



Agreement on the Conservation of Albatrosses and Petrels

Third Meeting of Advisory Committee

Valdivia, Chile, 19 – 22 June 2007

**Report of the
Breeding Sites Working Group 2007 to AC3**

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8 May 2007

1. Introduction

This paper contains information on the work undertaken by the Breeding Sites Working Group, in the period between June 2006 and May 2007. Actions identified by the WG in 2006 are shown in italics, and comments about their completion or progress towards completion are noted below. A number of recommendations are put forward for consideration by the AC, drawing from work and experience of the WG undertaken during the period 2006/07.

2. Progress to date

The main work item for 2006/07 has been the collation of data about threats, management and protection of breeding sites for ACAP species. Draft analyses of these data are presented in Annex 2, and these are expected to be revised and added to during the period prior to the meeting of AC3.

Data were submitted for 470 breeding sites for ACAP species by Argentina, Australia, Chile, France, SCAR, New Zealand, Norway, South Africa, and the United Kingdom. Data were submitted for 25 species.

Since 2006, data for an additional 302 sites have been submitted, including data for three additional jurisdictions (Chile, Norway and the Antarctic Continent by SCAR).

3. Membership

The current membership of the Breeding Sites Working Group is appended in Annex 1.

4. Work programme

The work programme agreed in 2006 is set out below. Items denoted * are complete.

Action	To be completed *already complete	Responsibility
Advise national coordinators	October 2005*	Parties and Signatories (Breeding Range States)
Examine options for data storage and access to information	November 2005*	Chair and WG members

Adopt terms of reference	December 2005*	Parties and Signatories (Breeding Range States)
Confirm a database format for use by ACAP	December 2005*	Chair and WG members
Revise proformas and implement data compilation	March 2006*	
Conduct initial gap analysis	May 2006*	
Data submission from Parties 1 st tranche (1/2 of available data) 2 nd tranche (remaining data) 3 rd tranche (newly collected data)	May 2006* December 2006* Annually	Parties and Signatories (Breeding Range States)
Report on the assessment of database structure and data quality issues and recommend analyses for prioritisation	June 2006*	Chair and WG members
Request a list of breeding sites from parties	July 2006*	Chair
Revise the database lists and structures following the recommendations of the BSWG in June 2006	September 2006*	Chair and WG member
Develop a list of alien species	July 2006*	Chair and WG member
Develop analyses as set out in the report of the BSWG of June 2006	March 2007*	Chair and WG member
Review analyses of data and gaps Recommend priority sites / threat management actions Recommend data-gathering priorities	June 2007* and ongoing	Chair and WG members
Work with other ACAP WGs to report on analyses of threats to ACAP species	June 2007* and ongoing	Chair and WG members

5. Database structure revised

In the inter-sessional period, the database was restructured following recommendations of the WG. It now consists of 5 primary tables, namely:

- Breeding Sites details
- Island details
- Protection and Management
- Threats
- Survey of breeding population size

As agreed at AC2, the use of Microsoft Access as supporting software was continued until May 2007. Data entry and verification was achieved through a combination of use of the MS Access interface developed for the database, and via the export of tables in Microsoft Excel.

There were some delays in getting a fully operational version of the revised database. Some problems still persist with the copy function. However, with the major data entry phase completed, this will not impede future operation of the existing database.

The database development is at the stage of completion of the major data-entry. It would be an appropriate time to:

- EITHER: Migrate the BSWG database to other software and systems
- OR Retain Microsoft Access as the software supporting the database
- AND Consolidate the BSWG database and combine it with other ACAP databases as appropriate

Recommendations:

- *The WG should consider how to support the existing database and any future data needs, including possible amalgamation of databases across WGs, as appropriate.*
- *The WG requests that resources are allocated for ongoing maintenance, error checking and standardisation, future data input, analyses, and provision of extracts from the database*

6. List of threats and consistency in threat levels

7.

The BSWG used the following list of threats and sub categories at breeding sites:

Category	Threat sub-category
Human disturbance	Agriculture
Human take	Browsing on / trampling of habitat
Natural disaster	Climate change
Disease	Competition for habitat
Habitat alteration by alien species	Degradation of habitat
Habitat alteration by humans	Extraction
Predation by alien species	Fire
Change in impact by native species	Flood
Contamination at breeding site	Hunting
	Invasive plants
	Landslide
	Military action
	Onshore oil
	Parasite
	Pathogen
	Plastics
	Recreation
	Science
	Tourism

	Toxins – man made
	Toxins – natural
	Tsunami
	Use of habitat for human resource exploitation (e.g. aquaculture)
	Vector for disease
	Vegetation encroachment
	Volcanic activity
	Water-level rising

There was a suggestion by WG members to add 'Development' as a threat, instead of or in addition to 'Habitat alteration by humans'. However, this addition was not agreed by all members, and some requested further refinement of this threat.

There are some benefits in revising the list of threats, but this will lead to extensive additional review of the threats listed in the database, if the group of threats "Nature of threat" field is changed. One possible solution is to add "Building development" as a sub-category.

Recommendation:

- *The WG recommend an update the list of threats to include an additional categories or sub-categories as required.*

8. List of alien species

The work programme for 2006 specified that a list of alien species be developed by the WG. The following species were identified by WG members in submissions.* May be a naturally occurring species at some sites.

Code	Scientific Name	Common name
PAM	<i>Pasteurella multocida</i>	Avian cholera*
BOT	<i>Bos taurus</i>	Cattle
CAA	<i>Capra aegagrus</i>	Goat
CAF	<i>Canis familiaris</i>	Dog
CAH	<i>Capra hircus</i>	Goat
FEC	<i>Felis catus</i>	Cat
HOS	<i>Homo sapiens</i>	Human
MSM	<i>Mus musculus</i>	House mouse
MUE	<i>Mustela erminea</i>	Stoat
MUF	<i>Mustela furo</i>	Ferret
MUN	<i>Mustela nivalis</i>	Weasel
ORC	<i>Oryctolagus cuniculus</i>	Rabbit
OVA	<i>Ovis aries</i>	Sheep
OVM	<i>Ovis ammon</i>	Mouflon
RAE	<i>Rattus exulans</i>	Polynesian rat
RAN	<i>Rattus norvegicus</i>	Norwegian rat
RAR	<i>Rattus rattus</i>	Ship rat
RNT	<i>Rangifer tarandus</i>	Reindeer
SUS	<i>Sus scrofa</i>	Feral pig
TRV	<i>Trichosurus vulpecula</i>	Brushtail possum

9. Definitions for levels of threat at breeding areas:

The following definitions were agreed by the WG at AC2, and are used in the current BSWG database. Only island-site based threats were considered in the data submissions (ie marine-based threats were not considered).

Low – An existing threat that may be causing a slow decline, or slowing the recovery of a population.

Medium – An existing threat that is likely to cause a substantial decline, or substantially slow the rate of recovery of a population.

High – An existing threat that is likely to be the main cause of a rapid or catastrophic decline, or reversal of recovery of a population, at a breeding area. The threat is likely to lead to the extirpation of the species from the breeding area.

Action from 2006

- *The BSWG noted that the Parties submitting data would need to be contacted to request re-assessment of low-level threats submitted*

Comment: this action was completed with data submitted in 2007 and Parties were provided with extracts and requested to review all the data entered prior to July 2006.

Recommendation:

- *The BSWG accept the slightly revised definitions of threat levels*

The following threats were identified in the submissions including past, present, and suspected but unconfirmed threats

Nature of Threat	Past	Present	Suspected but unconfirmed	(blank)	Grand Total
Change in impact of native species		19			19
Contamination at Breeding site	1				1
Disease	8	14	38		60
Habitat alteration by alien species	50	75	4		129
Habitat alteration by humans	1				1
Human Disturbance	26	174			200
Human Take	16	1			17
Natural Disaster		23			23
Information unavailable				10	10
Predation by alien species	41	142	64		247

Grand Total	143	448	106	10	707
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There was concern from WG members that threats were not being consistently treated between submitters, with a large number of threats listed that may be 'potential' rather than 'actual' threats. In particular these threats were for Disease and Human Disturbance and natural disaster, for the threats listed as 'present threats'.

Some WG members considered this was a substantive issue, as lack of consistency in the current dataset may undermine the integrity of the analyses or interpretation of the data.

Some suggestions were put forward to resolve this problem. The WG is requested to review these and make recommendations to the AC:

1. The WG review the definitions of threats, and revise them if they do not reflect what members consider are important factors affecting albatross and petrel populations
2. Members revise their threat ratings to ensure that all threats identified are consistent with the definitions set out in section 8 of the BSWG report.
3. That a requirement be put in place for threats and other data submitted to the database be supported by appropriate documentation, e.g. published reports setting out the population effect that a threat is contributing to.

Recommendations:

- *The WG put forward revised definitions and / or lists of threats to the AC, and require provision of published information to support the listing of threats in the database.*

10. Potential outcomes from the Breeding Sites database

The BSWG recognised that the database would be used initially to provide the following outcomes:

1. The number/percent of :
 - a. global population of a species affected by particular threats
 - b. breeding areas affected by particular threats.

This analysis would guide the assessment of which were the most significant threats.

2. A list of 'key' breeding areas requiring urgent management in order of priority for each Party and internationally. This list would be arrived at by a combination of the above analyses and expert opinion of the BSWG.

3. A list of breeding areas that require management plans.
4. The ability to compare the suite of threats that are affecting different classes of ACAP-listed species – for example surface-nesting species and burrow-nesting species.

The BSWG noted that there was merit in carrying out a range of analyses along the themes of those listed above, and that these should be considered by the next meeting of the BSWG for further examination. It was recognised that national priorities would also have to be taken into account by Parties. Both national and international priority lists would require further assessment by the BSWG before submission to the Advisory Committee

Action from 2006

- *The Chair would work with members to develop / review a range of methodologies for these analyses intersessionally, and preliminary analyses would be circulated prior to the next meeting of the BSWG.*

Comment: Draft analyses are included in Annex 2 of that address these desired outcomes.

The WG members commented that item 1b may not deliver useful results due to the varying scale of breeding sites.

Recommendation:

- *The WG revise the list of required analyses in section 9 of the BSWG report.*
- *The WG recommend that the AC accept the report of the Breeding Sites Working Group, revised work programme. And analyses presented in Annex 2*

11. Publication

The BSWG agreed that simple summaries of the data within the database should be published on the ACAP website, where this was consistent with the Terms of Reference of the BSWG. It was noted that some data providers were sensitive to the general availability of the database and so it was considered unlikely that the full database would be made freely available.

Action from 2006

- *The Chair would work with the ACAP Secretariat to deliver database extracts and appropriate levels of access to Parties and via the ACAP website to the wider public.*

Comment: This work was not completed due to delays with completion of work on the database structure, and submission data of some key larger

datasets. Access to the information in the database (or subsets thereof) is a simple matter to arrange, on a technical basis, requiring export of tables or distribution of the access database as appropriate.

Recommendation:

- *The BSWG consider which data should be accessible publicly, to Parties, and recommend that the Secretariat arrange for publication of these on the ACAP website.*

4. ACAP Indicators

A proposal has been prepared to provide indicators of the status of ACAP species, which seeks to use outputs from the BSWG database and other sources (e.g. Status and Trends WG, IUCN Redlist species status).

Comments from the WG on this proposal were:

1. Indicators should include marine threats as well as the terrestrial ones covered in the proposal.
2. It would be useful if the Status and Trends, and Seabird Bycatch WGs considered proposal concomitantly, and discussed the issue at the AC.
3. Composite indicators require careful prior analysis to make sure one is combining variables in appropriate fashion.
4. Once sites are relatively consistent in delimitation and in threat categorisation, composite indices would seem feasible.
5. Indicators for scale / significance of conservation action may be somewhat problematic.
6. For all of the above, some serious analysis will be necessary to understand the properties / sensitivities etc. of the indices before we can select and / or use them.

Recommendation:

- *The working group recommend that the proposal on indicators be put to the AC3, with due consideration of the items 1 – 6 noted above.*

5. Gap analysis

The main data gaps identified for the current fields of data include:

- Galapagos sites for Waved Albatross (all information);

- Antarctic Continent for Southern Giant Petrels (complete data submitted for 30 sites, but verification outstanding about locations and management for some sites – BS Chair to complete);
- Chilean data (some fields outstanding, e.g. threats and management);
- Data on the percentage of a population affected by a particular threat (throughout); and
- Spatial data (latitude, longitude, area) lacking or that have not been verified for a number of sites.

Recommendation:

- *The BSWG should work with Parties with outstanding data to fill gaps (particularly Ecuador and Chile). Note that for Chilean sites, work by Graham Robertson, Carlos Moreno, and others has provided the basis for the population information, but threats and management data are still unavailable.*

6. Working Group structure and Chair

Given that future work requirements for the BSWG are focussed on examining priorities for conservation and management and species- wide assessment of threats (including marine-based threats), coordination and overlap with existing working groups will become stronger than in the period up to AC3. Therefore it may be worthwhile to consider alternative structures for the WGs.

The chair of the Breeding Sites Working Group will be stepping down at AC3.

Recommendation:

- *The BSWG considers the current WG structures with the AC, and*
- *Either: recommends that a new Chair be elected by the Advisory Committee for the BSWG;*
- *OR: recommends an alternative structure and revised Terms of Reference and appropriate representation.*

7. Acknowledgements

The BSWG thanks Anjali Pande and Nathan Walker of New Zealand for their contribution to the development of the database. Funding from the ACAP Secretariat to John Cooper facilitated the inclusion of data on Southern Giant Petrel breeding localities on the Antarctic Continent. Thanks to all the members of the WG who provided detailed comments on the report and prepared and checked data for the BSWG database.

8. Recommendations from the Breeding Sites Working Group to the Advisory Committee

The BSWG recommend that the Advisory Committee:

- *The WG should consider how to support the existing database and any future data needs, including possible amalgamation of databases across WGs, as appropriate.*
- *The WG requests that resources are allocated for ongoing maintenance, error checking and standardisation, future data input, analyses, and provision of extracts from the database*
- *The WG recommend an update the list of threats to include an additional categories or sub-categories as required.*
- *The WG accept the slightly revised definitions of threat levels*
- *The WG put forward revised definitions and / or lists of threats to the AC, and require provision of published information to support the listing of threats in the database.*
- *The WG revise the list of required analyses in section 9 of the BSWG report.*
- *The WG recommend that the AC accept the report of the Breeding Sites Working Group, revised work programme. And analyses presented in Annex 2*
- *The BSWG consider which data should be accessible publicly, to Parties, and recommend that the Secretariat arrange for publication of these on the ACAP website.*
- *The working group recommend that the proposal on indicators be put to the AC3, with due consideration of the items 1 – 6 noted in s11 above.*
- *The BSWG should work with Parties with outstanding data to fill gaps (particularly Ecuador and Chile). Note that for Chilean sites, work by Graham Robertson, Carlos Moreno, and others has provided the basis for the population information, but threats and management data are still unavailable.*
- *The BSWG considers the current WG structures with the AC, and*
 - *Either: recommends that a new Chair be elected by the Advisory Committee for the BSWG;*
 - *OR: recommends an alternative structure and revised Terms of Reference and appropriate representation.*

**ANNEX 1: LIST OF BREEDING SITE WORKING GROUP MEMBERS AND
OTHER CONTACTS**

Breeding Range States	Working Group members (*National Coordinators)(# chair)
Argentina (National Coordinator TBC)	Flavio Quintana Maria Laura Tombesi
Australia	Barry Baker* Rosemary Gales
Chile	Marcelo Garcia Alvarado*
Ecuador (National Coordinator TBC)	Augusto Corriere Gabrielle Montoya
France	Henri Weimerskirch* Martine Bigan
New Zealand	Simon Banks* Susan Waugh#
Norway (National Coordinator TBC)	Oystein Storkersen
South Africa	John Cooper* Robert Crawford
United Kingdom	Mark Tasker* Richard Phillips
Signatories that are not Breeding Range States and Interested Non-Signatories	Contacts
Brazil	Onildo Marini-Filho
Peru	Liliana Gomez
Scientific Committee on Antarctic Research (for Antarctic Continent)	Eric Woehler John Cooper
United States of America	Kim Rivera
BirdLife International	Ben Sullivan John Croxall

ANNEX 2: DRAFT ANALYSES OF THE BREEDING SITE WG DATABASE

This paper presents draft analyses using data submitted to the BSWG database. The main objectives for the analysis identified by the WG in 2006 were:

- To examine the number or percentage of the global population affected by particular threats;
- To examine the number or percentage of breeding areas affected by particular threats;
- To list key breeding areas requiring urgent management actions, in priority order;
- To list breeding areas requiring management plans;
- To compare the suite of threats affecting ground and burrow-nesting ACAP species; and
- Other analyses as relevant

In this document, the term 'site' (or breeding sites) follows the definition used in the instructions to the submitters of data, being is a SINGLE SPECIES breeding locality.

1. Examination of the extent of data an data gaps

Twenty-six ACAP species are included in the BSWG database (Table1.) Data for Bullers and Antipodean albatrosses are currently stored with two species codes, for their main populations (formerly separate taxa).

Data have been submitted on 426 breeding sites, divided between 10 jurisdictions (Table 2.)

Data were submitted for 25 of the 26 ACAP species (Table 3).

Data gaps are known to exist for the following:

- Galapagos sites for Waved Albatross (all information for two sites)
- Antarctic Continent for Southern Giant Petrels (complete data included in the analysis for 30 sites, but verification is outstanding about locations and management for some sites – BSWG chair or data manager to complete)

- Chilean data (some fields outstanding, e.g. threats and management for 8 sites)

2. Management planning and protection

Management planning is considered an important step in reducing risks to ACAP species. For each site where data were submitted, information was gathered about the management authority, management plans, whether those plans were current. Table 4 indicates that for 446 Island areas, management plans are known to exist for 288 areas. Of these, 85 did not specify what level of protection status was in place (left blank).

Site protection was described for each breeding site, and for a large number of sites, protection is equivalent to the highest IUCN category Ia (163 islands). Other levels of protection were IUCN category Ib (1 island), III (1 island), IV (188 islands), V (8 islands).

3. Threats

Seven threat types were identified by the WG in 2006-07 (Table 5). These covered the range of threats thought to operate on breeding sites (but not marine areas), and that would be necessary to describe threats to all ACAP species. 16 sub-categories were identified. Some sub-categories can be used with more than one threat type.

The most important threats identified, in terms of the number of listings are human disturbance (174 threats) and predation by alien species (142 threats). Habitat alteration by alien species is the third most important threat (75 threats). Threats directly related to adverse effects of alien species comprise 48% of identified threats. Threats directly attributable to human activity make up 39% of identified threats.

There was concern from WG members that threats were not being identified consistently between submitters, with a large number of threats listed that may be 'potential' rather than 'actual' threats. In particular these threats were for Disease, Human Disturbance and Natural Disaster. Lack of consistency in the current dataset may undermine the integrity of the analyses.

4. Quantifying effects

The WG requested in 2006 that parties submit information about the proportion of a species population at a breeding site that were subject to the particular threats identified there. Data submitted on this field were patchy in 2007 (Table 6). For each level of threat (High, Medium and Low), a high proportion of null records (blanks, 40%) was recorded.

The value of these data will not be fully realised until a higher proportion of sites have ‘% affected’ data submitted. Further analyses of these data were therefore not attempted.

5. Threats affecting ACAP species - by species and by island

For each ACAP species, threats were listed at the level of an island (Table 7). Only present (current) threats were used in these analyses. The species with the most threats identified in the current dataset is White-chinned petrel (89 threats), followed by Light-mantled Albatross (59 threats), Northern Giant Petrel (51 threats) and Wandering Albatross (44 threats). Grey Petrel and Southern Giant Petrel had 34 identified threats each. The remaining species had 20 or fewer threats associated with them.

In terms of severity of threats, 15 species had high level threats associated with them, and 12 had medium level threats. All had low level threats.

The threat species associated with threats are shown in tables 8 – 11. High level threats are associated with predation by cats, pigs, and stoats. Predation affected 18 ACAP species.

Habitat alteration by alien species (browsing and trampling of habitat) was listed as a threat for 12 ACAP species (Table 10), and a high level threat at three sites for Black-browed Albatross, Grey Petrel and Light-mantled Albatross (by rabbits). There were two sites with Medium level threats to Southern and Northern Giant Petrels (by rabbits). The remaining threats by a range of herbivorous animals were listed as low-level threats affecting 11 ACAP species.

Change in impact of native species by Australasian Gannets is listed as a high level threat for Shy Albatross; otherwise this threat type is associated with low levels of impact by Antarctic Fur seals for White-chinned Petrels. (Table 11)

6. Future analyses

A multitude of future analyses are possible with the current dataset. Some types of analyses will require additional data, such as the percentage of a species or breeding sites affected by different threats. Some suggestions for future analyses include:

- Comparing threats to surface-nesting and burrow-nesting species
- Examining the severity or type of threats in relation to management actions
- Examining species population parameters (e.g. population trend and size) in relation to threats and their management

Table 1. ACAP species and codes as listed in the BSWG database

Species Code	Species Scientific Name	Species Common Name
DAM	<i>Diomedea amsterdamensis</i>	Amsterdam albatross
DIA/DIG	<i>Diomedea antipodensis</i>	Antipodean albatross
DID	<i>Diomedea dabbenena</i>	Tristan albatross
DIP	<i>Diomedea epomophora</i>	Southern royal albatross
DIQ	<i>Diomedea sanfordi</i>	Northern royal albatross
DIX	<i>Diomedea exulans</i>	Wandering albatross
MAH	<i>Macronectes halli</i>	Northern giant petrel
MAI	<i>Macronectes giganteus</i>	Southern giant petrel
PCI	<i>Procellaria cinerea</i>	Grey petrel
PCN	<i>Procellaria conspicillata</i>	Spectacled petrel
PCW	<i>Procellaria westlandica</i>	Westland petrel
PHE	<i>Phoebastria palpebrata</i>	Light-mantled albatross
PHI	<i>Phoebastria irrorata</i>	Waved albatross
PHU	<i>Phoebastria fusca</i>	Sooty albatross
PRK	<i>Procellaria parkinsoni</i>	Black petrel
PRO	<i>Procellaria aequinoctialis</i>	White-chinned petrel
TQA	<i>Thalassarche cauta</i>	Shy albatross
TQB/TQP	<i>Thalassarche bulleri</i>	Buller's albatross
TQE	<i>Thalassarche eremita</i>	Chatham albatross
TQH	<i>Thalassarche carteri</i>	Indian yellow-nosed albatross
TQL	<i>Thalassarche chlororhynchos</i>	Atlantic yellow-nosed albatross
TQM	<i>Thalassarche melanophris</i>	Black-browed albatross
TQR	<i>Thalassarche chrysostoma</i>	Grey-headed albatross
TQS	<i>Thalassarche salvini</i>	Salvin's albatross
TQT	<i>Thalassarche steadi</i>	White-capped albatross
TQW	<i>Thalassarche impavida</i>	Campbell albatross

Table 2. Number of site for which data are held by jurisdiction

Jurisdiction	Total
Antarctic Continent	30
Argentina	4
Australia	17
Chile	10
Disputed	217
France	73
New Zealand	86
Norway	1
South Africa	17
United Kingdom	15
Grand Total	470

Table 3. Number of breeding sites for which data have been submitted by species.

Name of Key Species	Species Scientific Name	Antarctic	Argentina	Australia	Chile	Disputed	Ecuador	France	New Zealand	Norway	South Africa	United Kingdom	Grand Total
DAM	<i>Diomedea amsterdamensis</i>							1					1
DIA/DIG	<i>Diomedea antipodensis</i>								8				8
DID	<i>Diomedea dabbenena</i>											2	2
DIG	<i>Diomedea epomophora</i>								4				4
DIP	<i>Diomedea sanfordi</i>								5				5
DIQ	<i>Diomedea exulans</i>			1		18		12			2		33
DIX	<i>Macronectes halli</i>			1		24		9	12		2		48
MAH	<i>Macronectes giganteus</i>	30	4	3		56		5		1	2	1	102
MAI	<i>Procellaria cinerea</i>			1				6	4		2	1	14
PCI	<i>Procellaria conspicillata</i>											1	1
PCN	<i>Procellaria westlandica</i>								1				1
PCW	<i>Phoebastria palpebrata</i>			3		41		9	14		2		69
PHE	<i>Phoebastria fusca</i>							7			2	4	13
PHU	<i>Phoebastria irrorata</i>						0						0
PRK	<i>Procellaria parkinsoni</i>								2				2
PRO	<i>Procellaria aequinoctialis</i>					47		11	10		2		70
TQA	<i>Thalassarche cauta</i>			3									3
TQB/THP	<i>Thalassarche bulleri</i>								11				11
TQE	<i>Thalassarche eremita</i>								1				1
TQH	<i>Thalassarche carteri</i>							4	1		1		6
TQL	<i>Thalassarche chlororhynchos</i>											6	6
TQM	<i>Thalassarche melanophris</i>			4	9	24		3	2				42
TQR	<i>Thalassarche chrysostoma</i>			1	1	7		5	1		2		17
TQS	<i>Thalassarche salvini</i>							1	4				5
TQT	<i>Thalassarche steadi</i>								4				4
TQW	<i>Thalassarche impavida</i>								2				2
Grand Total		30	4	17	10	217		73	86	1	17	15	470

Table 4. Management plans and protection status – Figures are the number of sites on each island with (or without) a Management Plan

Jurisdiction	IUCN Status	Island	FALSE	TRUE
Antarctic Continent	Category Ia	Avian Island		1
		Charlton Island		1
		Christoffersen Island		1
		Dewart Island		1
		Giganteus Island		1
		Hawker Island		1
		Ile Apendice		1
		Ile Jean Rostand		1
		King George Island	1	4
		Litchfield Island		1
		Livingston Island		1
		Michelsen Island		1
		Moss Island		1
		Nelly Island (Antarctic)		1
		Nelson Island		1
		Powell Island		1
		Robert Island		1
	(blank)	Barrientos Island	1	
		Ile des Petrels	1	
		Ile Gouveneur	1	
		King George Island	2	3
		Livingston Island	1	
Antarctic Total			7	23
Argentina	(blank)	Isla Arce	1	
		Isla Gran Robredo	1	
		Isla Observatorio	1	
		Staten Island	1	
Argentina Total			4	
Australia	Category Ia	Bishop and Clerk Islets (MQ)		1
		Macquarie Island		7
		Pedra Branca		1
		The Mewstone		1
	Category IV	Albatross Island (AU)	1	
Australia Total			1	10
Chile	Category V	Isla Cinclodes	1	
		Isla Gonzalo	2	
		Isla Grande	1	
		Isla Norte	1	
		Isla Spirit	1	
		Isla Square	1	
		Isla Sur	1	
Chile Total			8	
Disputed	Category IV	Albatross Island (SGSSI (IGSISS))		5
		Annenkov Island		6
		Anvil Stacks		1
		Bernt		3
		Bird Island (SGSSI (IGSISS))		7
		Bjornstadt Bay Island		2

		Candlemas Island	1	
		Cape Vakop Island		2
		Clerke Rocks		1
		Cooper Island		5
		Crescent Island		4
		Grass Island		4
		Green Island		3
		Hall Island		3
		Harcourt Island		4
		Hauge Reef		3
		Hogs Mouth Rocks		1
		Inner Lee Island		5
		Invisible Island		4
		Jomfruene		2
		Kupriyanov Islands		5
		Low Rock Point island		2
		Main Island		4
		McCarthy Island		3
		Mollymawk Island		4
		Outer Lee Island		5
		Petrel Island		3
		Pickersgill Islands		4
		Prion Island		5
		Proud Island		4
		Right Whale Rocks		2
		Saddle Island		5
		Samuel Islands		4
		Skrap Skerries		2
		Skua Island		4
		Sorn		1
		South Georgia		32
		Tern Island		2
		The Guides		1
		Trinity Island		4
		Verdant Island		2
		Welcome Islands		3
		Wirik Bay island		2
		Zavodovski Island	1	
	(blank)	Barren	1	
		Beauchene	1	
		Bird	1	
		Bleaker	1	
		Bottom (Port William)	1	
		Burnt Islet (South Burnt Island, Saunders)	1	
		Carcass	1	
		Dyke (Weddell)	1	
		East Falklands	8	
		Elephant Jason	1	
		George	1	
		Golden Knob (Elephant Cays)	1	
		Governor (Beaver)	1	

		Grand Jason	1	
		Jason West Cay	1	
		Keppel	1	
		Kidney (E coast, EF)	1	
		Lively	1	
		Low (Byron Sound)	1	
		New	1	
		North (New)	1	
		Pebble	1	
		Penn (Beaver)	1	
		Sandy Cay (Elephant Cays)	1	
		Sandy/ Sandy Bay (Bleaker)	1	
		Saunders	1	
		Sea Lion		1
		South Jason & islet	1	
		Speedwell	1	
		Steeple Jason	1	
		Swan (Falkland Sound)	1	
		Third Passage (K. George Bay)	1	
		Top (Port William)	1	
		West (Cape Orford)	1	
		West Falklands	3	
		West Point	1	
Disputed Total			46	169
France	Category Ia	Ile aux Cochons	5	
		Ile de l'Est	8	
		Ile des Apotres	9	
		Ile des Pingouins	10	
		Kerguelen	13	
		St Paul	2	
	Category IV	Amsterdam	4	
		Ile de la Possession	7	
		Kerguelen	6	
	(blank)	Ile des Pingouins	1	
		Kerguelen	9	
France Total			74	
New Zealand	Category Ia	Adams Island		5
		Alert Stack		1
		Antipodes Island		5
		Archway Island		1
		Auckland Island		5
		Bollons Island		5
		Broughton Island		1
		Campbell Island		8
		Cossack Rock		1
		Daption Rocks		1
		Dent Island		3
		Disappointment Island		5
		Enderby Island		5
		Ewing Island		2
		Folly Island		2
		Great Solander Island		1

		Ile de Jeanette Marie		1
		Jacquemart Island		3
		Leeward Island		1
		Little Barrier Island	1	
		Little Solander Island		1
		Monowai Island		2
		North-East Island (NZ)		1
		Ocean Island		1
		Pitt Island		1
		Rima Islet		1
		Rose Island		1
		South Island		1
		Toru Islet		2
	Category III	South Island	1	
	(blank)	Bounty Island	1	
		Chatham Island	1	
		Great Barrier Island	1	
		Nelly Island (NZ)		1
		Rosemary Rock	1	
		The Big Sister	3	
		The Forty-fours	3	
		The Little Sister	3	
		The Pyramid	3	
New Zealand Total			18	68
Norway	Category Ib	Bouvet Island		1
Norway Total				1
South Africa	Category Ia	Marion Island		8
		Prince Edward Island		9
South Africa Total				17
Grand Total			158	288

Table 5. Threats and threat sub-categories for present threats

Nature of Threat	Browsing on / trampling habitat	Browsing on/ trampling habitat	Climate change	comment : quarantine issues with potential rodent	Competition for habitat	Degradation of habitat	Extraction	Fire	Landslide	Parasite	Pathogen	Science	Tourism	Vector for disease	Volcanic activity	Water level rising	(blank)	Grand Total
Change in impact of native species					1	17				1								19
Disease											9			5				14
Habitat alteration by alien species	5	63				7												75
Human Disturbance			5	63		48		29				9	15				5	174
Human Take							1											1
Natural Disaster			7			4			2						2	1	7	23
Predation by alien species						1											141	142
Grand Total	5	63	12	63	1	77	1	29	2	1	9	9	15	5	2	1	153	448

Table 6. Percentage of an Island population at a Breeding Site affected by a threat – present threats only

Nature of Threat	0	20	100	(blank)	Grand Total
Change in impact of native species			1	18	19
Disease	8	1		5	14
Habitat alteration by alien species	58		5	12	75
Human Disturbance	91		9	74	174
Human Take				1	1
Natural Disaster		1	2	20	23
Predation by alien species	94		1	47	142
Grand Total	251	2	18	177	448

Table 7. Threats to ACAP by species and Island and severity of threat – present threats only. Note: Islands where no threat was identified are not listed here.

Species Common Name	Island	Nature of Threat	High	Low	Medium	None
Amsterdam albatross	Amsterdam	Disease	1			
		Human Disturbance		2		
		Predation by alien species	1	1	1	
Amsterdam albatross Total			2	3	1	
Antipodean albatross	Antipodes Island	Human Disturbance		2		
	Bollons Island	Human Disturbance		2		
	Chatham Island	Habitat alteration by alien species		3		
		Human Disturbance		1		
		Predation by alien species		3		
	Pitt Island	Human Disturbance		1		
		Predation by alien species		1		
	Adams Island	Human Disturbance		1		
	Auckland Island	Predation by alien species	1	1		
Antipodean albatross Total			1	15		
Black petrel	Great Barrier Island	Habitat alteration by alien species		1		
		Predation by alien species		3		
Black petrel Total				4		
Black-browed albatross	Bollons Island	Human Disturbance		1		
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	Kerguelen	Habitat alteration by alien species		1		
		Human Disturbance		2		
		Predation by alien species		3		
	Macquarie Island	Habitat alteration by alien species	1			
Black-browed albatross Total			1	9		
Buller's albatross	Great Solander Island	Human Disturbance		1		
	North-East Island (NZ)	Human Disturbance		1		
	Rosemary Rock	Natural Disaster			1	
	The Big Sister	Natural Disaster		1	1	

	The Forty-fours	Natural Disaster		1	1	
	The Little Sister	Natural Disaster		1	1	
Buller's albatross Total				5	4	
Campbell albatross	Campbell Island	Predation by alien species		1		
	Ile de Jeanette Marie	Predation by alien species		1		
Campbell albatross Total				2		
Chatham albatross	The Pyramid	Human Take			1	
		Natural Disaster	1		1	
Chatham albatross Total			1		2	
Grey petrel	Amsterdam	Disease	1			
		Human Disturbance		2		
		Predation by alien species		1	2	
	Antipodes Island	Human Disturbance		2		
	Campbell Island	Human Disturbance		1		
		Predation by alien species		1		
	Dent Island	Human Disturbance		1		
		Predation by alien species		1		
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		2		
	Jacquemart Island	Human Disturbance		1		
		Predation by alien species		1		
	Kerguelen	Habitat alteration by alien species		7		
		Human Disturbance		1		
		Predation by alien species		2	4	
	Macquarie Island	Habitat alteration by alien species	1			
	Marion Island	Human Disturbance		1		
Grey petrel Total			2	26	6	
Grey-headed albatross	Campbell Island	Human Disturbance		1		
		Predation by alien species		1		
	Ile de la Possession	Human Disturbance		1		
		Predation by alien species		2		
	Ile de l'Est	Habitat alteration by alien species		1		

		Human Disturbance		1		
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	Kerguelen	Habitat alteration by alien species		2		
		Human Disturbance		1		
		Predation by alien species		2		
	Macquarie Island	Habitat alteration by alien species	1			
		Predation by alien species				1
	Marion Island	Human Disturbance		1		
Grey-headed albatross Total			1	15		1
Indian yellow-nosed albatross	Amsterdam	Disease	1			
		Human Disturbance		2		
		Predation by alien species		1	2	
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	St Paul	Human Disturbance		1		
		Predation by alien species		1		
Indian yellow-nosed albatross Total			1	7	2	
Light-mantled albatross	Adams Island	Human Disturbance		2		
	Antipodes Island	Disease		1		
		Human Disturbance		2		
	Archway Island	Disease		1		
		Human Disturbance		2		
	Auckland Island	Disease		1		
		Human Disturbance		2		
		Predation by alien species	1	1		
	Bollons Island	Disease		1		
		Human Disturbance		2		
	Campbell Island	Human Disturbance		1		
		Predation by alien species		1		
	Dent Island	Human Disturbance		1		
		Predation by alien species		1		
	Disappointment Island	Human Disturbance		2		

	Enderby Island	Human Disturbance		2		
	Folly Island	Human Disturbance		1		
		Predation by alien species		1		
	Ile aux Cochons	Habitat alteration by alien species		1		
		Human Disturbance		1		
		Predation by alien species		2		
	Ile de la Possession	Human Disturbance		1		
		Predation by alien species		2		
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		1		
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	Jacquemart Island	Human Disturbance		1		
		Predation by alien species		1		
	Kerguelen	Habitat alteration by alien species		3		
		Human Disturbance		2		
		Predation by alien species		6		
	Leeward Island	Disease		1		
		Human Disturbance		2		
	Macquarie Island	Habitat alteration by alien species	1			
	Marion Island	Human Disturbance		1		
	Monowai Island	Human Disturbance		1		
		Predation by alien species		1		
	Rose Island	Human Disturbance		2		
	Light-mantled albatross Total		2	57		
Northern giant petrel	Adams Island	Human Disturbance		1		
	Antipodes Island	Human Disturbance		2		
	Campbell Island	Human Disturbance		1		
		Predation by alien species		1		
	Disappointment Island	Human Disturbance		1		
	Enderby Island	Human Disturbance		1		
	Ewing Island	Human Disturbance		1		
	Folly Island	Human Disturbance		1		

		Predation by alien species		1		
	Ile aux Cochons	Habitat alteration by alien species		1		
		Human Disturbance		1		
		Predation by alien species		2		
	Ile de la Possession	Human Disturbance		1		
		Predation by alien species		2		
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		2		
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	Kerguelen	Disease		1		
		Habitat alteration by alien species		9		
		Human Disturbance		4		
		Predation by alien species		9		
	Macquarie Island	Habitat alteration by alien species			1	
	Marion Island	Human Disturbance		1		
	Nelly Island (NZ)	Human Disturbance		2		
	Ocean Island	Human Disturbance		1		
	Prion Island	Human Disturbance		1		
Northern giant petrel Total				50	1	
Northern royal albatross	South Island	Change in impact of native species			1	
		Human Disturbance		1		
		Natural Disaster		1		
		Predation by alien species		3		
	The Big Sister	Natural Disaster	1	1		
	The Forty-fours	Natural Disaster	1	1		
	The Little Sister	Natural Disaster	1	1		
Northern royal albatross Total			3	8	1	
Salvin's albatross	Ile des Pingouins	Human Disturbance		1		
Salvin's albatross Total				1		
Shy albatross	Albatross Island (AU)	Disease		1		
	Pedra Branca	Change in impact of native species	1			
		Natural Disaster		1		

Shy albatross Total			1	2		
Sooty albatross	Amsterdam	Disease	1			
		Human Disturbance		2		
		Predation by alien species		1	2	
	Ile aux Cochons	Habitat alteration by alien species		1		
		Human Disturbance		1		
		Predation by alien species		2		
	Ile de la Possession	Human Disturbance		1		
		Predation by alien species		2		
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		1		
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	Marion Island	Human Disturbance		1		
	St Paul	Human Disturbance		1		
		Predation by alien species		1		
Sooty albatross Total			1	17	2	
Southern giant petrel	Avian Island	Human Disturbance		1		
	Barrientos Island	Human Disturbance			1	
	Candlemas Island	Natural Disaster		1		
	Ile aux Cochons	Habitat alteration by alien species		1		
		Human Disturbance		1		
		Predation by alien species		2		
	Ile de la Possession	Human Disturbance		1		
		Predation by alien species		2		
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		1		
	Ile des Apotres	Human Disturbance		1		
	Ile des Pingouins	Human Disturbance		1		
	Ile Jean Rostand	Human Disturbance	1			
	Isla Arce	Human Disturbance		1		
	Isla Gran Robredo	Human Disturbance		1		
	Isla Observatorio	Human Disturbance		1		

	King George Island	Human Disturbance		1	7	
	Livingston Island	Human Disturbance		1	1	
	Macquarie Island	Habitat alteration by alien species			1	
	Marion Island	Human Disturbance			1	
	Powell Island	Human Disturbance		1		
	Prion Island	Human Disturbance		1		
	Robert Island	Human Disturbance		1		
	Zavodovski Island	Natural Disaster		1		
Southern giant petrel Total			1	22	11	
Southern royal albatross	Adams Island	Human Disturbance		1		
		Natural Disaster		1		
	Auckland Island	Predation by alien species	1	1		
	Campbell Island	Human Disturbance		1		
		Predation by alien species		1		
	Enderby Island	Human Disturbance		1		
		Natural Disaster		1		
Southern royal albatross Total			1	7		
Wandering albatross	Ile aux Cochons	Habitat alteration by alien species		1		
		Human Disturbance		1		
		Predation by alien species		2		
	Ile de la Possession	Human Disturbance		1		
		Predation by alien species		2		
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		1		
	Ile des Apotres	Human Disturbance		1		
	Kerguelen	Disease		2		
		Habitat alteration by alien species		10		
		Human Disturbance		6		
		Predation by alien species		12	2	
	Marion Island	Human Disturbance		1		
	Prion Island	Human Disturbance		1		
Wandering albatross Total				42	2	
Westland petrel	South Island	Habitat alteration by alien species		3		

		Human Disturbance		2		
		Predation by alien species	2		2	
Westland petrel Total			2	5	2	
White-capped albatross	Adams Island	Human Disturbance		1		
	Auckland Island	Human Disturbance		1		
		Predation by alien species	1	1		
	Bollons Island	Human Disturbance		1		
	Disappointment Island	Human Disturbance		1		
White-capped albatross Total			1	5		
White-chinned petrel	Albatross Island (SGSSI (IGSISS))	Change in impact of native species		1		
	Annenkov Island	Change in impact of native species		1		
	Antipodes Island	Human Disturbance		2		
	Auckland Island	Predation by alien species	1			
	Bird Island (SGSSI (IGSISS))	Change in impact of native species		1		
	Bollons Island	Human Disturbance		2		
	Cooper Island	Change in impact of native species		1		
		Natural Disaster		1		
	Cossack Rock	Human Disturbance		1		
		Predation by alien species		1		
	Crescent Island	Change in impact of native species		1		
	Dent Island	Human Disturbance		1		
		Predation by alien species		1		
	Disappointment Island	Human Disturbance		1		1
	Ewing Island	Human Disturbance		1		
	Grass Island	Change in impact of native species		1		
		Predation by alien species			1	
	Harcourt Island	Change in impact of native species		1		
		Predation by alien species			1	
	Ile de la Possession	Human Disturbance		2		
		Predation by alien species		1	1	
	Ile de l'Est	Habitat alteration by alien species		1		
		Human Disturbance		1		
	Ile des Apotres	Human Disturbance		2		

	Ile des Pingouins	Human Disturbance		2		
	Inner Lee Island	Change in impact of native species		1		
	Invisible Island	Change in impact of native species		1		
	Jacquemart Island	Human Disturbance		1		
		Predation by alien species		1		
	Kerguelen	Disease		1		
		Habitat alteration by alien species		12		
		Human Disturbance		4		
		Predation by alien species		5	10	
	Marion Island	Human Disturbance		1		
		Predation by alien species		1		
	Mollymawk Island	Change in impact of native species		1		
	Monowai Island	Human Disturbance		1		
		Predation by alien species		1		
	Outer Lee Island	Change in impact of native species		1		
	Petrel Island	Change in impact of native species		1		
	South Georgia	Change in impact of native species		5		
		Habitat alteration by alien species		5		
		Natural Disaster		1		
		Predation by alien species			4	
White-chinned petrel Total			1	71	17	1
Grand Total			22	373	51	2

Table 8 Threat species in relation to severity of threat

	Nature of Threat	Cattle	Dog	Goat	Cat	Human	House mouse	Stoat	Ferret	Australasian gannet	NUL	Rabbit	Sheep	Mouflon	Polynesian rat	Norwegian rat	Ship rat	Reindeer	Antarctic Fur sea	Pig	Brush-tailed possum
High	Change in impact of native species									1											
	Disease														4						
	Habitat alteration by alien species											4									
	Human Disturbance					1															
	Natural Disaster					4															
	Predation by alien species				2			1												5	
High Total					2	5		1		1		4			4					5	
Medium	Change in impact of native species										1										
	Habitat alteration by alien species											2									
	Human Disturbance					10															
	Human Take					1															
	Natural Disaster					5															
	Predation by alien species		1		12											7	12				
Medium Total			1		12	16					1	2				7	12				
Low	Change in impact of native species																		17		
	Disease						5				1				4						
	Habitat alteration by alien species	2		1								32	6	4				22		1	1
	Human Disturbance					154					8										
	Natural Disaster					7					5										
	Predation by alien species		1		41		36	1	1							1	18			1	1
Low Total		2	1	1	41	161	41	1	1		14	32	6	4	4	1	18	22	17	2	2
None	Human Disturbance					1															
	Predation by alien species				1																
None Total					1	1															
Grand Total		2	2	1	56	183	41	2	1	1	15	38	6	4	8	8	30	22	17	7	2

Table 9. Alien Predator species and level of threat

Species Common Name	level of Threat	Dog	Cat	House mouse	Stoat	Ferret	Norwegian rat	Ship rat	Pig	Brush-tailed possum
Amsterdam albatross	High		1							
	Low			1						
	Medium							1		
Antipodean albatross	High								1	
	Low		3						2	1
Black petrel	Low	1	1				1			
Black-browed albatross	Low		1	1				1		
Campbell albatross	Low		2							
Grey petrel	Low		3	3						
	Medium		3					3		
Grey-headed albatross	Low		2	1				2		
	None		1							
Indian yellow-nosed albatross	Low			2						
	Medium		1					1		
Light-mantled albatross	High								1	
	Low		9	4				3		
Northern giant petrel	Low		6	5				4		
Northern royal albatross	Low		1		1	1				
Sooty albatross	Low		1	4				1		
	Medium		1					1		
Southern giant petrel	Low		1	2				1		
Southern royal albatross	High								1	
	Low		2							
Wandering albatross	Low		4	6				6		
	Medium		2							
Westland petrel	High		1		1					
	Medium	1					1			
White-capped albatross	High								1	
	Low		1							
White-chinned petrel	High								1	
	Low		4	7						
	Medium		5				6	6		

Grand Total		2	56	36	2	1	8	30	6	1
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Table 10. Threat species associated with Habitat alteration by alien species in relation to severity of threat

	level of Threat	Cattle	Goats	Rabbits	Sheep	Mouflon	Reindeer	Pig	Brush-tailed possum
Antipodean albatross	Low	1			2				
Black petrel	Low							1	
Black-browed albatross	High			1					
	Low						1		
Grey petrel	High			1					
	Low			3	1	1	3		
Grey-headed albatross	High			1					
	Low			2			1		
Light-mantled albatross	High			1					
	Low			3	1	1			
Northern giant petrel	Low			6	1	1	3		
	Medium			1					
Sooty albatross	Low			2					
Southern giant petrel	Low			2					
	Medium			1					
Wandering albatross	Low			8			4		
Westland petrel	Low	1	1						1
White-chinned petrel	Low			6	1	1	10		
Grand Total		2	1	38	6	4	22	1	1

Table 11. Threat species with a change in impact of native species in relation to severity of threat

Species Common Name	Current known level of Threat	Australasian gannet	Antarctic Fur Seal
Shy albatross	High	1	
White-chinned petrel	Low		17

11.