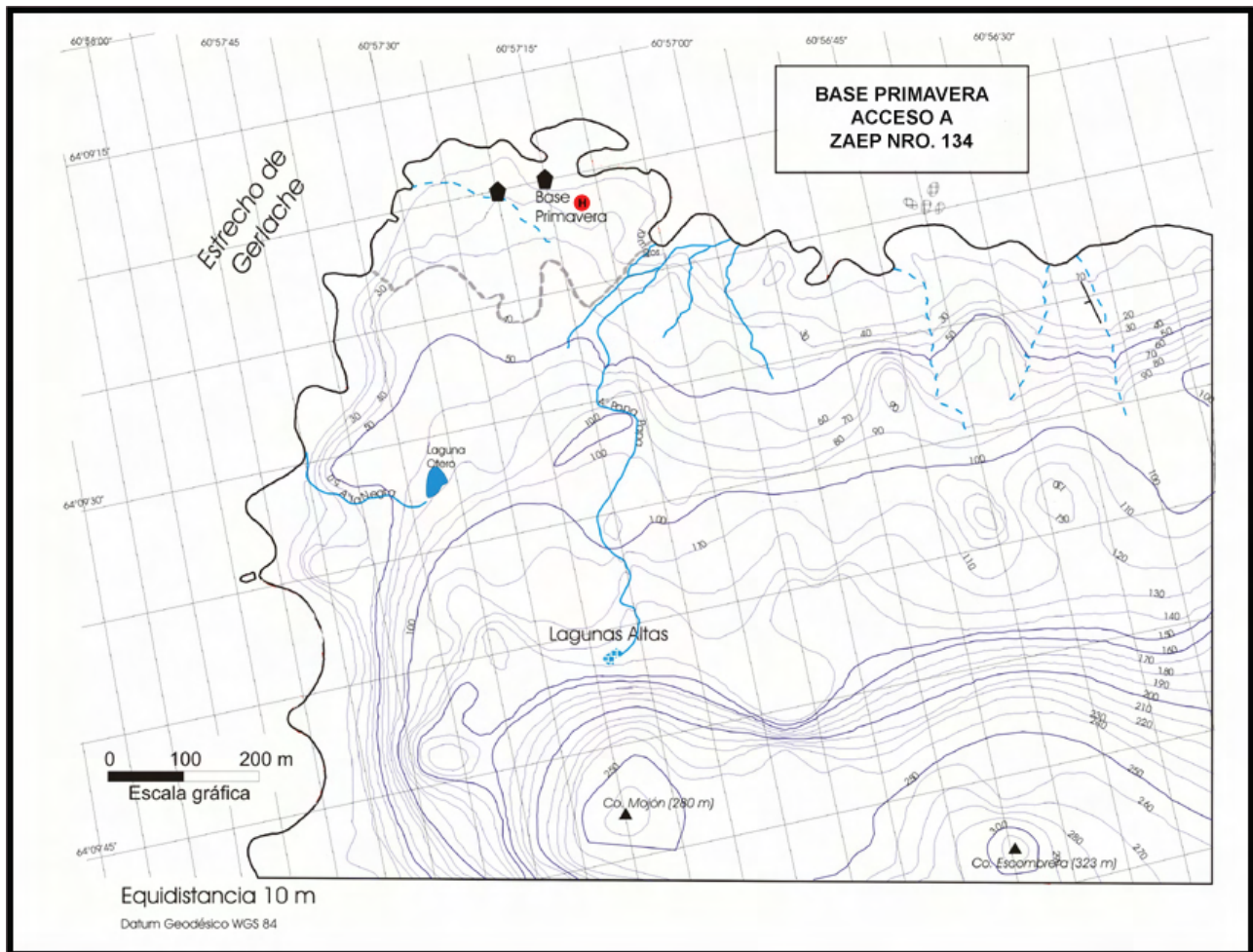


Figure 3: Area of Cierva Point that includes Primavera Base (the grey pointed line above the 40 m contour line indicates the base area, excluded from ASPA No.134).

**ASPA No. 139 Management Plan (Biscoe Point)**

# Management Plan for

## Antarctic Specially Protected Area (ASPA) No. 139

### BISCOE POINT, ANVERS ISLAND, PALMER ARCHIPELAGO

(64° 48' S, 63° 47' W)

#### Introduction

The Biscoe Point Antarctic Specially Protected Area is located near the south-west coast of Anvers Island, in the Palmer Archipelago, Antarctic Peninsula, at 64°48'40"S, 63°46'27"W. Approximate area: 0.63 km<sup>2</sup>. The primary reason for the designation of the Area is its extensive vegetation communities, soils and terrestrial ecology. The Area contains the most extensive stands of Antarctic hair grass (*Deschampsia antarctica*) and Antarctic pearlwort (*Colobanthus quitensis*) in the Anvers Island region, as well as numerous species of mosses and lichens. The Area is a breeding site for several bird species, including Adélie (*Pygoscelis adeliae*) and Gentoo (*Pygoscelis papua*) penguins, Brown (*Catharacta loennbergi*), South Polar (*C. maccormicki*) and hybrid skuas, which have been the subject of long-term monitoring and ecological research. Furthermore, the long history of protection of the Area makes it a valuable reference site for comparative studies and long-term monitoring. The Area was proposed by the United States of America and adopted through Recommendation XII-8 [1985, Site of Special Scientific Interest (SSSI) No. 20]; date of expiry was extended by Resolution 3 (1996) and through Measure 2 (2000); and the Area was renamed and renumbered through Decision 1 (2002). The boundary of the Area was revised through Measure 2 (2004) to remove its marine component, and following the collapse of the ice ramp joining the island to Anvers Island. The boundaries of the Area have not been changed in the current management plan.

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

Biscoe Point (64°48'47"S, 63°47'41"W), 0.63 km<sup>2</sup>, Anvers Island, Palmer Archipelago, Antarctic Peninsula, was originally designated as a Site of Special Scientific Interest through Recommendation XIII-8 (1985, SSSI No. 20) after a proposal by the United States of America. It was designated on the grounds that the "Site contains a large (approximately 5000 m<sup>2</sup>) but discontinuous stand of the two native vascular plants, Antarctic hair grass (*Deschampsia antarctica*) and, less commonly, Antarctic pearlwort (*Colobanthus quitensis*). A relatively well developed loam occurs beneath closed swards of the grass and contains a rich biota, including the apterous midge *Belgica antarctica*. Long-term research programs could be jeopardised by interference from nearby Palmer Station and from tourist ships."

The present management plan reaffirms the exceptional ecological and scientific values associated with the rich flora and invertebrate fauna within the Area. In addition, it is noted that the first observation of *C. quitensis* growing south of 60°S was made at Biscoe Point, reported by Jean-Baptiste Charcot from the Expédition Antarctiques Française in 1903-05. The island on which Biscoe Point lies contains the most extensive communities of *D. antarctica* and *C. quitensis* in the Anvers Island vicinity, and they are of unusual abundance for this latitude. The abundance is much greater than previously described, with almost half of the island of Biscoe Point, and much of the ice-free area of the peninsula to the north, possessing significant stands of vegetation. The communities extend over a large proportion of the available ice-free ground, with a discontinuous cover of *D. antarctica*, *C. quitensis* and bryophytes and lichens of several species varying in density over an area of approximately 250,000 m<sup>2</sup>. One stand of mosses in the prominent valley on the northern side of the main island extends almost continuously for 150 m along the valley floor, covering an area of approximately 6500 m<sup>2</sup>. Individual, near-continuous stands of *D. antarctica* and *C. quitensis* reach a similar size, both on the main island and, to a lesser extent, on the promontory to the north.

Several plant community studies were in progress when the Area was designated in 1985. Although these studies were discontinued soon after site designation, botanical research at the site has continued. For example, *D. antarctica* and *C. quitensis* seeds have been collected from Biscoe Point for plant studies examining the influence of climate change and enhanced UV-B radiation (Day, pers. comm. 1999). Biscoe Point was valuable for these studies because of the amount and quality of seeds available within the Area. Cores containing plant material and soils have been collected within the Area to investigate carbon and nitrogen fluxes within the ecosystem and to evaluate the influence of increased temperature and precipitation on the ecosystem (Park *et al.*, 2007, Day *et al.*, 2009). In addition, Biscoe Point is one of the few low-lying vegetated sites that has not yet been substantially damaged by Antarctic fur seals, and as such the Area has been identified as a potential control site for assessing Antarctic fur seal impacts on vegetation and soils in this region.



Biscoe Point is also valuable for ornithological research. Research into seabird ecology and long-term monitoring studies are being conducted on Adélie (*Pygoscelis adeliae*) and Gentoo (*Pygoscelis papua*) penguin colonies, as well as Brown (*Catharacta loennbergi*) and hybrid skuas (Patterson-Fraser, pers. comm., 2010). The Gentoo colony became established at Biscoe Point some time around 1992 and, as a recently founded colony, is of particular value for monitoring long-term ecological changes to the local bird population structure and dynamics (Fraser, pers. comm., 1999). The Adélie colony is valuable for long-term monitoring and comparison with other colonies in Arthur Harbor that are subjected to higher levels of human influence. In this respect, the fact that the Area has been protected from significant human use, and that use allowed has been regulated by permit, for such a long period of time is of particular value. The Adélie colony is one of the oldest in the southern Anvers Island region (more than 700 years), and as such is valuable for paleoecological studies. The site is also the only site in the region where Brown (*Catharacta loennbergi*), south polar (*C. maccormicki*) and hybrid skuas are known to occur annually.

Until recently, Biscoe Point was on a peninsula joined to Anvers Island by an ice ramp extending from the adjacent glacier. The ice ramp disappeared as the glacier retreated, and a narrow channel now separates Anvers Island from the island on which Biscoe Point lies. The original boundary of the Area was of geometric shape and extended to include a separate ice-free promontory 300 m to the north of this island, and also included the intervening marine environment. The Area is now defined to include all land above the low tide water level of the main island on which Biscoe Point is situated (0.53 km<sup>2</sup>), all offshore islets and rocks within 100 m of the shore of the main island, and most of the predominantly ice-free promontory 300 m to the north (0.1 km<sup>2</sup>). The marine component has now been excluded from the Area because of the lack of information on its values. The Area in total is now approximately 0.63 km<sup>2</sup>.

In summary, the Area at Biscoe Point therefore has high value for its outstanding:

- examples of vegetation communities, soils and associated terrestrial ecology;
- ornithological interest, with several of the resident breeding bird species and associated paleoecological features possessing unusual properties, and which are the subject of long-term studies; and
- utility as a reference site for comparative studies and monitoring.

In order to protect the values of the Area, it is important that visitation continue to remain low and be carefully managed.

## **2. Aims and Objectives**

### **Management at Biscoe Point aims to:**

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance and sampling in the Area;
- allow scientific research on the ecosystem and physical environment associated with the values for which the Area is protected, while ensuring protection from over-sampling;
- allow other scientific research within the Area provided it is for compelling reasons which cannot be served elsewhere and provided it will not compromise the values for which the Area is protected;
- minimize the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes in support of the aims of the management plan.

## **3. Management activities**

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

- Signs showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently, and copies of this management plan, including maps of the Area, shall be made available at Palmer Station (US) on Anvers Island and at Yelcho Station (Chile) on Doumer Island.
- Markers, signs or other structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition, and removed when no longer necessary.
- Visits shall be made as necessary (at least once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.

## **4. Period of designation**

Designated for an indefinite period.

## **5. Maps and photographs**



Map 1: ASPA No. 139 Biscoe Point, in The context of ASMA No. 7 SW Anvers Island and Palmer Basin, showing the location of nearby stations (Palmer Station, US; Yelcho Station, Chile; and Port Lockroy, UK), and the location of nearby protected areas. Projection Lambert Conformal Conic: Standard parallels: 1st 64° 45' S; 2nd 65° 00' S; Central Meridian: 64° 06' W; Latitude of Origin: 63° 45' S, Spheroid WGS84, Data source SCAR Antarctic Digital Database V4.1. Inset: the location of Anvers Island and the Palmer Archipelago in relation to the Antarctic Peninsula.

Map 2: ASPA No. 139 Biscoe Point: Physical features, boundaries and access guidelines. Map specifications: Projection: Lambert Conformal Conic: Standard parallels: 1st 64° 48' S; 2nd 64° 50' S; Central Meridian: 63° 46' W; Latitude of Origin: 63° 48' S; Spheroid: WGS84; Vertical datum: mean sea level; Horizontal Datum: USGS BIS1 (1999); Contour interval: 5 m. The coastline of the island on which Biscoe Point lies is derived from USGS digital orthophotography with a horizontal and vertical accuracy of  $\pm 2$  m (Sanchez and Fraser, 2001). The peninsula to the north of Biscoe Point, several offshore islands and Anvers Island are beyond the limits of this orthophotograph. These features are digitized from an orthophotograph covering the wider area (ERA, 2010) and are estimated as accurate to  $\pm 1$  m.

Map 3: Biscoe Point, ASPA No. 139: Penguin colonies, approximate vegetation extent, and known contaminated sites. Map specifications as for Map 2.

## 6. Description of the Area

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

#### *General description*

Biscoe Point (64°48'47" S, 63°47'41" W) is at the western extremity of a small island (0.53 km<sup>2</sup>), located close to the southern coast of Anvers Island (2700 km<sup>2</sup>) about 6 km south of Mount William (1515 m), in the region west of the Antarctic Peninsula known as the Palmer Archipelago (Map 1). Until recently, this island was joined to Anvers Island by an ice ramp extending from the adjacent southward-flowing glacier, and many maps (now incorrectly) show Biscoe Point as lying on a peninsula. A narrow, permanent, marine channel of approximately 50 m in width now separates the island on which Biscoe Point lies from Anvers Island. This mostly ice-free island lies south-east of Biscoe Bay and to the north of Bismarck Strait. A smaller extent of mostly ice-free land about 300 m to the north remains joined as a peninsula to Anvers Island by an ice ramp.

The island on which Biscoe Point lies is approximately 1.8 km long in an east-west direction and of up to about 450 m in width (Map 2). Topography consists of a series of low-lying hills, with the main east-west oriented ridge rising to a maximum altitude of about 24 m. A small ice cap (0.03 km<sup>2</sup>) previously rising to 12 m at the eastern end of the island no longer exists and has wasted to a series of small snow patches. The coastline is irregular and generally rocky, studded by offshore islets and rocks, and pitted by numerous bays. A number of the more sheltered bays harbor gentle and accessible gravel beaches. The unnamed promontory to the north is approximately 750 m in length (east-west) by 150 m wide and is of similar character, although of lower topography.

Palmer Station (US) is located 13.8 km north-west of the Area at Arthur Harbor, Yelcho Station (Chile) is located approximately 12 km to the southeast at Doumer Island, while 'Base A' (UK, Historic Site No. 61) is located at Port Lockroy, Goudier Island (off Wiencke Island) approximately 13 km to the east (Map 1).

#### *Boundaries*

The original boundary of the Area was of geometric shape to include the land associated with Biscoe Point, the separate ice-free promontory 300 m to the north, and also the intervening islands and marine environment. A recent detailed review revealed little information to substantiate special values associated with the local marine environment. The marine area is not the subject of current or planned scientific studies, nor is it being subjected to specific pressures or threats requiring management. For these reasons, the boundary has been revised to exclude the marine environment. The Area is now defined to include all land above the low tide water level of the main island on which Biscoe Point is situated (0.53 km<sup>2</sup>), all offshore islets and rocks within 100 m of the shore of this main island, and most of the predominantly ice-free promontory 300 m to the north (0.1 km<sup>2</sup>) (Map 2). The landward (eastern) boundary on the northern promontory bisects the peninsula at the point where it protrudes from Anvers Island, distinguished by a small bay cutting into the glacier in the south and a similar, although less pronounced, coastline feature in the north. The total area including the main island and the northern promontory is approximately 0.63 km<sup>2</sup>.

#### *Climate*

No meteorological data are available for Biscoe Point, although data are available for Palmer Station (US), where conditions are expected to be broadly similar. Monthly air temperature averages recorded for Palmer Station over a 22-year period range from -7.8°C in August (the coldest month) to 2.5°C in January (the warmest) (Baker, 1996). The minimum recorded temperature is -31°C and the maximum is 9°C, while the annual mean is -2.3°C. During the same period, the average annual precipitation was 75cm and snowfall averaged 387 cm. Storms and precipitation at Palmer

Station are frequent, with winds being persistent but generally light to moderate in strength, prevailing from the north-east. Cloud cover is frequently extensive, often with a ceiling of less than 300 m. While these broad patterns are expected to be reflected at Biscoe Point, the Area is in a more exposed position that is open to weather particularly from the west and south, which may result in some minor climatic differences.

#### *Geology and Soils*

Specific descriptions are not available of the geology of island on which Biscoe Point lies, or of the peninsula to the north. However, the bedrock appears to be composed mainly of gabbros and adamellites of Late Cretaceous to Early Tertiary age belonging to the Andean Intrusive Suite, which dominate the composition of southeastern Anvers Island (Hooper, 1958). Gabbro is a dark, coarse-grained plutonic rock that is mineralogically similar to basalt, and which is composed mainly of calcium-rich plagioclase feldspar and pyroxene. Adamellite is a granitic rock composed of 10-50% quartz and which contains plagioclase feldspar. A fine mineral soil is present on the gentle terrain, although precise soil characteristics have yet to be described. A relatively well-developed, loamy soil is associated with the closed swards of *Deschampsia*. Cores extracted in the south of the island, close to the Adélie penguin colony, consisted of an organic horizon, overlying a sandy loam glacial drift or bedrock (Day *et al.* 2009).

#### *Freshwater Habitat*

A number of small seasonal streams and ponds are present on the island on which Biscoe Point lies, although they have not been scientifically described. A small pond (perhaps the largest, at approximately 30 m x 8 m) and stream occur in a valley on the southern side of the principal ridge of the island, 50 m NE of the southern small boat landing site (Map 2). The presence of a long rubber hose suggests that at one time visitors may have collected fresh water from this site. The hose was removed in 2009-10 and disposed of at Palmer Station. Another freshwater pond of similar size (approximately 25 m x 6 m) is found in the prominent east-west trending valley on the northern side of the island. A small associated stream drains this pond to the west. The freshwater environment has thus far escaped significant disturbance from seals. Information on the hydrology of the separate promontory to the north is not available.

#### *Vegetation*

The most significant aspect of the vegetation at Biscoe Point is the abundance and reproductive success of the two native Antarctic flowering plants, the Antarctic hair grass *Deschampsia antarctica* and Antarctic pearlwort *Colobanthus quitensis*. The communities of *D. antarctica* and *C. quitensis* at Biscoe Point are the most extensive in the Anvers Island vicinity and are considered particularly abundant for such a southerly location (Greene and Holtom 1971; Komárková 1983, 1984; Komárková, Poncet and Poncet 1985). The first observation of *C. quitensis* growing south of 60°S was made near Biscoe Point, recorded (as *C. crassifolius*) by the biologist Turquet on Jean-Baptiste Charcot's Expédition Antarctiques Française (1903-05). More recently, seeds from both flowering plants within the Area have been collected for propagation in studies on the effects of climate change and UV-B exposure on these species being conducted out of Palmer Station (Day, pers. comm., 1999; Xiong, 2000). In January 2004, cores of plant material and soils were collected from Biscoe Point and were used in multi-year experiments into the tundra ecosystem. The cores were used in combination with precipitation and surface runoff samples to measure pools and fluxes of carbon and nitrogen within the Biscoe Point ecosystem and to evaluate the role of nitrogen inputs from the nearby penguin colony (Park *et al.*, 2007). Cores were also used in climate manipulation experiments at Palmer Station, which investigated the influence of increased temperature and precipitation on plant productivity and the abundance of the springtail *Cryptopygus* (Day *et al.*, 2009).

The abundance of *D. antarctica* and *C. quitensis* is much greater than previously described, and almost half of the island on which Biscoe Point lies, and much of the ice-free area of the peninsula to the north, possess significant stands of these species and a wide range of bryophytes and lichens. The approximate distribution of the most substantial stands of vegetation on the main island has been estimated from air and ground photography (Map 3). The distribution illustrated in Map 3 is intended as a general guide to the main areas of vegetation cover, rather than as a definitive description, and is not based on a precise ground survey. However, it does serve to indicate the scale of the vegetated communities, which comprise a discontinuous cover of varied composition and density over an area of approximately 250,000 m<sup>2</sup>. Komárková (1983) noted a discontinuous stand of *D. antarctica* and *C. quitensis* reaching approximately 5000 m<sup>2</sup> on the main island. One particularly extensive stand of mosses in the principal valley on the northern side of the main island extends almost continuously for 240 m along the valley floor, occupying an area of approximately 8000 m<sup>2</sup> (Harris, 2001). Stands of lesser extent are present elsewhere on the island and on the separate promontory 300 m to the north. Colonization has been observed occurring on recently deglaciated material.

Mosses tend to dominate on valley floors, close to streams and ponds, and in moist depressions. Mosses specifically recorded at Biscoe Point include *Bryum pseudotriquetrum* and *Sanionia uncinata* (Park *et al.*, 2007). On valley sides, mixed communities of moss and *C. quitensis* are frequent on lower north-facing slopes, with an increasing prevalence of *D. antarctica* with elevation. Mixed *D. antarctica* and *C. quitensis* communities are particularly prolific on northern slopes between 10-20 m, while *D. antarctica* tends to be more frequent on the higher exposed sites above 20 m. Mosses and lichens are frequently co-dominants or subordinate taxa. In some habitats *C. quitensis* may occur in small patches

alone. Plant communities are commonly found on snow-free benches below the ridgelines on which Adélie (*Pygoscelis adeliae*) and Gentoo (*Pygoscelis papua*) penguins nest (Park and Day, 2007). Patches of dead vascular plants of up to 20 m<sup>2</sup> have been observed within the Area, believed to result from the effects of desiccation, flooding and frost during some summers (Komárková, Poncet and Poncet 1985).

Unlike many other low-lying coastal sites in the region, the vegetation at Biscoe Point does not appear to have been severely affected by the recent substantial increase in numbers of Antarctic fur seals (*Arctocephalus gazella*). As such, the Area has been identified as a potential control site for assessing Antarctic fur seal impacts on vegetation and soil (Day, pers. comm., 1999).

#### *Invertebrates, Bacteria and Fungi*

The apterous midge *Belgica antarctica* has been observed associated with the well-developed loam and closed swards of grass. Cores collected at Biscoe Point contained several species of microarthropod, including several species or genera of Acrai, one species of Diptera and three species of Collembola. The springtail *Cryptopygus antarcticus* was the most abundant microarthropod (Day *et al.*, 2009) No further information is available on the invertebrate assemblages in the Area, although in view of the well-developed plant communities a rich invertebrate fauna might be expected. There is no information available on local bacterial or fungal communities.

#### *Breeding Birds and Mammals*

At least six species of birds breed on the island on which Biscoe Point lies. The most numerous colony is of Adélie penguins (*Pygoscelis adeliae*), located on the ridge of a promontory on the south side of the island, above a narrow cove on the southern coast (Map 3). A Gentoo penguin (*Pygoscelis papua*) colony was discovered on slopes on the northern side of this cove, on the southern side of the main island ridge, in 1992-93 (Fraser, pers. comm., 1999) (Map 3) and Gentoo numbers have increased significantly in recent years with 2401 breeding pairs in the 2009-10 season (Patterson-Fraser, pers. comm., 2010). Data on numbers of breeding pairs are presented in Table 1.

**Table 1.** Numbers of breeding Adélie (*Pygoscelis adeliae*) and Gentoo (*Pygoscelis papua*) penguins on the island on which Biscoe Point lies 1971-2002.

Year	<i>Pygoscelis adeliae</i>			<i>Pygoscelis papua</i>		
	Breeding pairs	Count type <sup>1</sup>	Source	Breeding pairs	Count type <sup>1</sup>	Source
1971-72	3020	N3	2	0	N3	2
1983-84	3440	C3	3	0	C3	3
1984-85	2754	N1	3	0	N1	3
1986-87	3000	N4	4			
...						
1994-95				14	N1	5
1995-96				33	N1	5
1996-97	1801	N1	5	45	N1	5
1997-98				56	N1	5
1998-99				26	N1	5
1999-2000	1665	N1	5	149	N1	5
2000-01	1335	N1	5	296	N1	5
2001-02	692	N1	5	288	N1	5
2002-03	1025	N1	5	639	N1	5
2009-10	594	N1	6	2401	N1	6

1. N = Nest, C = Chick, A = Adults; 1 = < ± 5%, 2 = ± 5-10%, 3 = ± 10-15%, 4 = ± 25-50% (classification after Woehler, 1993)
2. Müller-Schwarze and Müller-Schwarze, 1975
3. Parmelee and Parmelee, 1987
4. Poncet and Poncet 1987 (note: the number of 3500 given in Woehler (1993) appears to be in error).
5. Fraser data supplied February 2003, based on multiple published and unpublished sources.
6. Patterson-Fraser data supplied March 2010 based on census at time of peak egg presence.

The Adélie colonies are some of the oldest in the region (more than 700 years), and have been the subject of paleoecological studies (Emslie, 2001), while the Gentoo colony is considered particularly interesting because it has been recently established (Fraser, pers. comm., 1999). Long-term studies are being conducted on the population structure and dynamics of the penguin colonies within the Area, which make a useful comparison with other colonies in Arthur Harbor that are subjected to higher levels of human influence (Fraser, pers. comm., 1999). The number of Adélie breeding pairs at Biscoe Point has declined from a high of around 3000-3500 in the 1980s to less than 600 in the most recent count made in 2009-10 (Patterson-Fraser pers. comm. 2010).

South Polar skuas (*Catharacta maccormicki*) and Brown skuas (*C. loennbergi*) breed within the Area annually, and hybrids also occur. On the island on which Biscoe Point lies, 132 pairs of South Polar skuas and one pair of Brown skuas were counted on 26-27 February 2001 (Harris, 2001). Concurrently, 15 pairs of South Polar skuas, usually with one or two chicks, were counted on the promontory 300 m to the north. Kelp gulls (*Larus dominicanus*) and Antarctic terns (*Sterna vittata*) breed within the Area (Fraser, pers. comm., 2000), although data on numbers are not available. Information on other bird species that breed within the Area, or that transiently visit, is not available.

Small numbers of non-breeding Antarctic Fur seals (*Arctocephalus gazella*) (several counted on the island in late-February 2001 – Harris, 2001), Weddell seals (*Leptonychotes weddellii*) and Southern Elephant seals (*Mirounga leonina*) have been observed on beaches in summer. Despite the presence of beaches and terrain suitable for haul-out, relatively few seals are typically observed within the Area. This may be a result of the observed frequent persistence of dense brash ice originating from glaciers calving from nearby Anvers Island (Fraser, pers. comm., 1999). Further information on numbers and breeding status, or on other seal species, is not available. No information is available on the local marine environment.

#### *Human Activities and Impact*

Human activity within the Area appears to have been minimal, but few details have been recorded. The first documented human activity in the vicinity of Biscoe Point occurred over 150 years ago, when John Biscoe, Royal Navy, entered the bay now named after him on 21 February 1832. Biscoe recorded a landing on Anvers Island, probably near Biscoe Point, to take formal possession for the United Kingdom of what he believed to be part of the mainland of Antarctica (Hattersley-Smith, 1991). The next recorded visit to Biscoe Point was in 1903-05, when Turquet made observations of *C. quitensis* at the site on the Première Expédition Antarctiques Française led by Charcot.

More recently, formal plots for plant studies were established on the island near Biscoe Point in 1982 (Komárková, 1983), although the long-term research originally planned was discontinued soon thereafter. Komárková used welding rods inserted into the soil to mark study sites. A partial survey accurately mapped the positions ( $\pm 2$  m) of 44 welding rods found in soils and vegetation during a systematic search made on the northeastern side of the island in February 2001 (Map 3) (Harris, 2001). The rods were located in an area of some of the richest vegetation on the island, and distributed over an area of at least 8000 m<sup>2</sup>. In general, they had been inserted into soil or vegetation with chemically coated ends downwards. Contaminants from the rods appeared to kill all vegetation up to 20 cm from where the rods lay. Numerous rods have been found in previous seasons, possibly numbering in the hundreds (Fraser, Patterson, Day: pers. comms., 1999-2002). Additional welding rods were found on and near the beach during the 2009-10 season, which were collected and disposed of at Palmer Station (Patterson-Fraser, pers. comm., 2010). The Area is not considered suitable as a reference site for measuring chemical contamination, because there remains uncertainty over contaminant types and concentrations, which sites have been affected, and the extent to which contaminants may have moved through soil, water and biological systems.

Fraser (pers. comm., 2001) also reported markers made of lead present in the Gentoo colony. In addition, seaborne litter (mostly wood) may be found on beaches, and there remains a rubber hose (15 m long, ~15 cm diameter) in a small valley near the southern small boat landing site, which may once have been used for water supply purposes.

Recent scientific studies within the Area have focused on monitoring the breeding status of penguins and skuas. The Area has also been used for the collection of seeds of *Deschampsia* and *Colobanthus* and cores of soil and plant material for ecological research in the Palmer Station region. Permits have been required to visit the Area since the site was specially protected in 1985.

#### *6(ii) Access to the Area*

Access to the Area may be made by small boat, by aircraft or across sea ice by vehicle or on foot. The seasonal cycle of sea ice formation in the Palmer area is highly variable, with sea ice formation beginning between March and May. For the period 1979 to 2004, the seasonal duration of sea ice in the Palmer area varied between five and 12 months (Stammerjohn *et al.*, 2008).

Aircraft access restrictions to the Area apply for the period 01 October to 15 April inclusive. During this time, helicopters may land at either of the two designated landing sites (Map 2). Landing site (A) is located on the northern coast of the main island on which Biscoe Point lies (64°48'35" S, 63°46'49" W). Landing site (B) is situated on the promontory 300 m north of the main island and is on the permanent snow slope approximately 50-100 m east of the ice-free ground (64°48'22" S, 63°46'24" W). Helicopter access to the Area should be within the Helicopter Access Zone. The zone allows helicopter access from two main directions: from the north and west, from the region of Biscoe Bay towards landing site (A) and from the north and east, across the Anvers Island coastline towards landing site (B).

When access to the Area is made by sea, two landing sites are recommended although small boats may land anywhere within the Area. The first recommended landing site is located on the southern coast of the island, on the beach on the northern shore of the elongated cove (Map 2) and is the site most likely to be free of sea ice. The second recommended landing site is on the beach in the small cove mid-way along the northern coast of the island and is adjacent to the

designated camp and helicopter landing sites. Dense brash ice is frequently found in the vicinity of the island and originates from calving glaciers on Anvers Island.

When sea ice conditions allow, the Area may be accessed over sea ice on foot or by vehicle. However, movement within the Area is by foot only and vehicles may not be taken onto land within the Area. Persons entering the Area may not move beyond the immediate vicinity of their landing site unless specifically authorised by Permit.

*6(iii) Restricted and managed zones within the Area*

A Helicopter Access Zone (Maps 2 and 3) has been defined within the Management Plan for Antarctic Specially Managed Area No. 7, which applies to aircraft accessing the designated landing sites within the Area. The Helicopter Access Zone extends in northwesterly and northeasterly directions from the designated landing sites out to a distance of 2000 feet (610 m) from the edges of known bird colony breeding locations within the Area.

*6(iv) Structures within and near the Area*

No structures or instruments are known to be present within the Area. A permanent survey marker, consisting of a 5/8" stainless steel threaded rod, was installed on the island on which Biscoe Point lies by the USGS on 31 January 1999. The marker is located at 64°48'40.12"S, 63°46'26.42"W at an elevation of 23 m (Maps 2 & 3). It is sited approximately midway along the principal ridgeline of the island, about 100 m north of the southern small boat landing site. The marker is set in bedrock and marked by a red plastic survey cap.

*6(v) Location of other protected areas within close proximity of the Area*

The nearest protected areas to Biscoe Point are: Litchfield Island (ASPA No. 113) which is 16 km west of the Area in Arthur Harbor; South Bay (ASPA No. 146), which is approximately 12 km to the southeast at Doumer Island; and Eastern Dallmann Bay (ASPA No. 153) which is approximately 85 km to the northeast, adjacent to Brabant Island (Map 1).

**7. Permit conditions**

Entry into 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:

- it is issued for scientific purposes, or for educational purposes that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardize the ecological, scientific, or educational values of the Area;
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with the Management Plan ;
- the Permit, or an copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period.

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

Access to the Area shall be by small boat, by aircraft, or over sea ice by vehicle or on foot.

*Boat access*

The recommended landing sites for small boats are at either of the following locations (Maps 2&3):

- 1) on the beach on the northern shore of the elongated cove on the southern coast of the island, which is the site most likely to be free of sea ice;
- 2) on the beach in the small cove mid-way along the northern coast of the island, adjacent to the designated camp and helicopter landing sites.

Access by small boat at other locations around the coast is allowed, provided this is consistent with the purposes for which a Permit has been granted.



*Aircraft access and overflight*

Restrictions on aircraft operations apply during the period between 01 October and 15 April inclusive, when aircraft shall operate and land within the Area according to strict observance of the following conditions:

- 1) Overflight of the Area below 2000 ft (~610 m) is prohibited outside of the Helicopter Access Zone (Map 2), except when specifically permitted for purposes allowed for by the Management Plan. It is recommended that aircraft maintain a 2000 ft (~610 m) horizontal separation distance from the edges of bird colonies breeding within the Area as shown in Map 2, unless accessing the designated landing sites through the Helicopter Access Zone;
- 2) Helicopter landing is permitted at two designated sites (Map 2), the first (A) on the main island on which Biscoe Point lies, and the second (B) on the separate promontory 300 m further to the north. The landing sites with their coordinates are described as follows:
  - (A) on beach gravels a few meters above sea level 35 m east of the beach on the eastern shore of a small cove on the northern coast of the island (64°48'35" S, 63°46'49" W). A small tidal pool of about 25 m in diameter is located 30 m east of the landing site; and
  - (B) on the lower (western) slopes of a permanent snow / ice ramp extending from Anvers Island towards the northern promontory at a site approximately 50-100 m east of the ice-free ground (64°48'22" S, 63°46'24" W). Care should be exercised on this snow slope, which is likely to be crevassed further towards the east and up-slope on Anvers Island.
- 3) Aircraft landing within the Area should approach within the Helicopter Access Zone to the maximum extent practicable. The Helicopter Access Zone allows access from the north and west, from the region of Biscoe Bay, to landing site (A), and from the north and east to landing site (B) (Map 2). The Helicopter Access Zone extends over the open water between landing sites (A) and (B).
- 4) Use of smoke grenades to indicate wind direction is prohibited within the Area unless absolutely necessary for safety, and any grenades used should be retrieved.

*Vehicle access and use*

When access over sea ice is viable, there are no special restrictions on the locations where such access may be made, although vehicles are prohibited from being taken on land within the Area.

*Foot access and movement within the Area*

Movement on land within the Area shall be on foot. All people in aircraft, boats, or vehicles are prohibited from moving on foot beyond the immediate vicinity of their landing site unless specifically authorised by Permit. Visitors should move carefully so as to minimize disturbance to flora, fauna, and soils, and 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.

*7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place*

- Scientific research that will not jeopardize the ecosystem or values of the Area;
- Essential management activities, including monitoring;
- Activities with educational aims (such as documentary reporting (photographic, audio or written) or the production of educational resources or services) that cannot be served elsewhere.
- The appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

*7(iii) 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 permanent survey markers and signs, permanent structures or installations are prohibited;

All structures, scientific equipment or markers installed in the Area must be authorized by permit 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 of the Area;

Installation (including site selection), maintenance, modification or removal of structures shall be undertaken in a manner that minimizes disturbance to flora and fauna.

Removal of specific 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(iv) Location of field camps*

Temporary camping is allowed within the Area at the designated site located approximately 50 m north-east of helicopter landing site (A), on the northern coast of the main island on which Biscoe Point lies. The camp site is located on beach gravels and rocky ground a few meters above sea level, immediately north of a transient tidal pool, and is separated from the sea further to the north by a low rocky ridge of about 8 m. When necessary for essential purposes specified in the Permit, temporary camping is allowed on the separate peninsula 300 m to the north, although a specific camping site has not been determined. Camping on surfaces with significant vegetation cover is prohibited.

*7(v) Restrictions on materials and organisms which can be brought into the Area*

No living animals, plant material, microorganisms or soils shall be deliberately introduced into the Area, and the precautions listed below shall be taken against accidental introductions;

To help maintain the ecological and scientific values at Biscoe Point visitors shall take special precautions against introductions. Of concern are pathogenic, microbial, invertebrate or plant introductions sourced from other Antarctic sites, including stations, or from regions outside Antarctica. Visitors shall ensure that sampling equipment and markers brought into the Area are clean. To the maximum extent practicable, footwear and other equipment used or brought into the area (including backpacks, carry-bags and tents) shall be thoroughly cleaned before entering the Area;

In view of the presence of breeding birds at Biscoe Point, no poultry products, including products containing uncooked dried eggs, including wastes from such products, shall be released into the Area;

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;

Fuel, food, and other materials are not to be stored in the Area, unless required for essential purposes connected with the activity for which the permit has been granted;

All materials introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of their introduction 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(vi) Taking or harmful interference with native flora or fauna*

Taking or harmful interference of native flora and fauna is prohibited, except in accordance with a separate permit issued under Article 3 of Annex II by the appropriate national authority specifically for that purpose.

*7(vii) Collection or removal of anything 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.

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.

The appropriate national authority should be notified of any items removed from the Area that were not introduced by the permit holder.

*7(viii) Disposal of waste*

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

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

- 1) 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 for protective measures.
- 2) Any specific sites of long-term monitoring shall be appropriately marked.

*7(x) Requirements for reports*

Parties should ensure that the principal holder of each permit issued submit to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form contained in Appendix 4 of Resolution 2 (1998)(CEP I).

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, in sufficient detail to allow 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 maintain a record of usage, to be used both in any review of the Management Plan and in organizing the scientific use of the Area.

The appropriate authority should be notified of any activities/measures undertaken, and / or of any materials released and not removed, that were not included in the authorized permit.

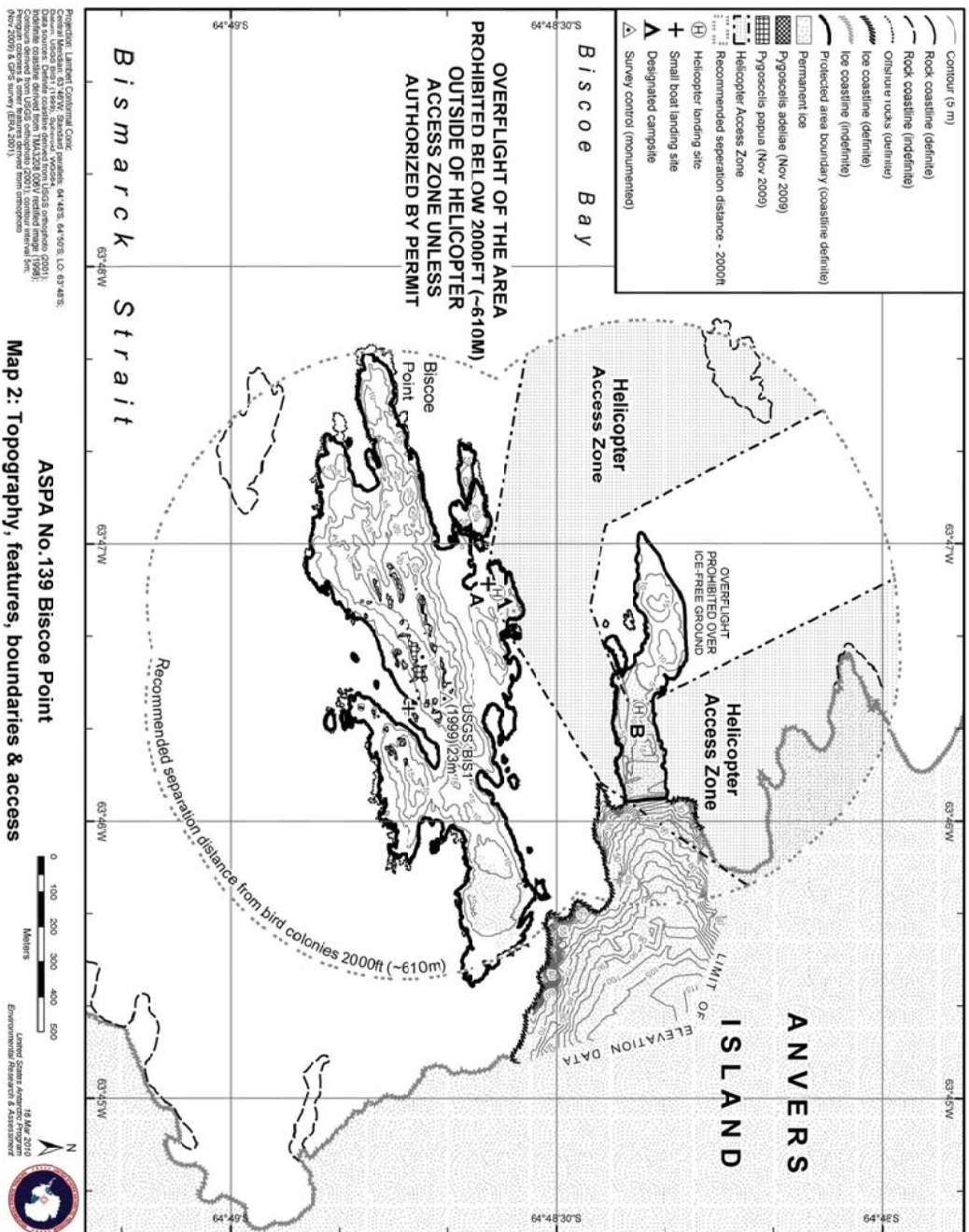
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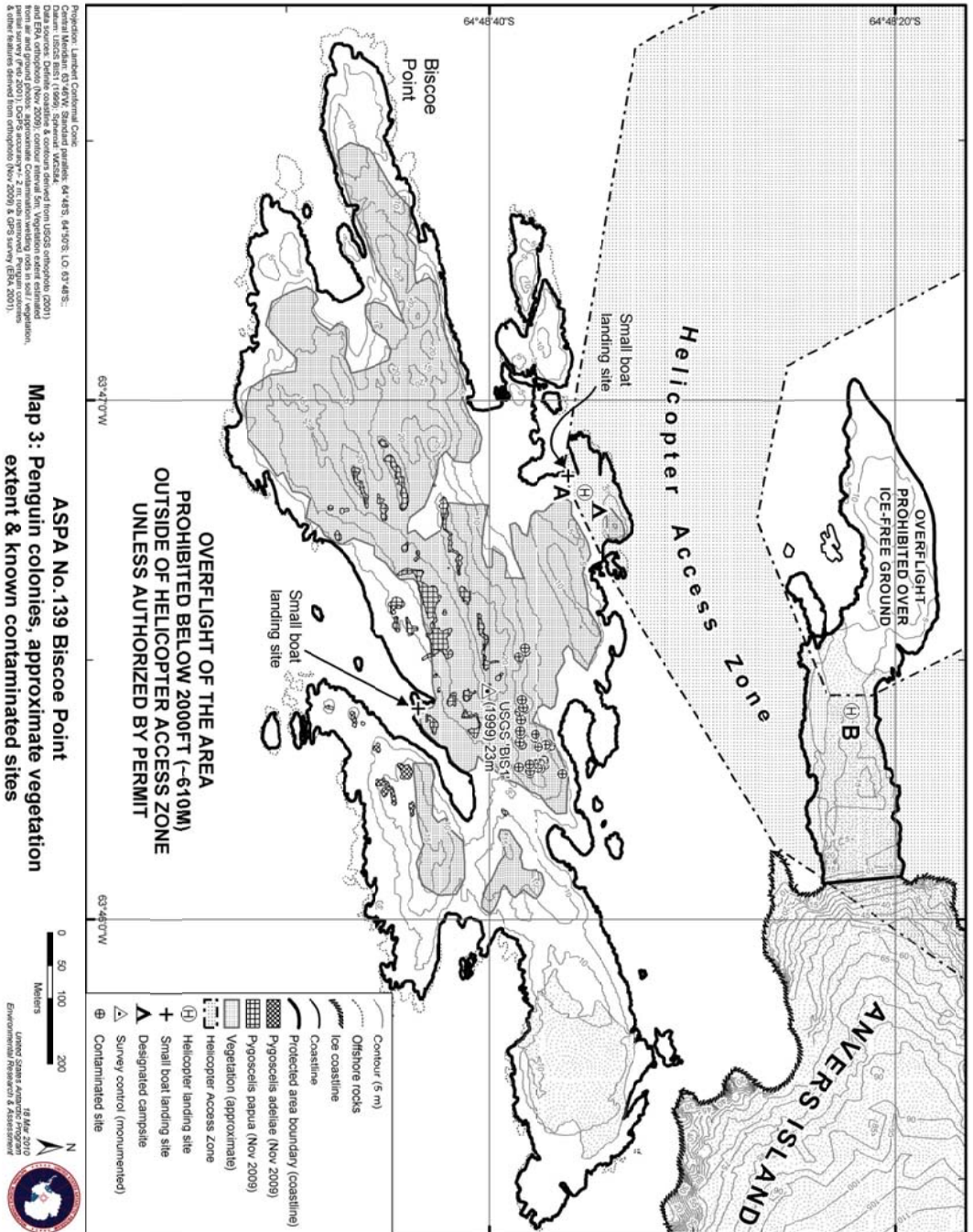


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**ASPA No. 140 Management Plan (Parts of Deception Island)**

# Management Plan for Antarctic Specially Protected Area No. 140

## PARTS OF DECEPTION ISLAND, SOUTH SHETLAND ISLANDS

### Introduction

The primary reason for the designation of Parts of Deception Island, (Lat. 62°57'S, Long. 60°38'W), South Shetland Islands, as an Antarctic Specially Protected Area (ASPAs) is to protect environmental values, predominantly the terrestrial flora within the Area. The flora of the island is unique in Antarctic terms, particularly where associated with these geothermal areas, but also because of the recently formed surfaces that provide known-age habitats for the study of colonisation and other dynamic ecological processes by terrestrial organisms (Smith 1988).

Deception Island is an active volcano. Recent eruptions occurring in 1967, 1969 and 1970 (Baker *et al.* 1975) altered many of the topographical features of the island and created new, and locally transient, surfaces for the colonisation of plants and other terrestrial biota (Collins 1969; Cameron & Benoit 1970; Smith 1984b; c). There are a number of sites of geothermal activity, some with fumaroles (Smellie *et al.* 2002).

Five small Sites around the coast of Port Foster were adopted under Recommendation XIII-8 (ATCM XIII, Brussels, 1985) as Site of Special Scientific Interest No. 21 on the grounds that "*Deception Island is exceptional because of its volcanic activity, having had major eruptions in 1967, 1969 and 1970. Parts of the island were completely destroyed, new areas were created, and others were covered by varying depths of ash. Few areas of the interior were unaffected. The island offers unique opportunities to study colonization processes in an Antarctic environment.*" Protection of the island's botanical values was enhanced through Measure 3 (2005) when the number of Sites of botanical interest included within the ASPA was increased to 11.

ASPAs 140 makes a substantial contribution to the Antarctic protected areas system as it (a) contains a particularly wide diversity of species, (b) is distinct from other areas due to the geothermally-heated ground in some parts of the island which create habitats of great ecological importance unique to the Antarctic Peninsula region, (d) is vulnerable to human interference, in particular, due to highly restricted spatial distribution of many plant species, particularly those associated with heated ground. While ASPA 140 is protected primarily for its outstanding environmental values (specifically its biological diversity) it is also protected for its scientific values (i.e. for terrestrial biology, zoology, geomorphology and geology).

The 11 Sites within the Area (c. 2.4 km<sup>2</sup>) encompass terrestrial and lagoon habitats around geothermally heated ground, areas of rich flora and known-age surfaces created following eruptions of 1967 and 1970 which are potentially useful for recolonisation studies. The Area is considered to be of sufficient size to provide adequate protection of the values identified.

### 1. Description of values to be protected

Following a detailed botanical survey of the island in 2002 (reviewed in 2010), 11 Sites of unique botanical interest were identified. Consequently, the values specified in the original designation were reaffirmed and considerably augmented.

These values are set out as follows:

- The island has the greatest number of rare (i.e. known to grow at a few localities in the Antarctic and often in small quantity) and extremely rare (i.e. known to grow at only one or two localities in the Antarctic) plant species of any site in the Antarctic. Twenty eight of the 54 mosses recorded on the island, four of the eight liverworts and 14 of the ca. 75 lichen are considered to be rare or extremely rare. Annex 1 lists the plant species classed as rare or extremely rare in the Antarctic Treaty area, which occur on Deception Island. These represent 25%, 17% and c. 4% of the total number of mosses, liverworts and lichens, respectively, known from the Antarctic (Aptroot & van der Knaap 1993; Bednarek-Ochyra *et al.* 2000; Ochyra *et al.* 2008; Øvstedal & Lewis Smith 2001). Thirteen species of moss (including two endemics), two species of liverwort and three species of lichen growing on Deception Island have not been recorded elsewhere in the Antarctic. No other site in the Antarctic is comparable. This suggests that there is a significant deposition of immigrant propagules (by wind and seabirds), particularly of southern South American provenance, over the Antarctic, which becomes established only where favourable germinating conditions prevail (e.g. the heat and moisture provided around fumaroles) (Smith 1984b; c). Such sites are unique in the Antarctic Treaty area.
- The more stable geothermal areas, some of which have fumaroles issuing steam and sulphurous gas, have developed bryophyte communities of varying complexity and density, each with a distinct and unique flora. Most of these areas were created during the 1967-70 series of eruptions, but at least one (Mt. Pond) predates that period. Species growing close to active vents are continuously subjected to temperatures between 30 °C to 50 °C, thereby posing important questions regarding their physiological tolerance.
- Areas of volcanic ash, mudflows, scoria and lapilli deposited between 1967 and 1970 provide unique known-age surfaces. These are currently being colonised by vegetation and other terrestrial biota, allowing the dynamics of immigration and colonisation to be monitored. These areas are unstable and subject to wind and water erosion, so exposing some areas to continual surface change and a cycle of recolonisation.
- Kroner Lake, the only intertidal lagoon with hot springs in Antarctica, supports a unique community of brackish-water algae.
- Several sites within the Area, unaffected by ash deposits during the 1967-70 eruptions, support long-established mature communities with diverse vegetation and are typical of the older stable ecosystems on the island.
- The largest known stand of Antarctic pearlwort (*Colobanthus quitensis*), one of only two flowering plants in the Antarctic, is located within the Area. After being virtually eradicated by burial in ash during the 1967 eruption, it has recovered and is now spreading at an unprecedented rate. This correlates with the current trend in regional climate change, particularly increasing temperature.

## **2. Aims and objectives**

Management of the Area aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- allow scientific research in the Area provided it is for compelling reasons which cannot be served elsewhere and which will not jeopardise the natural ecological system in that Area;

- prevent or minimise the introduction to the Area of alien plants, animals and microorganisms;
- ensure that the flora is not adversely affected by excessive sampling within the Area;
- preserve the natural ecosystem of the Area as a reference area for future comparative studies and for monitoring floristic and ecological change, colonisation processes and community development;
- allow visits for management purposes and to resurvey the state of the botanical values for which each Site has been designated, in support of the aims of this Management Plan.

### **3. Management activities**

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

- Visits shall be made as necessary to assess whether the individual Sites continue to serve the purposes for which they were designated and to ensure management and maintenance measures are adequate.
- Markers, signs or other structures (e.g. fences, cairns) erected within the Area for scientific or management purposes shall be secured and maintained in good condition and removed when no longer required.
- In accordance with the requirements of Annex III of the Protocol on Environmental Protection to the Antarctic Treaty, abandoned equipment or materials shall be removed to the maximum extent possible provided doing so does not adversely impact on the environment and the values of the Area.
- A map showing the location of each Site on Deception Island (stating any special restrictions that apply) shall be displayed prominently and a copy of this Management Plan shall be made available at Gabriel de Castilla Station (Spain) and Decepción Station (Argentina). Copies of the Management Plan shall be freely available and carried aboard all vessels planning visits to the island.

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

Designated for an indefinite period.

### **5. Maps**

Figure 1: Antarctic Specially Protected Area No. 140, Deception Island, showing the location of Sites A – L (Scale 1:100 000).

Figures 1a–d: Topographic Maps of Antarctic Specially Protected Area No. 140 showing Sites A- L (Scale 1: 25 000).

### **6. Description of the Area**

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

#### *General Description*

Research by Smith (1984) and Peat *et al.* (2007) described the recognised biogeographical regions present within the Antarctic Peninsula. Antarctica can be divided into three major biological provinces: northern maritime, southern maritime and continental. Deception Island lies within the northern maritime zone (Smith, 1984).



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. Using this model, Deception Island is predominantly Environment Domain G (Antarctic Peninsula off-shore islands geologic), which is described as “*a very small terrestrial environment focused around the Antarctic Peninsula and associated offshore islands such as Deception Island. At 966 km<sup>2</sup> it is by far the smallest environment within the classification. The environment consists entirely of ice-free land cover and contains a combination of three geological units - sedimentary (2%), intrusive (24%), and volcanic (28%). Climatically the environment is the warmest in the classification with an average air temperature of only -3.29°C, has the smallest seasonal range at -8.82°C, and receives the highest level of solar radiation at 10.64 MJ/m<sup>2</sup>/day. The average wind speed within the environment is moderate, at 13.86 m/sec. The environment is moderately sloping with an average slope of 13.41°. Well-known locations the environment covers include parts of ice free areas on South Shetland Islands such as Fildes Peninsula on King George Island, and small points on the Antarctic Peninsula along Davis Coast.*” The scarcity of Environment Domain G, relative to the other environmental domain areas, means that substantial efforts have been made to conserve the values found within this environment type elsewhere: other protected areas containing Domain G include ASPAs 109, 111, 112, 114, 125, 126, 128, 145, 149, 150, and 152 and ASMA 1 and 4.

Environment Domain B (Antarctic Peninsula mid-northern latitudes geologic) is also present and is described as “*a small terrestrial environment focussed around the Antarctic Peninsula. The size of the environment is very small (16,592 km<sup>2</sup> – sixth smallest), consists entirely of ice-free land cover, and contains a combination of three geological units – metamorphic (4%), intrusive (21%) and volcanic (20%). Climatically the environment is warm with the fourth warmest average temperature (-11.15°C), third smallest seasonal range (-13.00°C) and third highest level of solar radiation (10.05 MJ/m<sup>2</sup>/day). The average wind speed within the environment is moderate at 10.70 m/sec, but it is an extremely steep environment with an average slope of 29.44° making it the second steepest environment within the continent. Well-known locations the environment cover Seal Nunataks, much of Vega and Smith Island, parts of Snow Hill, Deception, Brabant, Anvers and Adelaide Islands, and ice-free western and eastern parts of the Antarctic Peninsula south to Marguerite Bay and Wilkins Coast to latitude 69° 30’S.*” Other protected areas containing Environment Domain B include ASPAs 108, 115, 134 and 153 and ASMA 4.

#### *Natural Features, Boundaries and Scientific Values*

ASPAs 140 comprises 11 Sites, shown in Figures 1 and 1a-1d. This fragmented distribution is characteristic of the vegetation cover of Deception Island. Because of the patchy nature of stable and moist substrata not subjected to erosion, the vegetation has a disjunct distribution and is consequently restricted to widely scattered, and often very small, habitats.

The Sites are lettered A to L (but excluding I), in a clockwise direction from the south-west of the caldera and referred to by the most prominent named geographical feature associated with each Site. Photographs of each Site are shown in Annex 2.

#### Site A - Collins Point

*Area encompassed.* The north-facing slopes between Collins Point and the unnamed point 1.15 km to the east (0.6 km west of Entrance Point), directly opposite Fildes Point, and extending from the back of the beach to a ridge extending up to c. 1 km inland from the shoreline.

*Boundaries.* The eastern boundary of Site A runs south from the shore at the unnamed point 0.6 km west of Entrance Point, following the outline of a ridge to an elevation of 184 m. The western boundary extends from Collins Point, following a ridge south to an elevation of 145 m. The southern boundary is delimited by the arcuate ridge crest (following a line of summits east to west at 172, 223 and 214 m) joining points 184 and 145 m. The beach area, including the Collins Point light beacon (maintained by the Chilean Navy), to the 10 m contour is excluded from the Site.

*Scientific value.* No geothermally-heated ground is known within the Site boundary. The Site contains some of the best examples of the island's longest established vegetation, largely unaffected by the recent eruptions, with high species diversity and several Antarctic rarities, some in considerable abundance. A few small plants of *Colobanthus quitensis* have recently become established, while the large liverwort *Marchantia berteroana* is a fairly recent and spreading colonist. Research on seals is undertaken on the beach to the north of the Site, and the Site also contains a colony of kelp gulls in the low cliffs above the beach.

#### Site B - Crater Lake

*Area encompassed.* Crater Lake and its shoreline, the flat ground to its north and the scoria-covered lava tongue to the south.

*Boundaries.* The northern boundary extends along the foot of the slope to the north of the broad valley c. 300 m north of Crater Lake (at c. 30 m altitude). The western boundary follows the ridgeline immediately west of the lake, and to the east of the small unnamed lake at Lat. 62°59.000' S, Long. 060°40.600' W. The southwestern and southern boundary follow the top of the slope (at altitude c. 80 m) that extend to the southwest and south of the lake. The eastern boundary passes to the east of the lava tongue south of Crater Lake, around the eastern rim of the lake and c. 300 m across the flat plain to the north of the Crater Lake.

*Scientific value.* No geothermally-heated ground is known within the Site boundary. The principal area of botanical interest lies on a scoria-covered lava tongue south of the lake. The Site was unaffected by the recent eruptions. The vegetation on the scoria tongue has a diverse cryptogamic flora, including several Antarctic rarities, and exceptional development of turf-forming moss, dominated by one relatively common species (*Polytrichastrum alpinum*). Of particular interest is that it reproduces sexually in great abundance here. Sporophytes of this species are not known in such profusion in this, or any other moss, anywhere else in the Antarctic. The extensive, virtually monospecific, moss carpet (*Sanionia uncinata*), on the flat ground to the north of Crater Lake, is one of the largest continuously vegetated stands on the island.

#### Site C – Caliente Hill, southern end of Fumarole Bay

*Area encompassed.* A narrow line of fumaroles extending c. 40 × 3 m along the gently sloping summit ridge at c. 95 to 107 m elevation on Caliente Hill above the north-west side of Albufera Lagoon northwest of Decepción Station (Argentina) at the southern end of Fumarole Bay.

*Boundaries.* The area includes all the ground above the 90 m contour on the hill, with the exception of the ground south east of a point 10 m north west of the cairn at the southeast end of the ridge. Access to the cairn at the southeast end of the ridge is not restricted.

*Scientific value.* Geothermally-heated ground is included within the Site. Several rare species of moss, some unique to the island, colonise the heated soil crust close to the vents, of which only two or three are visible. The vegetation is extremely sparse and not obvious, in total encompassing less than c. 1 m<sup>2</sup> in area, and is therefore particularly vulnerable to trampling

and over-sampling. Structures within the Site include experimental apparatus monitoring long-term ground temperature variations (operated by the Spanish Antarctic programme) and several short metal stakes arranged along the ridgeline near the highest point of the ridge.

#### Site D - Fumarole Bay

*Area encompassed.* The unstable moist scree slopes below the precipitous lava cliffs on the east side of the southern end of Stonethrow Ridge to the break of slope beyond the beach west of mid-Fumarole Bay. No structures are located within the Site, although much timber debris is found at the back of the beach several metres above the high tide mark. The timber may have been deposited at this location by a tsunami generated by earlier volcanological activity.

*Boundaries.* The southern end of the cliffs terminate in a prominent ridge sloping southeastward down to the beach. The southern boundary of the Site extends from the base of this ridge (at altitude c. 10 m) along the ridge line to the base of the cliffs at an altitude of c. 50 m. The western boundary follows the limit of the scree at the base of the cliffs roughly northwards for 800 m at altitude of approximately 50 m. The eastern boundary extends northwards along the break-of-slope at the back of the beach for 800 m including all the large boulders. The northern boundary (c. 100 m in length) joins the break of slope at the back of the beach to the scree at the base of the lava flow cliffs. The flat beach area from the shore, including two prominent inter-tidal fumaroles to the south of Fumerole Bay, to the break-of-slope is excluded from the Site.

*Scientific value.* No geothermally-heated ground is known within the Site, although fumarole activity is present in the inter-tidal zone east of the Site. The Site has a complex geology and contains the most diverse flora on the island, including several Antarctic rarities. It was unaffected by the recent eruptions.

#### Site E – Downie Ridge, west of Stonethrow Ridge

*Area encompassed.* The Site encompasses an area of fumarole activity and includes a red scoria cone lying at Lat. 62°58.091' S, Long. 060°44.414' W, c. 270 m altitude, on the northern side of Downie Ridge, c. 600 m south-southwest of the highest point on Stonethrow Ridge (330 m), west of central Fumarole Bay. It comprises two parts about 20 m apart, each with fumaroles, the more easterly part being more highly vegetated with lichens, mosses and liverworts covering an area of c. 15 × 5 m.

*Boundaries.* The boundary extends to 10 m beyond all evidence of geothermal activity.

*Scientific value.* Areas of geothermally-heated ground are present within the Site. The Site possesses several very rare mosses, liverworts and lichens, two of the dominant species being a liverwort (*Clasmatocolea grandiflora*) and lichen (*Stereocaulon condensatum*), neither of which is known elsewhere in Antarctica. Photographs taken in the mid-1980s indicate that the development and diversity of this vegetation has advanced considerably. A skua nest (noted in 1993 and 2002 and occupied in 2010) is present within the vegetation. These birds may be responsible for introducing some of the plants from Tierra del Fuego, notably the dominant liverwort.

#### Site F - Telefon Bay

*Area encompassed.* The Site incorporates several features created during the 1967 eruption in Telefon Bay: Pisagua Hill on the south side of the Site, the small shallow Ajmonecat Lake on the ash plain north of Stancomb Cove and the low flat ash plain extending from the shoreline of Telefon Bay to the steep slopes and lava outcrops ca. 0.5 km inland. Pisagua Hill was created as a new island in 1967, but is now joined to the main island by the aforementioned

ash plain. At the northern end of the plain is Extremadura Cove, which was a lake until the narrow isthmus (c. 2 m wide and 50 m long) separating it from Port Foster was breached sometime around 2006. Extremadura Cove is excluded from the Site.

*Boundaries.* The north shoreline of the lagoon (Stancomb Cove) at the south-west of Telefon Bay marks the southern boundary of the Site, while the southwest shore of the Extremadura Cove to the north of Telfon Bay marks the northeastern boundary of the Site. The southeast boundary extends along the shore south of Pisagua Hill, northwards to the shoreline of the Extremadura Cove at the northern end of Telefon Bay. The northwest boundary is roughly delineated by the 10 m contour of Telefon Ridge that links Stancomb Cove to Extremadura Cove. Ajmonecat Lake (Lat. 62°55.375'S, Long. 060°40.750'W), including its shoreline, is included in the Site. The shoreline of Telefon Bay is excluded from the Site to allow access past the Site.

*Scientific value.* No geothermally-heated ground is known within the Site. The main point of botanical interest is that all surfaces within the Site date from 1967, thereby allowing accurate monitoring of colonisation by plants and other biota. The Site has a generally barren appearance, but close inspection reveals an abundance of inconspicuous mosses and lichens. In the absence of geothermal activity here, colonisation processes may be related to aspects of the current trend in climate change. Although species diversity is low, the developing communities are typical of non-heated habitats throughout the island.

#### Site G - Pendulum Cove

*Area encompassed.* The Site comprises the uneven gentle slope of coarse grey, crimson, and red scoria and occasional disintegrating blocks of yellowish tuff, east-northeast of Crimson Hill and c. 0.4 – 0.8 km east of Pendulum Cove. It extends c. 400 m from west to east and is up to c. 400 m wide from north to south. It was created largely by the 1969 eruption which destroyed the nearby abandoned Chilean Base (Historic Site and Monument No. 76). The Site includes the slope and undulating “plateau” behind Pendulum Cove.

*Boundaries.* The western boundary follows the 40 m contour line and the eastern boundary follows the 140 m contour line east-southeast of Pendulum Cove. The northern and southern boundaries follow the edge of the volcanic debris-covered permanent ice that borders the Site.

*Scientific value.* Geothermal activity was recorded during a survey in 1987, with substantial heat being emitted from crevices amongst scoria. There was no such evidence in 2002. Although vegetation is very sparse, this known-age site is being colonised by numerous moss and lichen species. Two of the mosses (*Racomitrium lanuginosum* and *R. heterostichoides*) are unique both on the island and in the Antarctic, and both are very rare here. Several other mosses are Antarctic rarities.

#### Site H - Mt. Pond

*Area encompassed.* The Site is situated c. 1.4 to 2 km north-north-west of Mount Pond summit. The extensive area of geothermally-heated ground includes an area (c. 150 × 500 m) on the north eastern side of the gently sloping upper part of a broad ridge at c. 385 to 500 m elevation (Smith 1988). At the northern end of the Site there are numerous inconspicuous fumarole vents in low mounds of very fine, compacted baked soil. The higher, southern, part of the Site is close to a large rime dome at 512 m, in the lee of which (at c. 500 to 505 m) are numerous active fumaroles, also surrounded by fine, compacted baked soil, on a steep, moist, sheltered slope. The extensive areas of heated ground surrounding the fumaroles comprise a fine soil with a soft crust that is extremely vulnerable to trampling. There are several stands

of dense, thick (up to 10 cm) bryophyte vegetation associated with these areas. The adjacent yellowish tuff outcrops support a different community of mosses and lichens.

*Boundaries.* The northern boundary is marked by Lat. 62°55.85'S, the southern boundary by Lat. 62° 56.2' S and the eastern boundary is marked by Long. 060°33.5'W. The western boundary follows the ridgeline of the broad ridge that slopes north northwest from the summit of Mt. Pond between Long. 060°33.8'W and Long. 060°34.7'W.

*Scientific value.* This is an outstanding site of botanical interest, unique in the Antarctic. It possesses several moss species which are either unique to the Antarctic or are extremely rare in Antarctica. The development of the moss turf (*Dicranella hookeri* and *Philonotis polymorpha*) in the main upper part of the Site is exceptional, and two or more species have colonised profusely since last inspected in 1994. The large liverwort *Marchantia berteroana* is rapidly colonising the warm moist soil crust at the periphery of the moss stands. At least one species of toadstool fungus also occur amongst the moss, the highest known record for these organisms in Antarctica. A totally different community of mosses and lichens occurs on the rock outcrops, and also includes several extremely rare species (notably *Schistidium andinum* and *S. praemorsum*).

#### Site J - Perchué Cone

*Area encompassed.* This ash cone lies c. 750 m northeast of Ronald Hill and comprises a very narrow line of fumaroles and adjacent heated ground on the west-facing slope at ca. 160-170 m elevation. The geothermal area covers ca. 25 × 10 m, and the fine ash and lapilli surface of the entire slope is very vulnerable to pedestrian damage.

*Boundaries.* The boundary encompasses all of the ash and cinder cone referred to as Perchué Cone.

*Scientific value.* The Site contains several mosses that are extremely rare in Antarctica. Photographic evidence suggests that the extent of moss colonisation has decreased since the mid-1980s.

#### Site K – Ronald Hill to Kroner Lake

*Area encompassed.* This Site includes the circular flat plain of the crater immediately to the south of Ronald Hill, and extends along the prominent broad shallow outwash gully with a low bank on either side, leading southwards from here to Kroner Lake. The substratum throughout the area is consolidated mud, fine ash and lapilli deposited by the lahar during the 1969 eruption. Part of the Site, notably the gully, remains geothermally active. The Site also includes the intertidal geothermal lagoon (Kroner Lake) as it is part of the same volcanological feature. This small, shallow, circular, brackish crater lake was breached by the sea during the 1980's, and is now the only geothermally heated lagoon in the Antarctic.

*Boundaries.* The boundary surrounds the crater basin, gully, Kroner Lake and an area between c. 100 – 150 m wide around the lake. A corridor below Ronald Hill, from the break-of-slope to the lowermost massive boulders about 10 to 20 m beyond, remains outside the boundary to allow access past the Area.

*Scientific value.* The surfaces of this Site are of a known age and are being colonised by numerous moss, liverwort and lichen species, several of which are extremely rare in the Antarctic (e.g. the mosses *Notoligotrichum trichodon* and *Polytrichastrum longisetum*, and a rare lichen, *Peltigera didactyla*, is colonising >1 ha of the crater floor). The geothermal northern intertidal shore of Kroner Lake possesses a unique community of algae.

#### Site L - South East Point



*Area encompassed.* An east-west trending rocky ridge *c.* 0.7 km north of South East Point, extending from the top of the sea cliff (*c.* 20 m altitude) westwards for *c.* 250 m, to a point about 80 m altitude. The north edge of the ridge is a low vertical lava outcrop, giving way to a steep unstable slope leading to the floor of a gully parallel to the ridge. The south side of the Site is the gently sloping ridge crest covered with ash and lapilli.

*Boundaries.* The Site extends 50 m north and south of the lava outcrop.

*Scientific value.* This Site has the most extensive population of Antarctic pearlwort (*Colobanthus quitensis*) known in the Antarctic. It was the largest population before the 1967 eruption (Longton 1967), covering *ca.* 300 m<sup>2</sup>, but was almost completely destroyed by ash burial. It gradually recovered, but since about 1985-1990 there has been a massive increase in seedling establishment and the population has expanded downwind (westwards, uphill). It is now very abundant in an area of *ca.* 2 ha. It is also remarkable for the absence of the other native vascular plant, Antarctic hairgrass (*Deschampsia antarctica*), almost always associated with this plant. Photographs of the Site immediately after the eruption revealed almost total loss of lichens, but these too have recolonised rapidly and extensively, the large bushy *Usnea antarctica* being particularly abundant and attaining a considerable size after the relatively short period since recolonisation. The cryptogamic flora of the Site is generally sparse and typical of most of the island. The Site is particularly important for monitoring the reproduction and spread of the pearlwort in a known-age site.

#### *6(ii) Access to the Area*

- Access to the Sites shall be by foot or small boat.
- Helicopter landings are prohibited within the Area. The Management Plan for Deception Island ASMA 4 shows recommended helicopter landing sites on Deception Island.
- All travel to the Sites shall be undertaken carefully so as to minimize disturbance to soil and vegetation en route.
- Site A - Collins Point, Site D - Fumerole Bay, Site F - Telefon Bay and Site - G Pendulum Cove are all accessible by small boat from Port Foster. Site C - Caliente Hill and Site E - Downie Ridge can be accessed overland from Albufera Lagoon. Site J - Perchué Cone, Site K - Ronald Hill to Kroner Lake and Site L - South East Point can be accessed overland from Whalers Bay. Site H - Mount Pond can be accessed from Pendulum Cove and Site B - Crater Lake can be accessed overland from Port Foster.

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

At Site A, Collins Point, there are six 50 × 50 cm plots marked with wooden corner stakes, although not all of the four stakes per plot remain. These were established by the British Antarctic Survey in 1969 to monitor changes in the vegetation in subsequent years (Collins 1969); data were obtained in 1969 and 2002. These markers should be maintained.

Structures within the Site C, Caliente Hill, include some experimental apparatus monitoring long-term ground temperature variations (operated by the Spanish National Antarctic Program) and several short metal stakes arranged along the ridgeline near the summit.

Other structures near to the Area are listed in the ASMA Management Plan for Deception Island.

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

ASPA 145 comprises two Sites of benthic importance within Port Foster. Deception Island and Port Foster are managed as ASMA No. 4 Deception Island.

*6(v) Restricted and managed zones within the Area*

None

**7. Permit conditions**

*7(i) General permit conditions*

Entry into 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:

- it is issued only for compelling scientific reasons which cannot be served elsewhere; or
- it is issued for essential management purposes such as inspection, maintenance or review;
- the actions permitted will not jeopardise the floristic, ecological or scientific values of the Area;
- any management activities are 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, must be carried within the area;
- a visit report shall be supplied to the authority named in the Permit, and to the Chair of the Deception Island Management Group;
- permits shall be issued for a stated period;
- the appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

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

- Land vehicles are prohibited in the Area.
- Helicopter landings are prohibited within the Area. The Management Plan for Deception Island ASMA 4 shows recommended helicopter landing sites on Deception Island.
- Movement within the Area Sites shall be on foot.
- Rowing boats are permitted for sampling purposes in the lakes in Site B - Crater Lake and Site F - Telefon Bay, and the lagoon in Site K – Ronald Hill to Kroner Lake. Prior to use at each Site, boats shall be cleaned to reduce the risk of introductions of non-native species from outside the Treaty area and other Antarctic locations, including other Sites within ASPA 140.
- All movement shall be undertaken carefully so as to minimize disturbance to soil and vegetation. In particular, the vegetation on Site C - Caliente Hill is sparse and not obvious and is therefore particularly vulnerable to trampling.

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

Activities include:

- compelling scientific research which cannot be undertaken elsewhere and which will not jeopardise the flora and ecology of the Area;
- essential management activities, including monitoring.

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

Structures shall not be erected within the Area except as specified in a Permit. All scientific equipment, botanical quadrats or other markers installed in the Area must be approved by

Permit 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 of the Area.

At Site A - Collins Point, the existing staked plots should be maintained to allow continued monitoring of vegetation change since 1969. At Site K – Ronald Hill to Kroner Lake, any wind-blown debris from HSM No. 71 shall be removed. At Site G – Pendulum Cove, any wind-blown debris from HSM No. 76 shall be removed.

*7(v) Location of field camps*

Camping is not permitted within the Area. The ASMA Management Plan for Deception Island shows recommended sites for field camps on the island, but outside ASPA 140.

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

No living animals, plant material or microorganisms shall be deliberately introduced into the Area. To ensure that the floristic and ecological values of the Area are maintained, special precautions shall be taken against accidentally introducing microbes, invertebrates or plants from other Antarctic sites, including stations, or from regions outside Antarctica. All sampling equipment or markers brought into the Area shall be cleaned or sterilized. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including bags or backpacks) shall be thoroughly cleaned before entering the Area. No poultry or egg products shall be taken into the Area.

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. Release of radio-nuclides or stable isotopes directly into the environment in a way that renders them unrecoverable shall not be permitted.

Fuel, food and other materials are not to be deposited within the Area, unless authorized by Permit for specific scientific or management purposes. Permanent depots are not permitted. All materials introduced shall be for a stated period only, shall be removed at or before the conclusion of the stated period, and shall be stored and handled so that risk of their introduction into the environment is minimised. 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*. The appropriate authority shall be notified of any materials released and not removed that were not included in the authorised Permit.

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

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the *Protocol on Environmental Protection to the Antarctic Treaty*. Where taking of 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 and removal of materials not brought into the Area by the Permit holder*

Material of a biological, geological (including soil and lake sediment), or hydrological nature 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, 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. In order to avoid anthropogenic microbial and nutrient enrichment of soils, no solid or liquid human waste should be deposited within the Area. Human wastes may be disposed of within Port Foster, but avoiding ASPA 145.

*7(x) Measures that are necessary to ensure that the aims and objectives of the Management Plan continue to be met*

- Permits may be granted to enter the Area to carry out biological, vulcanological or seismic monitoring and site inspection activities. Biological activities may involve the collection of small amounts of plant or soil material or small numbers of invertebrates for analysis or review.
- Any long-term monitoring sites shall be appropriately marked and the markers or signs maintained.

*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, and no later than six months after the visit has been completed. Such visit reports should include, as applicable, the information identified in the recommended visit report form [contained as an Appendix in the Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas (available from the website of the Secretariat of the Antarctic Treaty; [www.ats.aq](http://www.ats.aq)). If appropriate, the national authority should also forward a copy of the visit report to the Party that proposed the Management Plan, to assist in managing the Area and reviewing the Management Plan. Wherever possible, Parties should deposit the original or copies of the 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.

## 8. Supporting documentation

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Figure 1 - Antarctic Specially Protected Area No. 140, Sites of Exceptional Botanical Importance, Deception Island, South Shetland Islands

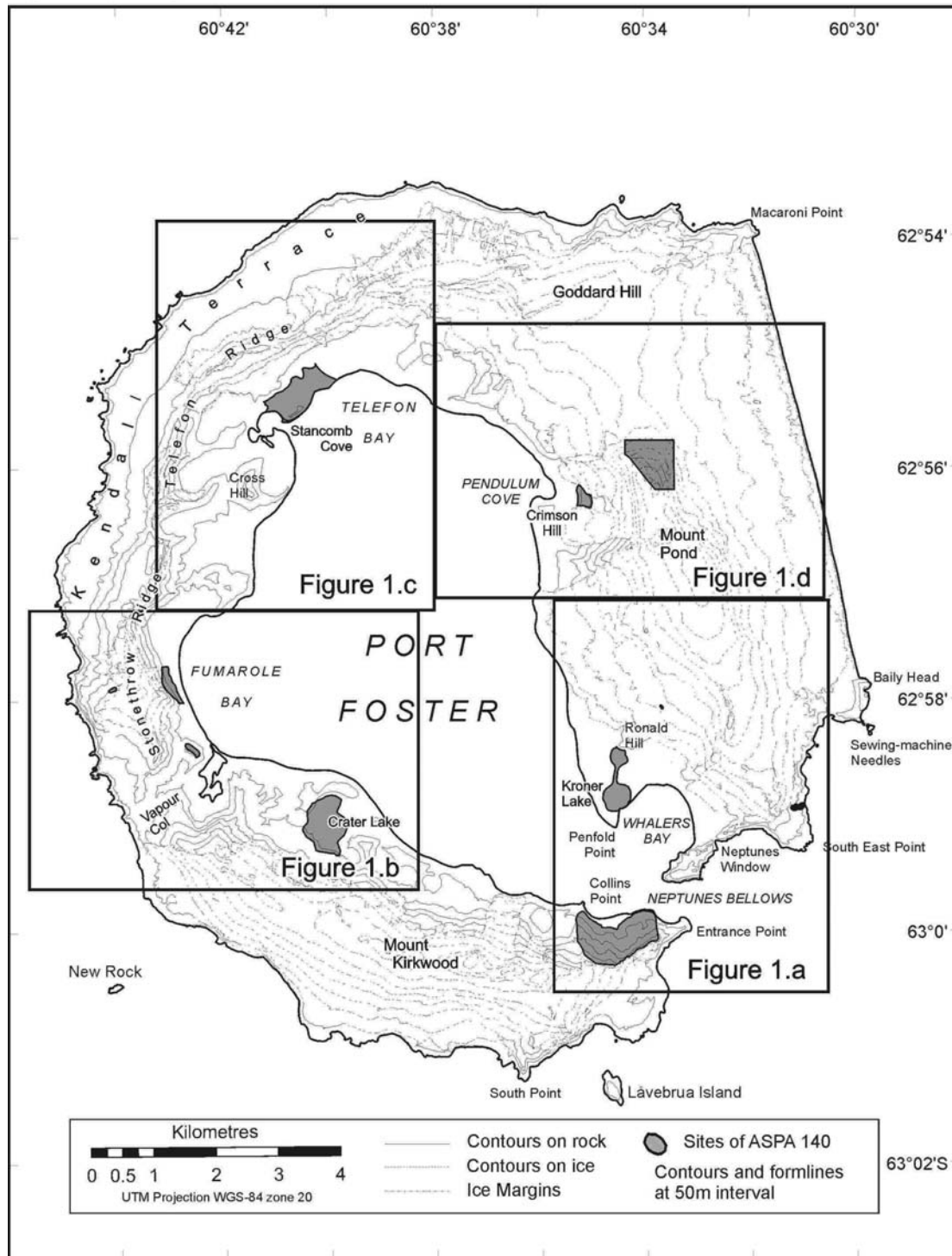
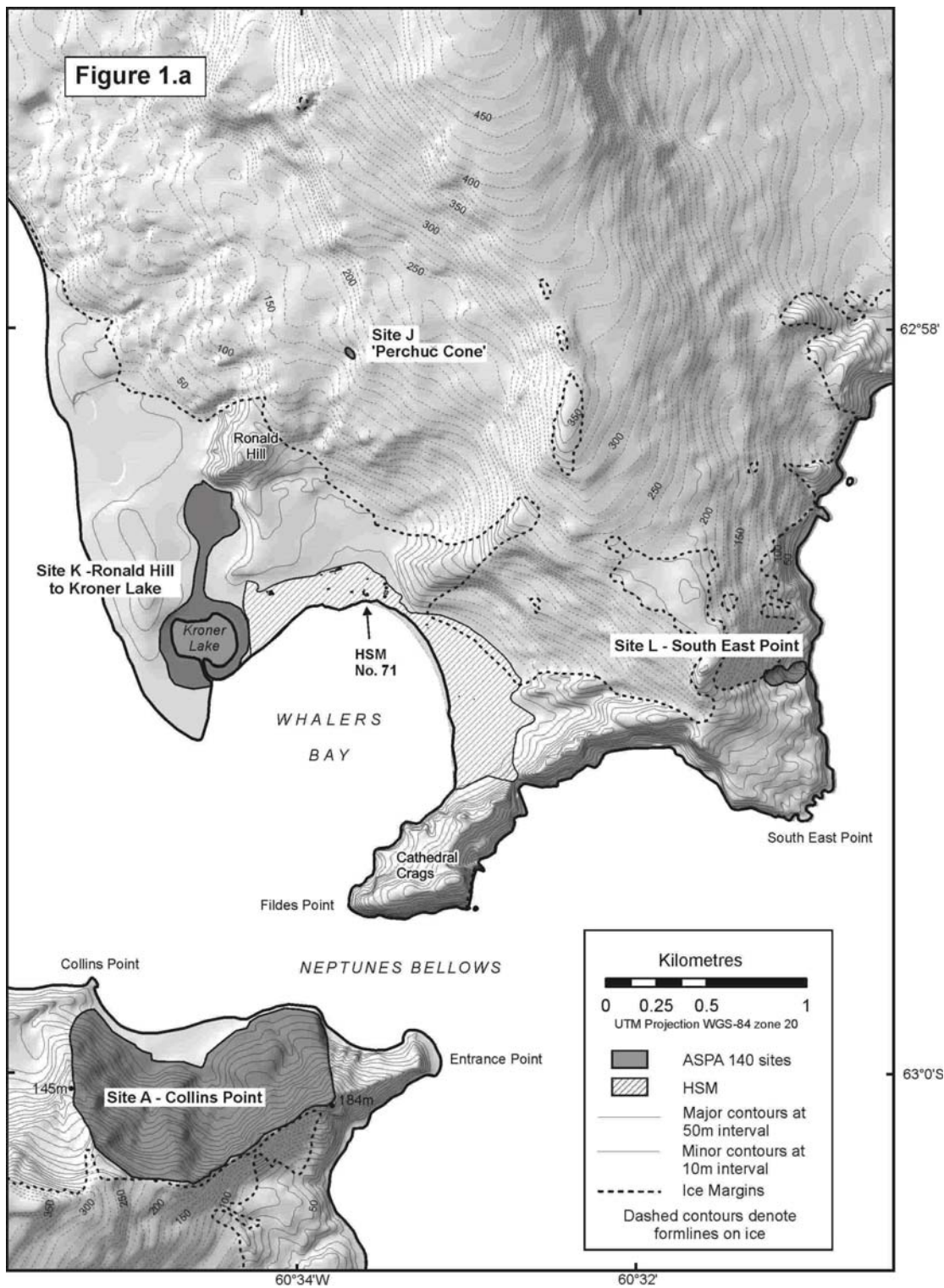


Figure 1.a



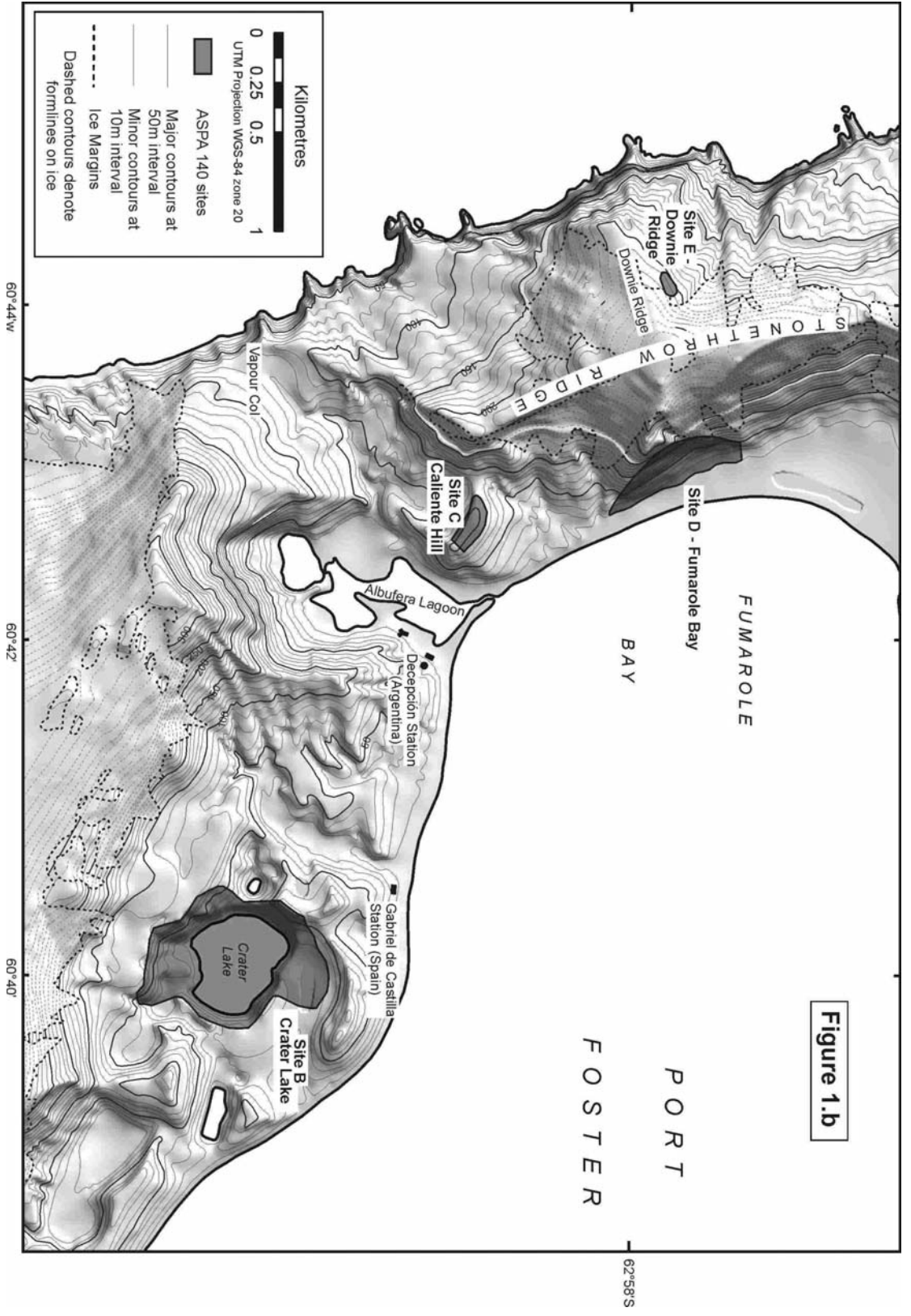
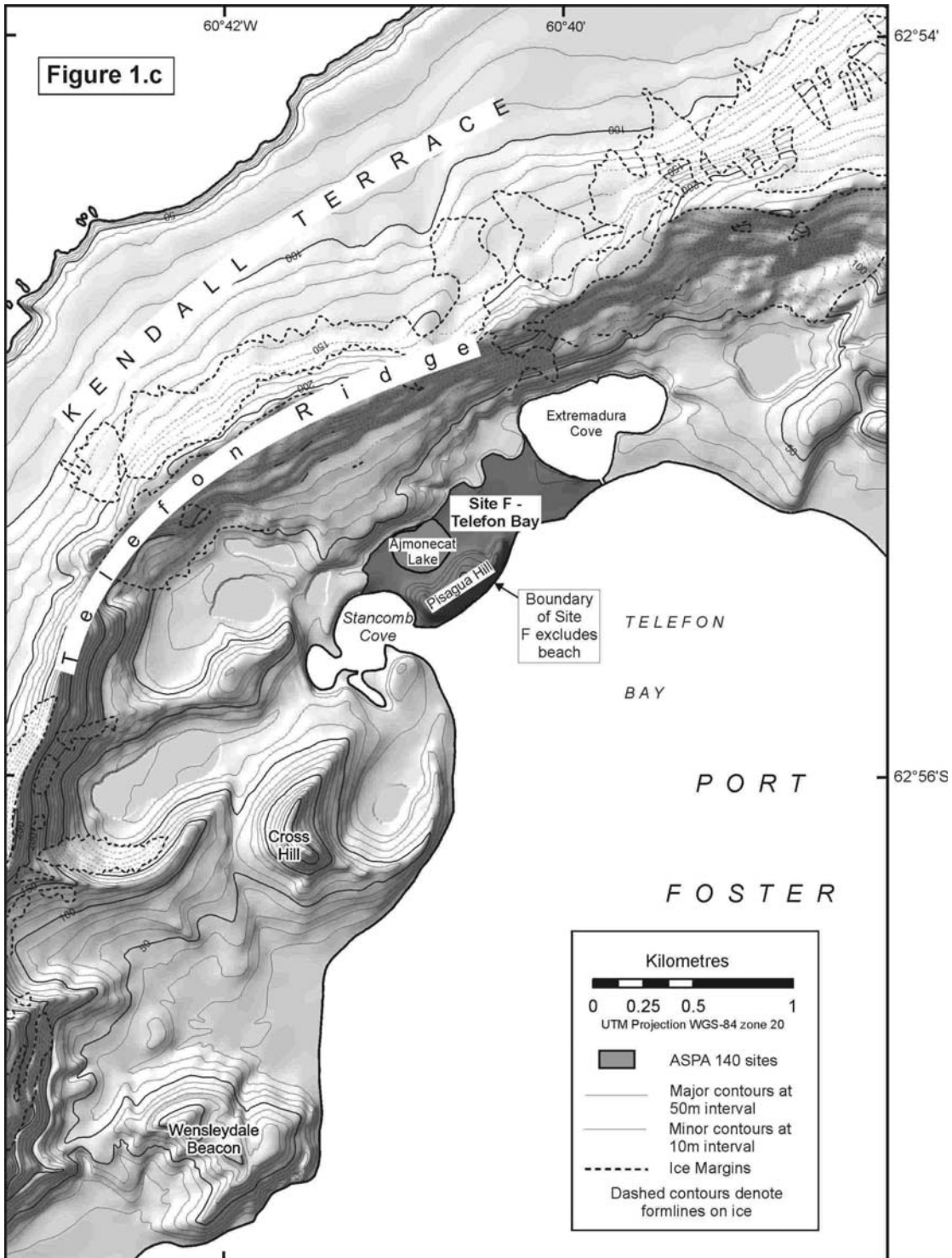
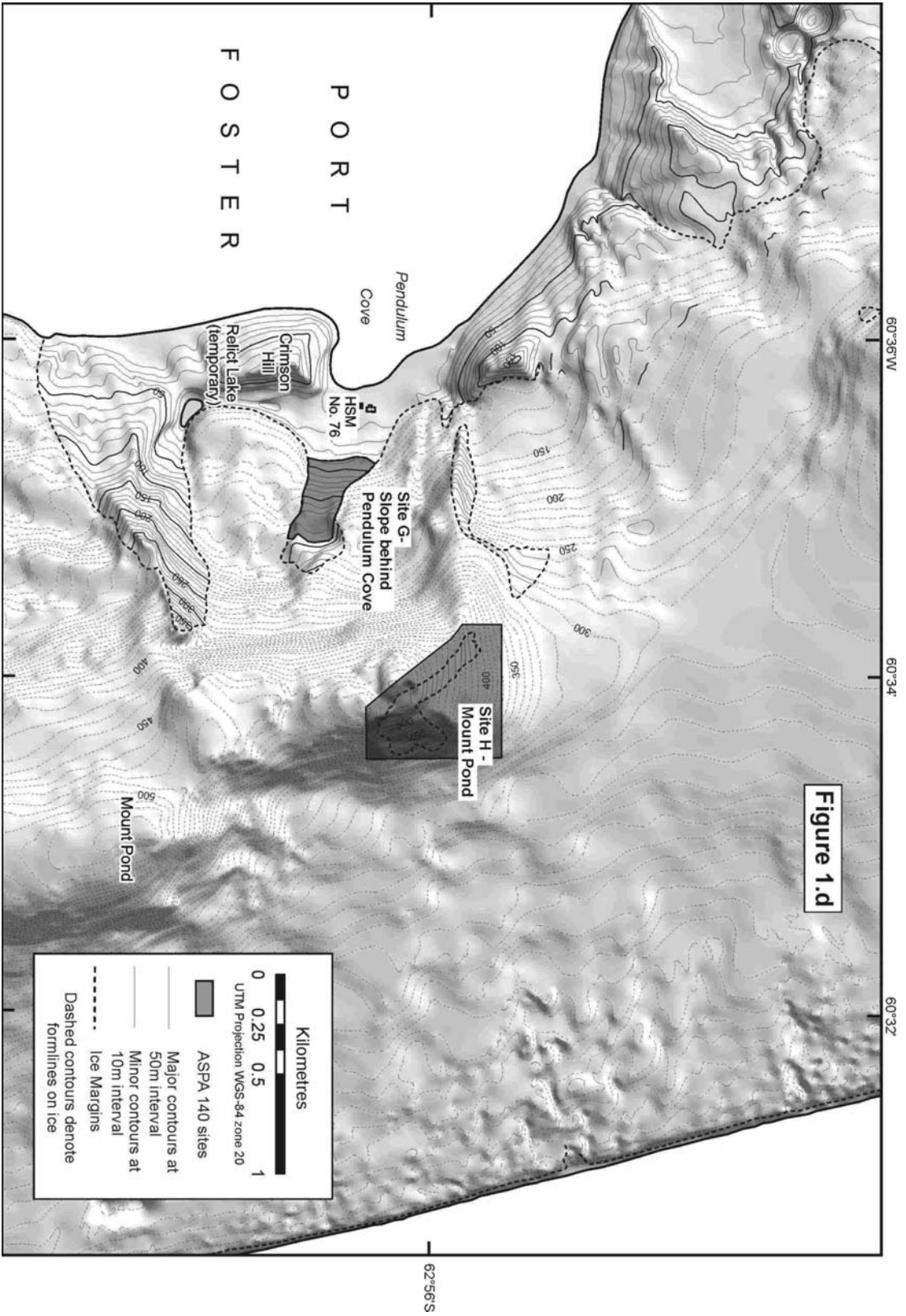


Figure 1.b

Figure 1.c







**Annex 1.** List of plant species, classed as rare or very rare in the Antarctic Treaty Area, occurring on Deception Island

A. Bryophytes (L = Liverwort)

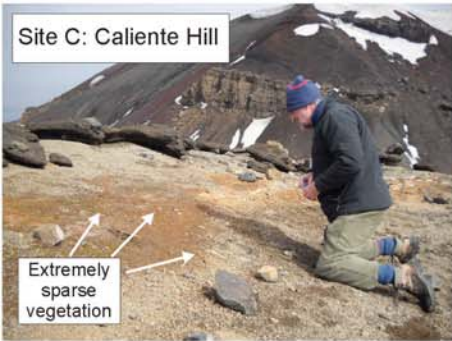
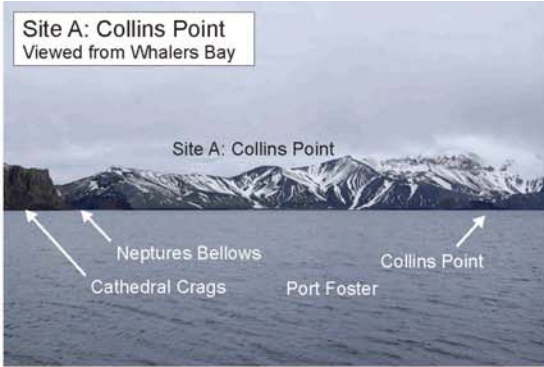
Species	Sites where species occurs	Notes
<i>Brachythecium austroglareosum</i>	D	Few other known Antarctic sites
<i>B. fuegianum</i>	G	Only known Antarctic site
<i>Bryum amblyodon</i>	C, D, G, K	Few other known Antarctic sites
<i>B. dichotomum</i>	C, E, H, J	Only known Antarctic site
<i>B. orbiculatifolium</i>	H, K	One other known Antarctic site
<i>B. pallescens</i>	D	Few other known Antarctic sites
<i>Cryptochila grandiflora</i> (L)	E	Only known Antarctic site
<i>Dicranella hookeri</i>	C, E, H	Only known Antarctic site
<i>Didymodon brachyphillus</i>	A, D, G, H	Locally more abundant than any other known Antarctic site
<i>Ditrichum conicum</i>	E	Only known Antarctic site
<i>D. ditrichoideum</i>	C, G, J	Only known Antarctic site
<i>D. heteromallum</i>	C, H	Only known Antarctic site
<i>D. hyalinum</i>	G	Few other known Antarctic sites
<i>D. hyalinocuspdatum</i>	G	Few other known Antarctic sites
<i>Grimmia plagiopodia</i>	A, D, G	A continental Antarctic species
<i>Hymenoloma antarcticum</i>	B, C, D, E, G, K	Few other known Antarctic sites
<i>H. crispulum</i>	G	Few other known Antarctic sites
<i>Notoligotrichum trichodon</i>	K	One other known Antarctic site
<i>Philonotis polymorpha</i>	E, H	Only known Antarctic site
<i>Platyneurum jungermannioides</i>	D	Few other known Antarctic sites
<i>Polytrichastrum longisetum</i> (L)	K	One other known Antarctic site
<i>Pohlia wahlenbergii</i>	C, E, H	One other known Antarctic site
<i>Racomitrium heterostichoides</i>	G	Only known Antarctic site
<i>R. lanuginosum</i>	G	Only known Antarctic site
<i>R. subsecundum</i>	C	Only known Antarctic site
<i>S. amblyophyllum</i>	C, D, G, H	Few other known Antarctic sites
<i>S. andinum</i>	H	Few other known Antarctic sites
<i>S. deceptionensis</i> sp. nov.	C	Deception endemic
<i>S. leptoneurum</i> sp. nov.	D	Deception endemic
<i>Schistidium praemorsum</i>	H	One other known Antarctic site
<i>Syntrichia andersonii</i>	D, L	Only known Antarctic site

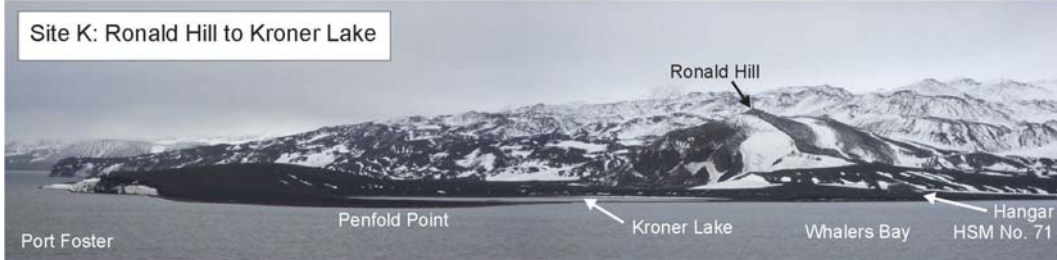
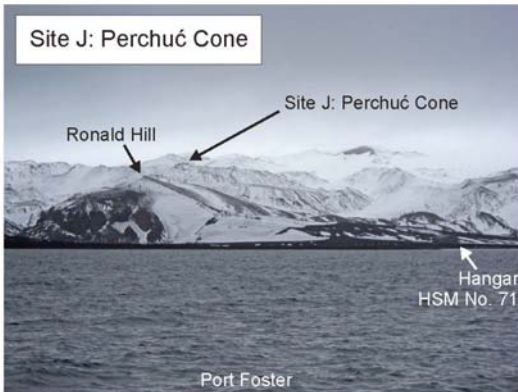
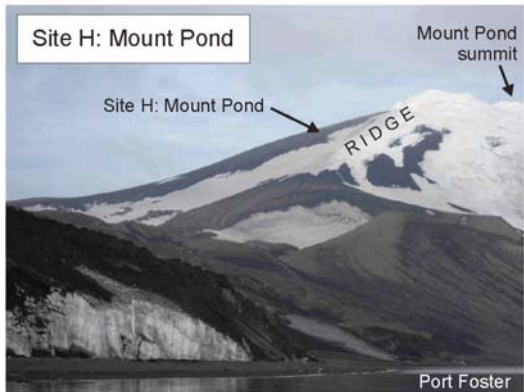
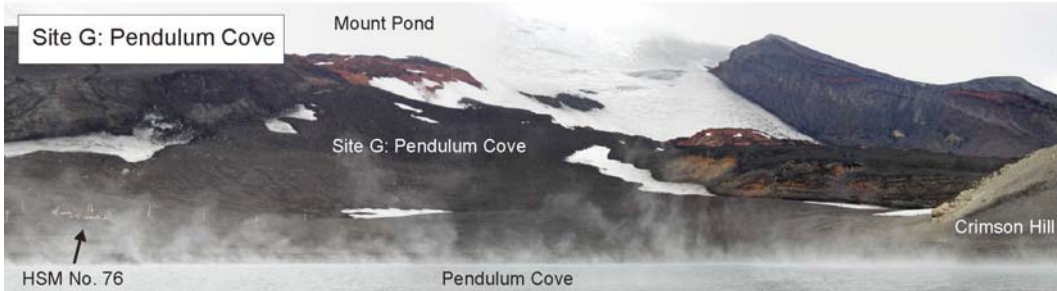


B. Lichens

Species	Sites where species occurs	Notes
<i>Acarospora austroshetlandica</i>	A	One other known Antarctic site
<i>Caloplaca johnstonii</i>	B, D, F, L	Few other known Antarctic sites
<i>Catapyrenium lachneoides</i>	?	Few other known Antarctic sites
<i>Cladonia galindezii</i>	A, B, D	More abundant than any other known site
<i>Degelia sp.</i>	K	Only known Antarctic site
<i>Ochrolechia parella</i>	A, B, D	More abundant than any other known site
<i>Peltigera didactyla</i>	B, K	Very rare in B; very small colonising form abundant in K
<i>Pertusaria excludens</i>	D	Few other known Antarctic sites
<i>P. oculae-ranae</i>	G	Only known Antarctic site
<i>Placopsis parellina</i>	A, B, D, G, H	More abundant than any other known site
<i>Protoparmelia loricata</i>	B	Few other known Antarctic sites
<i>Psoroma saccharatum</i>	D	Only known Antarctic site
<i>Stereocaulon condensatum</i>	E	Only known Antarctic site
<i>S. vesuvianum</i>	B, G	Few other known Antarctic sites

**Annex 2.** Photographs of the Sites comprising ASPA 140 Parts of Deception Islands, South Shetland Islands.





**ASPA No. 145 Management Plan (Port Foster, Deception Island)**



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

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

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

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

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

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

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

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

The management of Port Foster aims to:

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

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

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

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

## II. Measures

### 4. Period of designation.

Designated for two years.

### 5. Maps.

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

### 6. Description of the area

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**7. Permit conditions**

Conditions for issuing a sampling permit:

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

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

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

*7(ii) Activities that may be conducted*

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

*7(iii) Scientific sampling*

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

*7(iv) Other restrictions*

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

## II. Measures

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

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

### *7(vi) Waste disposal*

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

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

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

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

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

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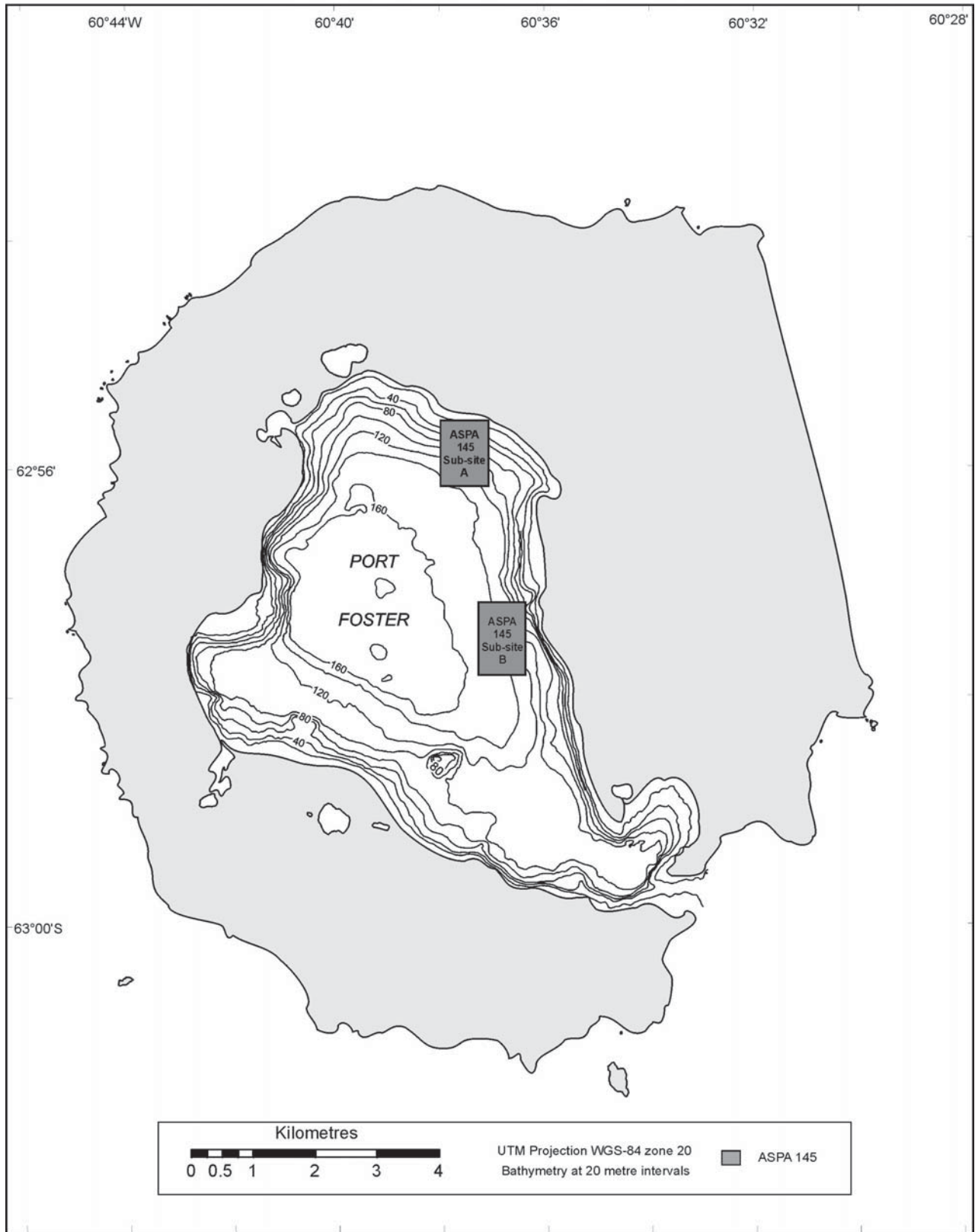
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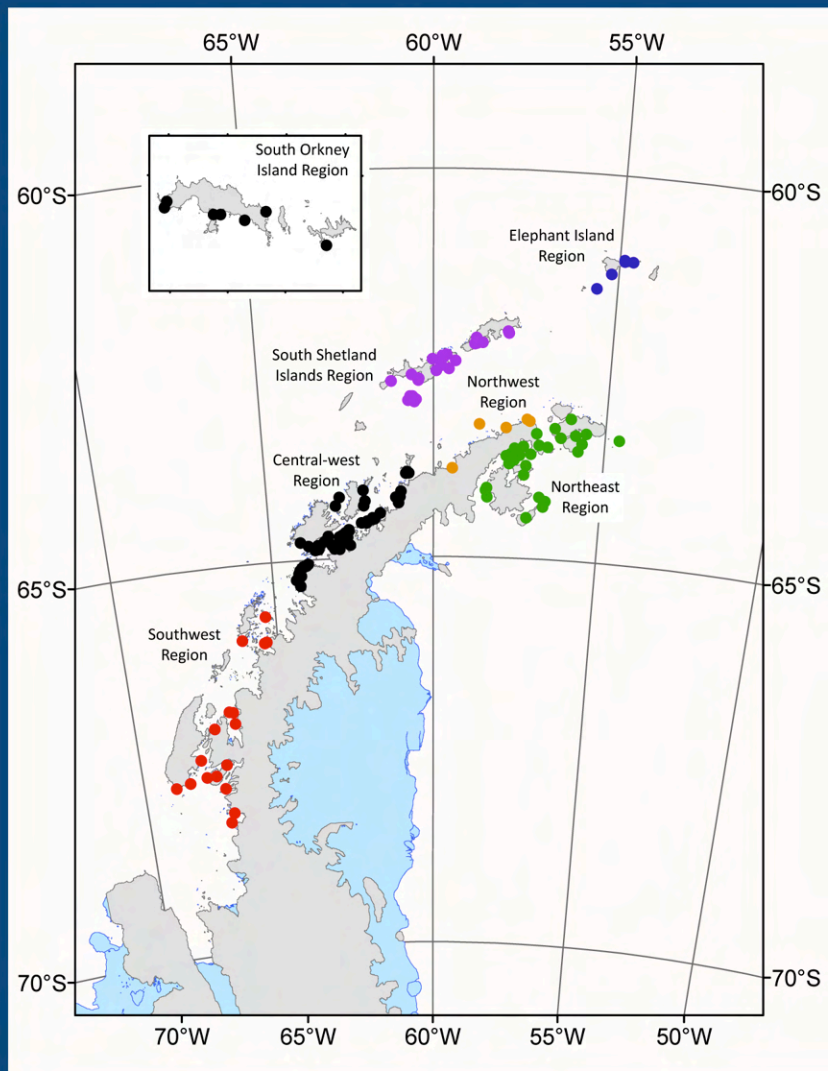
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Figure 1. Antarctic Specially Protected Area No. 145, Port Foster, Deception Island, South Shetland Islands.





The Antarctic Peninsula