IDENTIFYING CANDIDATE SPECIES FOR INCLUSION WITHIN THE AGREEMENT ON THE CONSERVATION OF ALBATROSSES AND PETRELS

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SUMMARY

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A scoring system is developed to identify members of the avian order Procellariiformes as candidates for inclusion within the international Agreement on the Conservation of Albatrosses and Petrels (ACAP). Two groups of birds appear as strong candidates: three North Pacific albatrosses *Phoebastria* spp. and three Mediterranean shearwaters of the genera *Calonectris* and *Puffinus*. Four mainly southern hemisphere–breeding shearwaters *Puffinus* spp. and the Peruvian Diving Petrel *Pelecanoides garnotii* might also be considered for listing. ACAP's Advisory Committee has agreed to progress the listing of the three albatrosses. Such listing would help move ACAP from being an essentially southern hemisphere agreement to a global one.

Key words: International agreement, seabird conservation, threatened species, Procellariiformes

INTRODUCTION

The Agreement on the Conservation of Albatrosses and Petrels (ACAP) is an international instrument that aims to achieve and maintain a favourable conservation status for albatrosses and petrels. It was developed because of global concern over the parlous conservation status of albatrosses in particular and the knowledge that highly migratory species that cross national boundaries require international efforts to conserve them (Cooper *et al.* 2006).

ACAP entered into force in February 2004 and applies only to the species of albatrosses and petrels listed in Annex 1 to the Agreement. To date, ACAP is essentially a regional agreement, with only species breeding in the southern hemisphere being listed in the Annex. However, the Agreement text does not make any geographic restrictions, allowing for geographic expansion by the relatively simple expedient of adding new species of albatrosses and petrels to those already listed.

Theoretically, it appears possible to add any species to Annex 1, based on the definition of an albatross and petrel in Article I 2 a:

> "Albatross" and/or "petrel" means one of any species, subspecies or population of the albatrosses and/or, as the case may be, petrels listed in Annex 1 to this Agreement.

However, it is clear from the Agreement's title, preambular clauses, and the scope, definitions and interpretation outlined in Article 1 that it was the intent of those drafting the Agreement to restrict the species covered to seabirds and, more specifically, to members of the avian order Procellariiformes. Discussion at the Scientific Meeting that preceded ACAP's First Session of the Meeting of Parties discussed possible changes to Annex 1 and noted that:

> Changes to Annex 1 would require the development of appropriate criteria;
>
> the term "petrel" was not defined in the Agreement and could include shearwaters *Puffinus* spp.;
>
> Cory's Shearwater *Calonectris diomedea* was a potential candidate for inclusion on Annex 1; and
>
> there had been considerable discussion about including North Pacific albatrosses in ACAP Annex 1 during ACAP's negotiation (ACAP Secretariat 2004a).

We have assumed that there is agreement amongst ACAP parties that all members of the Procellariiformes fall within the definition of "albatrosses and petrels" and hence are potential candidates for Annex 1. This means that storm-petrels (family Hydrobatidae) and diving petrels (Pelecanoididae) may also be considered for inclusion, along with all the members of the families Procellariidae (petrels, fulmars, prions and shearwaters) and Diomedeidae (albatrosses).

At its First Meeting of Parties, ACAP agreed to consider which new species might be added to Annex 1 in the future and requested that a discussion paper on the subject be prepared for consideration by its Advisory Committee [Resolution 1.5, Annex 2 Work Programme for the Advisory Committee for 2005 to 2007 (ACAP Secretariat 2004b)]. Such a discussion paper should attempt to set out an objective procedure for selecting candidate species. At this meeting, South Africa offered to take the lead in preparing the paper.

Accordingly, a paper (AC2 Doc 21, www.acap.aq/en/index.php?option=com_docman&task=doc_download&gid=119&Itemid=33) co-drafted by Australia and South Africa was submitted to the Second Meeting of ACAP's Advisory Committee. In consideration of this submission, the committee decided that a new version should be prepared for its 2007 meeting, that would take account of the following points:

> the need to develop independent criteria, noting that the criteria of endemism and population size (rarity) were already taken into account by the IUCN [International Union for Conservation of Nature] Red List;
>
> the desirability or not of the inclusion of listing by the Convention on Migratory Species as a criterion; and
>
> the desirability of weighting at-sea threats, since fishing-related bycatch was already recognized as a key threat to ACAP-listed species (ACAP Secretariat 2006).

A revised paper (AC3 Doc 18, www.acap.aq/en/index.php?option=com_docman&task=doc_download&gid=52&Itemid=33) took account of the above advice by revising the original document. Additionally, it took account of the decision of the Second Session of the Meeting of Parties, held in November 2006, to give specific status to the White-capped Albatross *Thalassarche steadi* and to the most recent revisions (www.birdlifeforums.org) to the IUCN Red List by BirdLife International.

It is suggested that the procedure described and implemented below should be used as an aid when considering proposals from parties to ACAP to list new species. Such proposals would include a detailed justification, possibly covering other issues in addition to the eight criteria outlined below, and would also take account of domestic priorities and reviews of the conservation status of candidate species (e.g. Barnes 2000; Garnett & Crowley 2000; Taylor 2000a, 2000b; Baker *et al.* 2002). The value of the current exercise is therefore seen as identifying from which groups of procellariiforms (in taxonomic, geographic and other terms) new proposals are likely to come and to propose a way of evaluating such proposals in a comparative manner.

THE PROCELLARIIFORMS

The taxonomy of the procellariiforms is not settled (Robertson & Nunn 1998, Brooke 2004, Penhallurick & Wink 2004, Rheindt & Austin 2005). Especially for the albatrosses, there are conflicting views on the numbers of extant species, and ACAP's Advisory Committee has appointed a working group to consider which taxonomic treatment it should adopt for this family (Cooper *et al.* 2006). In the light of that uncertainty, the present paper largely follows the taxonomic treatment of Brooke (2004) which accords closely with that of BirdLife International in its consideration of the conservation status of the world's birds (BirdLife International 2004).

Brooke (2004) lists a total of 128 extant species of procellariiforms in four families, made up of 21 albatrosses, 81 petrels (*sensu lato*), 22 storm-petrels and four diving petrels. Currently, following Brooke (2004), but with the addition of the White-capped Albatross (see above), 19 species of albatrosses and seven species of petrels are listed within ACAP. The listed albatrosses include all the species within the family other than the three species of the genus *Phoebastria* that breed solely in the Northern Hemisphere. The seven petrels include all species of *Macronectes* (giant petrels) and *Procellaria* within the family Procellariidae. No storm-petrels or diving petrels are included, nor are any members of the several other genera of the family Procellariidae.

CHOOSING CRITERIA FOR SELECTING CANDIDATE ACAP SPECIES

A number of criteria, other than the purely taxonomic as considered above, could be used to select candidate species for inclusion within ACAP. These are now considered briefly.

Global conservation status

All procellariiforms have been assigned a category of threat by BirdLife International, following criteria adopted by the IUCN (BirdLife International 2004, www.birdlifeforums.org). Of the 129 living species, 58 (45%) are currently (May 2008) classified as threatened, ranging from Critically Endangered (16 species), through Endangered (16 species) to Vulnerable (26 species). A further 17 species are considered to be Near-threatened. A threatened status suggests that the species might well benefit from being listed within an international agreement.

Listing within the Convention on Migratory Species

ACAP is a "daughter" agreement of the Convention on the Conservation of Migratory Species of Wild Animals [the Bonn Convention, or CMS (Cooper *et al.* 2006)]. The CMS encourages international cooperative action to conserve and manage migratory species, and encourages its parties to conclude agreements on wild animals that periodically cross national jurisdictional boundaries. The listing of a species within the CMS is not a prerequisite for its inclusion within ACAP, but it does show that the parties to the CMS have considered that some form of international action is desirable. Thus the several species of procellariiform seabirds currently listed on one or both of the two appendices of the CMS, and not currently listed within ACAP, warrant consideration as candidate species.

Current population trend

Current population trend is perhaps the most important criterion on which to judge the conservation status of a species. Many procellariiforms have decreasing populations and, as a consequence, are in need of conservation action and may thus warrant being be considered as candidate species for ACAP listing. However, the paucity of information on trends for most species (Brooke 2004) makes scoring of this criterion difficult.

Population size

The global populations of procellariiform seabirds vary in size greatly, from a few tens (e.g. some gadfly petrels *Pterodroma* spp.) to millions (e.g. several shearwaters *Puffinus* spp.). IUCN categories of threat are largely based on population trends, but given the huge ranges in population sizes that occur within the order, it is considered that rarity should also be a factor influencing the choice of candidate species for ACAP listing.

Level of endemism

ACAP is an international agreement. Thus it seems reasonable that species should breed within at least two states to be considered strong candidates. In other words, single-country endemic procellariiforms

might be accorded a lower priority for ACAP listing becasue conservation efforts directed at them will be largely of a domestic and not of an international nature. However, although several single-country endemic species are already listed within ACAP, all face threats within international waters because of their migratory nature (next subsection).

Migratory nature

Closely allied to the above criterion, the highly pelagic nature (in the great main) of the procellariiform species means that they often undertake long migrations at sea. This suggests that most species will travel within the territorial and Exclusive Economic Zone (EEZ) waters of more than one individual state and also within international waters. A high level of migratory behaviour might then suggest that inclusion within ACAP is warranted, because any conservation actions required will not be the sole responsibility of any one state.

Land-based threats

Many procellariiform species face land-based threats at their breeding grounds from such factors as alien species, pollution, disturbance and habitat loss. Such threats have been recognized by ACAP. It seems reasonable to consider that if similar land-based threats are faced by a species in more than one breeding-range state, then its listing within ACAP might lead to an improvement in its conservation status, by, for example, transfer of expertise ("capacity building") and by collaborative activities.

At-sea conservation threats

Lastly, the main driving force behind the negotiation and adoption of ACAP was the ongoing threat facing procellariiform seabirds within international waters from fishery interactions, especially with longlining gear (Anonymous 2000, Cooper *et al.* 2006). It was realized that such threats could be addressed only through the combined actions of many states—breeding-range and fishing nations alike. Thus, a species severely affected by at-sea fishing might well be a good candidate for listing within ACAP.

APPLYING THE SELECTION CRITERIA

The approach taken has been to assess all 129 extant species of procellariiform seabirds against the above eight criteria, using a semi-quantified scale (e.g. IUCN status Critically Endangered = 4, Endangered = 3, Vulnerable = 2, Near-threatened = 1, and Not Threatened/Least Concern = 0; see Appendix 1 at the *Marine Ornithology* web site for details of the scoring method used). The individual scores have then been totalled for each species. The important role ACAP has commenced to take in addressing at-sea threats to procellariiforms which requires international collaboration to be effective (e.g. by interacting with Regional Fishery Management Organizations—Cooper *et al.* 2006, ACAP Secretariat 2007) has been recognized by weighting (doubling) the assigned scores for that criterion to produce a list of weighted total scores.

To provide a "marker" below which a total weighted score would suggest that the species is not a priority candidate for ACAP listing, the same scoring system has been applied to the 26 species already listed within ACAP. An unlisted species scoring noticeably below the lowest score of the listed species would be unlikely to be a priority candidate for listing. Conversely, those species scoring the same as, or above, that "marker" could be considered suitable candidates.

To allow for the lack of independence of several criteria (e.g. IUCN threatened status takes account of population trend, which is included here as a separate criterion), the total weighted scores have been adjusted in two ways:

- by subtracting the IUCN status criterion, and
- by subtracting both the IUCN and CMS criteria.

CANDIDATE SPECIES BASED ON TOTAL WEIGHTED SCORES

Tables 1 lists the total scores and total weighted scores obtained for all 129 procellariiform species considered (the same list, ordered by total weighted score, is given in Appendix 2 at the *Marine Ornithology* web site). Total weighted scores for the 26 ACAP-listed species (footnoted in the table) ranged from 19 to 29, with a mean of 25. Scores for non-listed species ranged from 4 to 27. Only eight non-listed species (scoring range: 19–27; mean: 22) attained total weighted scores equal to or higher than the lowest weighted score attained by a listed species. No unlisted species exceeded the highest weighted score of a listed species, suggesting that the original suite of species selected for ACAP listing was a good one.

These eight species may be regarded as candidate species for consideration for inclusion within ACAP. Notably, they include the three remaining unlisted albatrosses (Short-tailed *Phoebastria albatrus,* Black-footed *Ph. nigripes* and Laysan *Ph. immutabilis,* all endemic to the North Pacific Ocean), as well as the Northern or Arctic Fulmar *Fulmarus glacialis,* three shearwater species that breed mainly within the Mediterranean Sea (Cory's *Calonectris diomedea,* Yelkouan *Puffinus yelkouan* and Balearic *P. mauretanicus*) and the Peruvian Diving Petrel *Pelecanoides garnotii.*

Species that closely approached the marker (i.e. have a total weighted score of 18) are three gadfly petrels, the Bermuda Petrel or Cahow *Pterodroma cahow,* the Phoenix Petrel *Pt. alba* and the Galapagos Petrel *Pt. phaeopygia* (out of 33 *Pterodroma* species), four shearwaters that mainly breed in the southern hemisphere and undergo trans-equatorial migrations (Wedge-tailed *P. pacificus,* Sooty Shearwater *P. griseus,* Pink-footed *P. creatopus* and Flesh-footed *P. carneipes*) and the Polynesian Storm-Petrel *Nesofregetta fuliginosa.*

CANDIDATES BASED ON ADJUSTED SCORES

Avoiding "double dipping" by leaving out the IUCN status and CMS listing criteria from the total weighted scores results in ACAP-listed species being not so well identified. For example, the Critically Endangered and CMS-listed Amsterdam Albatross *D. amsterdamensis* then scores noticeably lower than does the abundant and non-threatened Northern Fulmar (11 as compared with 19). The lack of complete independence of criteria notwithstanding, the use of total weighted scores, as has been done here, seems to be a more practical method of assessing procellariiform species for inclusion within ACAP.

SIGNIFICANCE OF LISTING THE CANDIDATE SPECIES

North Pacific albatrosses

It is fair to say that ACAP, although not restricted geographically, has from its negotiation and inception been concentrated on albatrosses and petrels of the southern hemisphere, at least partially explaining

why the North Pacific albatrosses were not included from the outset (Cooper *et al.* 2006). Their inclusion does, however, appear warranted, at least based on the scoring exercise presented here. Inclusion will have far-reaching implications in terms of increasing the number of range states, and thus the potential membership of ACAP. Further, domestic and international efforts are already underway to address the conservation concerns of these species (COSEWIC 2003, USFWS 2005, COSEWIC 2007, Naughton *et al.* 2007, Environment Canada 2008) and via the multinational North Pacific Albatross Working Group and the Short-tailed Albatross Recovery Team. A consideration of their inclusion within ACAP should therefore address how ACAP could "add value" to these existing efforts.

Mediterranean shearwaters

As far as it is known, no formal international efforts have as yet commenced to address the conservation of the three Mediterranean-breeding shearwaters as a single group, although calls for international action in relation to longlining mortality have been made (Cooper *et al.* 2003, Dunn 2007). However, a Species Action Plan for the Critically Endangered Balearic Shearwater has been produced by BirdLife International on behalf of the European Commission (BirdLife International 2002, Gallo-Orsi 2003, see also Oro *et al.* 2004). At its most recent meeting (the Eighth, held in 2005), the CMS called for concerted action to be taken by member states to improve the conservation status of this species, listing it on its Appendix I at the same meeting at the request of Spain [UNEP/CMS/Resolution 8.29 (www.cms.intwww.cms.int/bodies/COP/cop8/documents/proceedings/pdf/eng/CP8Res_8_29_Concerted_Action_AppI_eng_rev.pdf)]. Listing within ACAP seems to be one way that such action could be progressed, noting also that the species' single breeding-range state, Spain, is a party to ACAP.

Southern hemisphere shearwaters

Similar to the Mediterranean shearwaters, the four relatively high-scoring, primarily southern, shearwaters are known or are thought to be deleteriously affected by fishing activities [e.g. for the Flesh-footed Shearwater (Baker & Wise 2005)]. ACAP activities aimed at reducing at-sea mortality of listed species should also improve the conservation status of this group of largely co-occurring southern shearwaters, suggesting that their formal inclusion within ACAP should be considered. It is to be noted that, following a proposal by Chile, the Pink-footed Shearwater has been listed within Appendix I of the CMS and that conservation efforts have been proposed within its northern hemisphere non-breeding range (COSEWIC 2004, CEC 2005, Environment Canada 2008). However, these northern efforts are apparently proceeding without the formal involvement of Chile, the species' sole breeding-range state and a signatory to ACAP (but see Hinojosa Sáez & Hodum 2007). Although it did not score particularly highly (14), a fifth southern hemisphere transequatorial migrant, the Short-tailed Shearwater *P. tenuirostris*, fits well within this group.

Gadfly petrels

The Bermuda, Phoenix and Galapagos Petrels are species whose primary threats are land-based, and there is no evidence of at-sea threats affecting them, unlike all the currently listed ACAP species and most of the other high-scoring species. Their consideration for listing within ACAP might thus be given a low priority.

Remaining candidate species

The remaining candidate species, including those closely approaching the "marker," do not fall within any coherent group, and so they may perhaps be considered as having a lower priority for inclusion within ACAP. For example, the Northern Fulmar might best be treated internationally (if currently necessary at all) through the Program for the Conservation of Arctic Flora and Fauna (CAFF) of the Arctic Council (Cooper *et al.* 2000). However, the Peruvian Diving Petrel, a CMS Appendix I–listed species, breeds only within Chile and Peru (which countries jointly proposed its CMS listing). As parties to ACAP, these two countries might wish to consider progressing the species' conservation via the Agreement and, as a consequence, propose its inclusion.

PROGRESS WITH LISTING NEW SPECIES WITHIN THE AGREEMENT

At the Third Meeting of ACAP's Advisory Committee held in Valdivia, Chile, in June 2007, listing of new species was considered, using an earlier version of this paper as a basis for discussion (ACAP Secretariat 2007). The committee agreed as a first priority that the addition of the three North Pacific albatrosses should be progressed intersessionally by requesting that the ACAP Interim Secretariat prepare a supporting document assessing the species' conservation status. That document would be considered at the next meeting of the Advisory Committee (to be held in August 2008 in South Africa). If support were then to be forthcoming, the Advisory Committee would seek agreement from a Party or Parties to submit a resolution to list the North Pacific albatross species on Annex 1 of the Agreement at the Third Session of the Meeting of Parties in 2009 (ACAP Secretariat 2007). Such action might result in countries that are breeding-range states for the newly listed species [Japan, Mexico and the United States of America (Brooke 2004)] becoming parties to ACAP in time. Such action would help move ACAP from being an essentially southern hemisphere to a global agreement.

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TABLE 1

Scores obtained, using the scoring system developed in this paper, to assess the suitability of 129 Procellariiform species for inclusion on Agreement on the Conservation of Albatrosses and Petrels (ACAP) Annex 1

Name		IUCN status	CMS listing	Population		Endemism	Migratory	Threats		Total	Weighted total		
Common	Scientific			Size	Current trend			Land-based	At-sea		Calculated[a]	IUCN	IUCN+CMS
Wandering Albatross[b]	*Diomedea exulans*	2	4	3	2	3	4	3	4	25	29	27	23
Antipodean Albatross[b]	*Diomedea antipodensis*	2	4	2	1	0	3	1	4	17	21	19	15
Amsterdam Albatross[b]	*Diomedea amsterdamensis*	4	4	4	0	0	1	2	2	17	19	15	11
Tristan Albatross[b]	*Diomedea dabbenena*	4	4	3	4	0	4	2	4	25	29	25	21
Northern Royal Albatross[b]	*Diomedea sanfordi*	3	4	3	1	0	4	1	4	20	24	21	17
Southern Royal Albatross[b]	*Diomedea epomophora*	3	4	2	0	0	4	1	4	18	22	19	15
Waved Albatross[b]	*Phoebastria irrorata*	4	4	2	3	0	2	2	4	21	25	21	17
Short-tailed Albatross	*Phoebastria albatrus*	2	4	4	0	0	4	2	4	20	24	22	18
Black-footed Albatross	*Phoebastria nigripes*	3	4	2	2	1	4	3	4	23	27	24	20
Laysan Albatross	*Phoebastria immutabilis*	2	4	1	2	2	4	3	4	22	26	24	20
Black-browed Albatross[b]	*Thalassarche melanophrys*	3	4	1	2	4	4	3	4	25	29	26	22
Campbell Albatross[b]	*Thalassarche impavida*	3	4	2	0	0	2	1	4	16	20	17	13
Shy Albatross[b]	*Thalassarche cauta*	1	4	2	0	0	4	2	4	17	21	20	16
White-capped Albatross[b]	*Thalassarche steadi*	1	4	2	0	0	4	1	4	16	20	19	15
Chatham Albatross[b]	*Thalassarche eremita*	4	4	3	0	1	4	1	4	21	25	21	17
Salvin's Albatross[b]	*Thalassarche salvini*	2	4	2	2	2	4	3	4	23	27	25	21
Grey-headed Albatross[b]	*Thalassarche chrysostoma*	2	4	2	2	4	4	3	4	25	29	27	23
Atlantic Yellow-nosed Albatross[b]	*Thalassarche chlororhynchos*	3	4	2	3	0	4	1	4	21	25	22	18
Indian Yellow-nosed Albatross[b]	*Thalassarche carteri*	3	4	2	2	1	4	3	4	23	27	24	20
Buller's Albatross[b]	*Thalassarche bulleri*	1	4	2	0	0	4	1	4	16	20	19	15
Sooty Albatross[b]	*Phoebetria fusca*	3	4	2	2	2	4	3	4	24	28	25	21
Light-mantled Sooty Albatross[b]	*Phoebetria palpebrata*	1	4	2	2	4	4	3	4	24	28	27	23
Southern Giant Petrel[b]	*Macronectes giganteus*	1	4	2	2	4	4	4	4	25	29	28	24
Northern Giant Petrel[b]	*Macronectes halli*	1	4	2	0	4	4	3	4	22	26	25	21
Northern Fulmar	*Fulmarus glacialis*	0	0	0	0	4	4	3	4	15	19	19	19
Southern Fulmar	*Fulmarus glacialoides*	0	0	0	0	2	4	0	0	6	6	6	6
Antarctic Petrel	*Thalassoica antarctica*	0	0	0	0	0	4	0	0	4	4	4	4
Cape Petrel	*Daption capense*	0	0	0	0	4	4	3	1	12	13	13	13
Snow Petrel	*Pagodroma nivea*	0	0	0	0	3	3	0	0	6	6	6	6
Blue Petrel	*Halobaena caerulea*	0	0	0	0	4	4	4	0	12	12	12	12
Broad-billed Prion	*Pachyptila vittata*	0	0	0	0	2	4	4	0	10	10	10	10
Salvin's Prion	*Pachyptila salvini*	0	0	0	0	2	4	4	0	10	10	10	10
Antarctic Prion	*Pachyptila desolata*	0	0	0	0	4	4	4	0	12	12	12	12
Slender-billed Prion	*Pachyptila belcheri*	0	0	0	0	3	4	4	0	11	11	11	11
Fairy Prion	*Pachyptila turtur*	0	0	0	0	4	4	4	0	12	12	12	12
Fulmar Prion	*Pachyptila crassirostris*	0	0	1	0	1	2	2	0	6	6	6	6
Kerguelen Petrel	*Lugensa brevirostris*	0	0	1	0	2	4	4	0	11	11	11	11
Great-winged Petrel	*Pterodroma macroptera*	0	0	0	0	4	4	4	0	12	12	12	12
White-headed Petrel	*Pterodroma lessonii*	0	0	1	0	2	4	4	0	11	11	11	11
Atlantic Petrel	*Pterodroma incerta*	2	0	0	1	0	4	2	0	9	9	7	7
Providence Petrel	*Pterodroma solandri*	2	0	2	0	0	4	2	0	10	10	8	8
Magenta Petrel	*Pterodroma magentae*	4	0	4	0	0	1	2	0	11	11	7	7
Murphy's Petrel	*Pterodroma ultima*	1	0	1	0	1	4	3	0	10	10	9	9

Table 1, continued

Name		IUCN	CMS	Population				Threats			Weighted total		
Common	Scientific	status	listing	Size	Current trend	Endemism	Migratory	Land-based	At-sea	Total	Calculated[a]	IUCN	IUCN+CMS
Soft-plumaged Petrel	*Pterodroma mollis*	0	0	0	0	4	4	3	0	11	11	11	11
Zino's Petrel	*Pterodroma madeira*	4	0	4	0	0	1	2	0	11	11	7	7
Fea's Petrel	*Pterodroma feae*	1	0	4	0	1	4	4	0	14	14	13	13
Jamaica Petrel	*Pterodroma caribbaea*	4	0	4	0	0	2	2	0	12	12	8	8
Bermuda Petrel	*Pterodroma cahow*	3	2	4	0	0	3	2	2	16	18	15	13
Black-capped Petrel	*Pterodroma hasitata*	3	0	3	1	1	4	4	0	16	16	13	13
Juan Fernandez Petrel	*Pterodroma externa*	2	0	0	0	0	4	2	0	8	8	6	6
Kermadec Petrel	*Pterodroma neglecta*	0	0	2	1	4	4	4	0	15	15	15	15
Herald Petrel	*Pterodroma heraldica*	0	0	2	0	4	4	3	0	13	13	13	13
Trinidade Petrel	*Pterodroma arminjoniana*	2	0	3	0	1	3	3	0	12	12	10	10
Henderson Petrel	*Pterodroma atrata*	3	2	2	3	1	3	2	0	16	16	13	11
Phoenix Petrel	*Pterodroma alba*	2	0	3	2	3	4	4	0	18	18	16	16
Barau's Petrel	*Pterodroma baraui*	3	0	3	0	0	4	2	0	12	12	9	9
Hawaiian Petrel	*Pterodroma sandwichensis*	2	2	3	0	0	4	2	0	13	13	11	9
Galapagos Petrel	*Pterodroma phaeopygia*	4	2	2	4	0	4	2	0	18	18	14	14
Mottled Petrel	*Pterodroma inexpectata*	1	0	0	0	0	4	2	0	7	7	6	6
White-necked Petrel	*Pterodroma cervicalis*	2	0	2	0	2	4	4	0	14	14	12	12
Black-winged Petrel	*Pterodroma nigripennis*	0	0	0	0	3	4	3	0	10	10	10	10
Chatham Island Petrel	*Pterodroma axillaris*	4	0	4	4	0	1	2	0	15	15	11	11
Bonin Petrel	*Pterodroma hypoleuca*	0	0	1	0	1	4	3	0	9	9	9	9
Gould's Petrel	*Pterodroma leucoptera*	2	0	3	0	2	4	4	0	15	15	13	13
Collared Petrel	*Pterodroma brevipes*	0	0	3	0	3	4	3	0	13	13	13	13
Cook's Petrel	*Pterodroma cookii*	3	0	2	0	0	4	2	0	11	11	8	8
De Filippi's Petrel	*Pterodroma defilippiana*	2	0	3	0	0	1	2	0	8	8	6	6
Stejneger's Petrel	*Pterodroma longirostris*	2	0	1	0	0	4	2	0	9	9	7	7
Pycroft's Petrel	*Pterodroma pycrofti*	3	0	3	0	0	4	2	0	12	12	9	9
Mascarene Petrel	*Pseudobulweria aterrima*	4	0	4	4	0	1	2	0	15	15	11	11
Beck's Petrel	*Pseudobulweria becki*	4	0	4	0	1	2	1	0	12	12	8	8
Tahiti Petrel	*Pseudobulweria rostrata*	1	0	3	0	4	4	3	0	15	15	14	14
Fiji Petrel	*Pseudobulweria macgillivrayi*	4	0	4	4	0	1	1	0	14	14	10	10
Grey Petrel[b]	*Procellaria cinerea*	1	4	1	0	4	4	4	4	22	26	25	21
White-chinned Petrel[b]	*Procellaria aequinoctialis*	2	4	0	3	3	4	4	4	24	28	26	22
Spectacled Petrel[b]	*Procellaria conspicillata*	2	4	3	0	0	4	0	4	17	21	19	15
Black Petrel[b]	*Procellaria parkinsoni*	2	4	3	0	0	4	2	4	19	23	21	17
Westland Petrel[b]	*Procellaria westlandica*	2	4	1	0	0	3	2	4	16	20	18	14
Streaked Shearwater	*Calonectris leucomelas*	0	0	0	0	3	4	1	0	8	8	8	8
Cory's Shearwater	*Calonectris diomedea*	0	0	1	1	4	4	4	3	17	20	20	20
Cape Verde Shearwater	*Calonectris edwardsii*	0	0	3	3	0	3	2	3	14	17	17	17
Christmas Shearwater	*Puffinus nativitatis*	0	0	2	0	4	4	3	0	13	13	13	13
Wedge-tailed Shearwater	*Puffinus pacificus*	0	0	0	0	4	4	4	3	15	18	18	18
Buller's Shearwater	*Puffinus bulleri*	0	0	1	0	0	4	2	0	7	7	7	7
Manx Shearwater	*Puffinus puffinus*	0	0	1	0	4	4	3	0	12	12	12	12
Yelkouan Shearwater	*Puffinus yelkouan*	0	0	2	0	4	4	3	3	16	19	19	19
Balearic Shearwater	*Puffinus mauretanicus*	4	4	3	2	0	4	2	3	22	25	21	17
Black-vented Shearwater	*Puffinus opisthomelas*	2	0	2	3	0	2	2	0	11	11	9	9

Table 1, continued

Name		IUCN	CMS	Population				Threats			Weighted total		
Common	Scientific	status	listing	Size	Current trend	Endemism	Migratory	Land-based	At-sea	Total	Calculated[a]	IUCN	IUCN+CMS
Newell's Shearwater	*Puffinus newelli*	3	0	2	1	1	3	2	0	12	12	9	9
Townsend's Shearwater	*Puffinus auricularis*	4	0	3	1	0	1	2	0	11	11	7	7
Fluttering Shearwater	*Puffinus gavia*	0	0	2	0	0	2	2	0	6	6	6	6
Hutton's Shearwater	*Puffinus huttoni*	3	0	1	0	0	2	2	1	9	10	7	7
Audubon's Shearwater	*Puffinus lherminieri*	0	0	1	0	4	4	3	0	12	12	12	12
Heinroth's Shearwater	*Puffinus heinrothi*	2	0	4	0	1	2	1	0	10	10	8	8
Little Shearwater	*Puffinus assimilis*	0	0	1	0	4	4	3	0	12	12	12	12
Sooty Shearwater	*Puffinus griseus*	0	0	0	0	3	4	3	4	14	18	18	18
Short-tailed Shearwater	*Puffinus tenuirostris*	0	0	0	0	0	4	2	4	10	14	14	14
Pink-footed Shearwater	*Puffinus creatopus*	2	2	2	0	0	4	2	3	15	18	16	14
Flesh-footed Shearwater	*Puffinus carneipes*	0	0	1	0	2	4	3	4	14	18	18	18
Great Shearwater	*Puffinus gravis*	0	0	0	0	0	4	1	3	8	11	11	11
Bulwer's Petrel	*Bulweria bulwerii*	0	0	1	0	4	4	3	0	12	12	12	12
Jouanin's Petrel	*Bulweria fallax*	0	0	2	0	0	4	1	0	7	7	7	7
Wilson's Storm-Petrel	*Oceanites oceanicus*	0	0	0	0	4	4	3	0	11	11	11	11
New Zealand Storm-Petrel	*Oceanites maorianus*	0	0	4	0	0	0	1	0	5	5	5	5
White-vented Storm-Petrel	*Oceanites gracilis*	0	0	2	0	1	4	2	0	9	9	9	9
Grey-backed Storm-Petrel	*Garrodia nereis*	0	0	2	0	4	4	4	0	14	14	14	14
White-faced Storm-Petrel	*Pelagodroma marina*	0	0	0	0	4	4	3	0	11	11	11	11
White-bellied Storm-Petrel	*Fregetta grallaria*	0	0	2	0	4	4	3	0	13	13	13	13
Black-bellied Storm-Petrel	*Fregetta tropica*	0	0	2	0	4	4	3	0	13	13	13	13
Polynesian Storm-Petrel	*Nesofregetta fuliginosa*	2	0	3	1	4	4	4	0	18	18	16	16
European Storm-Petrel	*Hydrobates pelagicus*	0	0	1	0	4	4	3	0	12	12	12	12
Least Storm-Petrel	*Oceanodroma microsoma*	0	0	1	0	0	4	1	0	6	6	6	6
Wedge-rumped Storm-Petrel	*Oceanodroma tethys*	0	0	1	0	1	4	3	0	9	9	9	9
Band-rumped Storm-Petrel	*Oceanodroma castro*	0	0	2	0	4	4	3	0	13	13	13	13
Swinhoe's Storm-Petrel	*Oceanodroma monorhis*	0	0	2	0	3	4	3	0	12	12	12	12
Leach's Storm-Petrel	*Oceanodroma leucorhoa*	0	0	0	0	4	4	3	0	11	11	11	11
Guadalupe Storm-Petrel	*Oceanodroma macrodactyla*	4	0	4	0	0	2	2	0	12	12	8	8
Markham's Storm-Petrel	*Oceanodroma markhami*	0	0	2	0	1	4	3	0	10	10	10	10
Tristram's Storm-Petrel	*Oceanodroma tristrami*	1	0	3	0	1	3	4	0	12	12	11	11
Black Storm-Petrel	*Oceanodroma melania*	0	0	1	0	1	4	3	0	9	9	9	9
Matsudaira's Storm-Petrel	*Oceanodroma matsudairae*	0	0	2	0	0	4	1	0	7	7	7	7
Ashy Storm-Petrel	*Oceanodroma homochroa*	1	0	3	1	1	2	4	0	12	12	11	11
Hornby's Storm-Petrel	*Oceanodroma hornbyi*	0	0	3	0	1	3	1	0	8	8	8	8
Fork-tailed Storm-Petrel	*Oceanodroma furcata*	0	0	0	0	3	4	4	0	11	11	11	11
Common Diving Petrel	*Pelecanoides urinatrix*	0	0	0	0	4	4	4	0	12	12	12	12
Peruvian Diving Petrel	*Pelecanoides garnotii*	3	2	2	4	1	3	4	0	19	19	16	14
Magellanic Diving Petrel	*Pelecanoides magellani*	0	0	2	0	1	2	3	0	8	8	8	8
South Georgia Diving Petrel	*Pelecanoides georgicus*	0	0	0	0	4	4	4	0	12	12	12	12

[a] Calculated by doubling the score for sea-based threats (see text).
[b] Species already listed on Annex 1.