Amsterdam Albatross
Diomedea amsterdamensis

Albatros d'Amsterdam
Albatros de la Amsterdam

CRITICALLY ENDANGERED | ENDANGERED | VULNERABLE | NEAR THREATENED | LEAST CONCERN | NOT LISTED

Photo © Scott A. Shaffer

TAXONOMY

Order Procellariiformes
Family Diomedeidae
Genus *Diomedea*
Species *D. amsterdamensis*

Originally considered to be a Wandering Albatross (*Diomedea exulans*; Linnaeus, 1758), *D. amsterdamensis* was elevated to specific status following review by Roux and colleagues [1]. Their justification was largely based on patterns of plumage maturation, morphology and breeding biology and has been widely accepted [2, 3, 4, 5], although others suggest subspecific status a more appropriate classification given the low level of genetic divergence [6]. However, an extensive comparison of the *exulans* complex using more recent data shows that the Amsterdam Albatross is quite different from the other groups, *exulans*, *dabbenena,* and *antipodensis* (Burg, Rains, Milot and Weimerskirch, unpublished). The ACAP Taxonomy Working Group has yet to review the available taxonomic data for *D. amsterdamensis.*

CONSERVATION LISTINGS AND PLANS

International

- Agreement on the Conservation of Albatrosses and Petrels – Annex 1 [7]
- 2010 IUCN Red List of Threatened Species – Critically Endangered [8]
- Convention on Migratory Species - Listed Species (Appendix 1) [9]

Australia

- *Environment Protection and Biodiversity Conservation Act 1999* [10]
  - Endangered
  - Listed Marine Species
  - Listed Migratory Species
- Recovery Plan for Albatrosses and Giant-Petrels 2001-2005 [11]
- Threat Abatement Plan 2006 for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations [12]
- Western Australia: *Wildlife conservation Act 1950 - Wildlife Conservation (Specially Protected Fauna) Notice 2008 (2)* – Fauna that is rare or is likely to become extinct [13]

France

- Ministerial Order of 14 August 1998 *(Arrêté du 14 août 1998*) [14]
  - Listed Protected Species

BREEDING BIOLOGY

Diomedea amsterdamensis breeds biennially. Most eggs are laid in late February-March, hatch in May and the chicks fledge in January-February after spending 235 days in the nest (Table 1). Immature birds begin to return to the island between 4-7 years after fledging but do not begin breeding until they are nine years of age [15].

Table 1. *Breeding cycle of* D. amsterdamensis.

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
At colonies	■	■	■	■	■	■	■	■	■	■	■	■
Egg laying									■	■		
Incubating										■	■	■
Chick provisioning	■	■	■	■	■	■	■	■	■			■

BREEDING STATES

Table 2. *Distribution of the global* D. amsterdamensis *population among Parties to the Agreement that have jurisdiction over the breeding sites of ACAP listed species.*

	Argentina	Australia	Chile	Ecuador	France	New Zealand	South Africa	United Kingdom
Breeding pairs	-	-	-	-	100%	-	-	-

BREEDING SITES

Breeding *Diomedea amsterdamensis* are endemic to the French Southern Territories (Table 2), nesting only on the Plateau des Tourbières on Amsterdam Island in the southern Indian Ocean (Figure 1, Table 3). For the last 4 years, the breeding population has reached 24 to 26 pairs annually (H. Weimerskirch pers. comm.), up from five pairs in the 1980s [15]. The total population is estimated to be approximately 140-150 birds (90 adults) (H. Weimerskirch pers. comm.).

Photo © Scott A. Shaffer

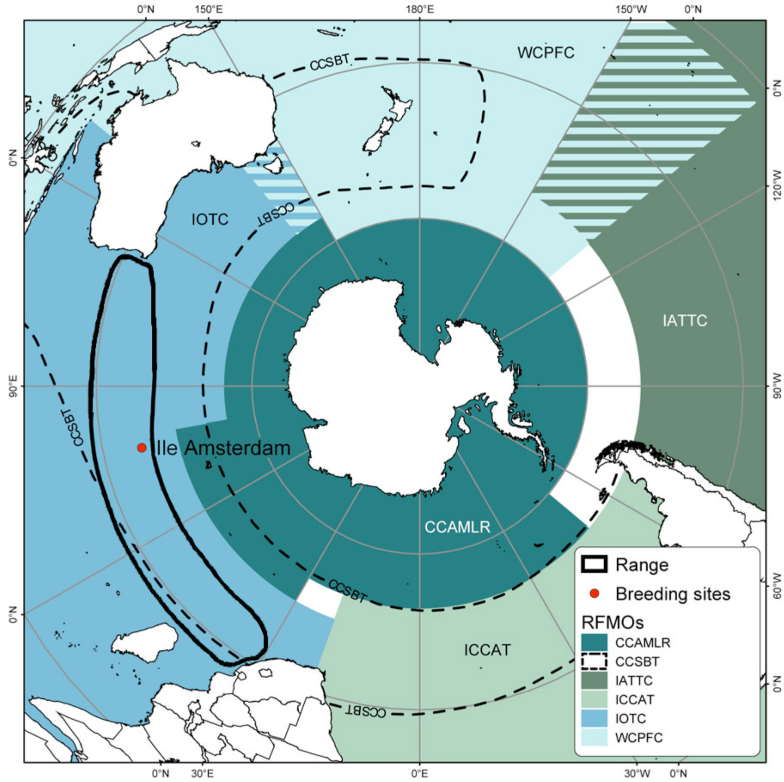

Figure 1. *The location of the single breeding site and approximate range of* D. amsterdamensis. *The boundaries of selected Regional Fisheries Management Organisations (RFMOs) are also shown.*

CCAMLR – Commission for the Conservation of Antarctic Marine Living Resources
CCSBT - Convention for the Conservation of Southern Bluefin Tuna
IATTC - Inter-American Tropical Tuna Commission
ICCAT - International Commission for the Conservation of Atlantic Tunas
IOTC - Indian Ocean Tuna Commission
WCPFC - Western and Central Pacific Fisheries Commission

Table 3*. Monitoring methods and estimates of the population size (annual breeding pairs) for the single breeding site. Table based on unpublished CNRS Centre d'Etudes Biologiques de Chizé data submitted to ACAP in 2007.*

Breeding site location	Jurisdiction	Years monitored	Monitoring method	Monitoring accuracy	Annual breeding pairs (last census)
Amsterdam Island 37° 48'S, 77° 32'E	France	1983-2007	A	High	26 (2007)

CONSERVATION LISTINGS AND PLANS FOR THE BREEDING SITES

International

Amsterdam Island

- Ramsar Convention List of Wetlands of International Importance (inscribed in 2008) [16]

France

- National Nature Reserve (*Réserve Naturelle Nationale*) - Décret n°2006-1211[17]

French Antarctic Territories (TAAF - Terres australes et antarctiques françaises)

Ile d'Amsterdam : Plateau des Tourbières

- Area Reserved for Technical and Scientific Research (*Zones Réservées à la Recherche Scientifique et Technique)* - Arrêté n°14 du 30 juillet 1985 [18] now included in Natural Reserve Management Plan [17]

POPULATION TRENDS

The single population of *D. amsterdamensis* has been monitored continuously since 1983. Annual counts of eggs laid have increased from a low of five in 1984 to a high of 32 in 2001 (Figure 2) [19]. This peak was due to poor breeding success in the previous year. Since 2004, the number of breeding pairs has remained at 24-26 per year. Inchausti and Weimerskirch (2001) suggest the *D. amsterdamensis* population could have been reduced by longline fishing activity that was operating around Amsterdam Island between the mid 1960s and mid 1980s and the observed recovery corresponds to a shift in fishing activity away from the island in the late 1980s and 1990s [20].

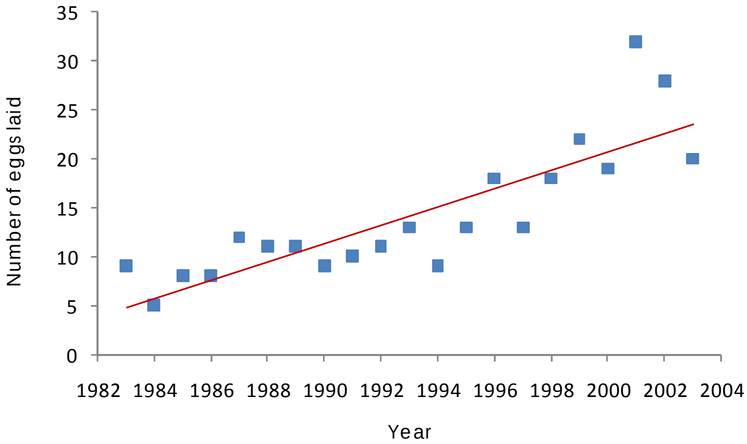

Figure 2. *Counts of the number of eggs laid each year with a simple regression line fitted, from Weimerskirch (2004)* [19]. *See text for assessment of population trends.*

Trend analyses indicate that the Amsterdam Island population is increasing at a rate of 6.7% ($p < 0.01$) per year [21] (Table 4).

Table 4. *Summary of population trend data for* D. amsterdamensis *based on counts of eggs laid extracted from Weimerskirch (2004)* [19].

Breeding site	Current Monitoring	Trend Years	% average change per year (95% Confidence Interval) [21]	Trend	% of population for which trend is calculated
Amsterdam Island	Yes	1983 – 2003	6.7 (4.5, 8.9)	Increasing	100%

Breeding success and adult survival data have been collected continuously since 1983. On average, adult survival is over 95%, as expected for these long-lived birds, and the reported breeding success of over 70% is similar to values reported for other *Diomedea* species (Table 5) [15]. Juvenile survival of over 70% is very high compared to other albatross species and this in part may explain the gradual growth of this population over the 1980s and 1990s [15]. A cause for concern however is a recent decline in breeding success in *D. amsterdamensis* that was paralleled with the continuous decrease since 1992 of the Indian Yellow-nosed Albatross population (*Thalassarche carteri*) on Amsterdam Island [19]. The decrease of breeding success in *T. carteri* has led to a rapid decrease in population size in some colonies where avian cholera killed mainly chicks, but also adults. The death of 66% of *D. amsterdamensis* chicks in 2000 and 74% in 2001 has not yet been attributed to an outbreak of avian cholera in this species [19].

Table 5. *Demographic data for the single* D. amsterdamensis *breeding site. Table based on data from Weimerskirch* et al. *(1997)* [15].

Breeding site	Mean breeding success (study period)	Mean juvenile survival	Mean adult survival (±SE, study period)
Amsterdam Island	71.6% (1983 -1994)	70.4%	95.7% (±1.8%, 1983-1993)

BREEDING SITES: THREATS

The extremely low population size and restricted breeding area of this species, limited to one breeding site, combine to significantly increase the threat to its survival (Table 6).

Table 6. *Summary of known threats causing population level changes at the single breeding site of* D. amsterdamensis. *Table based on unpublished data submitted to the ACAP Breeding Sites Working Group in 2008.*

Breeding site	Human disturbance	Human take	Natural disaster	Parasite or Pathogen	Habitat loss or degradation	Predation (alien species)	Contamination
Amsterdam Island	No [a]	No	No	High? [b]	No [a]	High (cats) [c] Low (rats) [c]	No

[a] Human disturbance in the past through widespread use of fire and habitat destruction by introduced cattle have combined to degrade the breeding sites and decrease the breeding site range across the island [22]. Fencing of cattle has reduced their impact but the habitat has been further degraded by draining of a peat bog on the plateau [23, 24].

[b] Avian cholera has recently been identified as the cause of a decline in the population of *T. carteri* on Amsterdam Island. If the occurrence of this disease is confirmed in *D. amsterdamensis*, the population would face a high risk of extinction within 20-30 years [19]. The source of the avian cholera may have been the poultry taken to the island to provide food for human inhabitants. The poultry was removed in 2007. This situation highlights the risks of human activities and domestic animals being agents for catastrophic disease in the most remote areas of the world.

[c] Predation by introduced ship rats (*Rattus rattus*) and feral cats (*Felis catus*) remains a significant threat.

Photo © Scott A. Shaffer

FORAGING ECOLOGY AND DIET

The feeding behaviour and diet of *D. amsterdamensis* has not been studied [5]. Like other great albatrosses, they probably surface-seize squid, fish and crustacea [2].

MARINE DISTRIBUTION

An understanding of the marine distribution of *D. amsterdamensis* is confounded by its similar appearance to other albatross species such as the Wandering Albatross, *D. exulans*. Satellite-tracking data for *D. amsterdamensis* have been collected from incubating adults which predominantly forage in waters within 1500 km of Amsterdam Island (Figure 3). Tracking of juvenile birds shows that they disperse through the Indian Ocean. Non-breeding adults venture to the coasts off western Australia and eastern Africa, but always remain in pelagic waters. Unsubstantiated sightings also exist from New Zealand [25, 26].

Satellite-tracking data indicate that *D. amsterdamensis* overlap with four regional Fisheries Management Organisations, the IOTC, CCSBT, SWIOFC (South-West Indian Ocean Fisheries Commission) and SIOFA (Southern Indian Ocean Fisheries Agreement), the last two aimed at ensuring the long-term conservation and sustainable use of fishery resources other than tuna (Figure 1; Table 7). France is the main Range State for *D. amsterdamensis*.

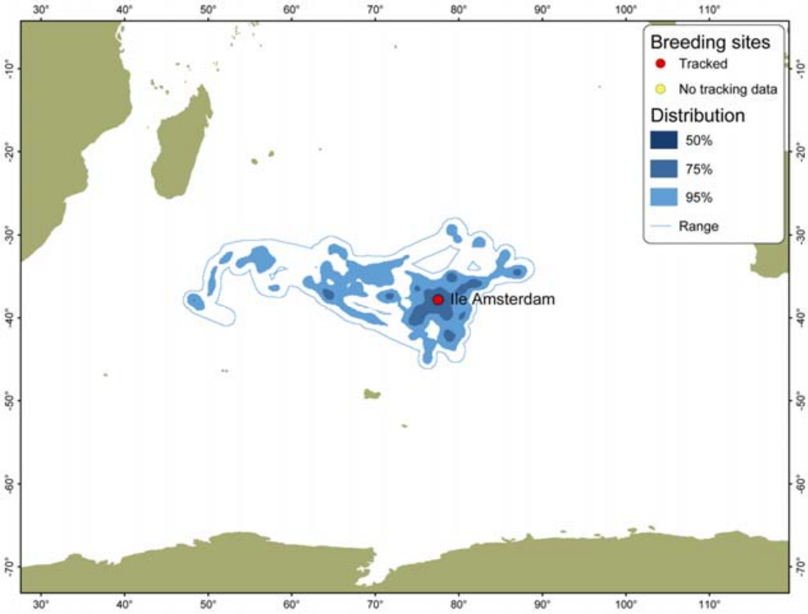

Figure 3. *Satellite-tracking data from incubating adult* D. amsterdamensis *(Number of tracks = 15). Map based on data contributed to the BirdLife Global Procellariiform Tracking Database* [27].

Table 7. *Summary of the known ACAP Range States and Regional Fisheries Management Organisations that overlap with the marine distribution of* D. amsterdamensis*.*

	Breeding and feeding range	Foraging range only	Few records - outside core foraging range
Known ACAP Range States	France	Australia South Africa	New Zealand?
Non-ACAP Exclusive Economic Zones	-	-	-
Regional Fisheries Management Organisations*	IOTC CCSBT SIOFA SWIOFC	-	WCPFC?

*See Figure 1 and text for list of acronyms

MARINE THREATS

Due to the low population size, few records exist that quantify the threats this species faces at sea. Longline fishing activities around the island during the 1970s and 1980s may well have contributed to the population decline at that time [26]. The foraging range of *D. amsterdamensis* extends up to 4000 km from the breeding site, and overlaps with longline fishing operations targeting tropical tuna species [27, 28].

KEY GAPS IN SPECIES ASSESSMENT

Urgent information on the disease status of the species is required as the diseases identified in adjacent albatross populations may also threaten *D. amsterdamensis* with extinction. Appropriate management and mitigation measures to control and limit spread of the disease should be implemented as a priority.

The distribution of these birds at sea is poorly known, so information on the distribution of birds of different age classes and at different stages of the annual cycle is also required to better assess overlap with fishing operations. The monitoring of the population trends and demographic parameters of *D. amsterdamensis* should be continued in order to monitor rates of adult and juvenile survival.

REFERENCES

1. Roux, J.P., Jouventin, P., Mougin, J.L., Stahl, J.C., and Weimerskirch, H. 1983. Un nouvel albatros *Diomedea amsterdamensis* n. sp. découvert sur l'Ile Amsterdam (37°, 50'S, 77°35'E). *L'Oiseau Revue Française d'Ornithologie* 53: 1-11.
2. Brooke, M. 2004. *Albatrosses and petrels across the world*. Oxford: Oxford University Press. 499 pp.
3. Marchant, S. and Higgins, P.J., eds. 1990. *Handbook of Australian, New Zealand, and Antarctic Birds*. Vol. 1 Ratites to Ducks. Oxford University Press: Melbourne. 1536 pp.
4. Robertson, C.J. and Nunn, G.B., 1998. *Towards a new taxonomy for albatrosses*, in *Albatross biology and conservation.* G. Robertson and R. Gales (Eds). Surrey Beatty & Sons: Chipping Norton. pp 13-19.
5. Tickell, W.L.N. 2000. *Albatrosses*. Sussex, UK: Pica Press.
6. Penhallurick, J. and Wink, M. 2004. Analysis of the taxonomy and nomenclature of the Procellariiformes based on complete nucleotide sequences of the mitochondrial cytochrome b gene. *Emu* 104: 125-147.
7. ACAP. *Agreement on the Conservation of Albatrosses and Petrels.* *http://www.acap.aq*.
8. IUCN. 2010. *2010 IUCN Red List of Threatened Species*. www.iucnredlist.org.
9. Bonn Convention. *Convention on the Conservation of Migratory Species of Wild Animals*. http://www.cms.int/.
10. Australian Government. 1999. *Environment Protection and Biodiversity Conservation Act 1999*. http://www.comlaw.gov.au/comlaw/management.nsf/lookupindexpagesbyid/IP200401830?OpenDocument.
11. Department of Environment and Heritage. 2001. *Recovery Plan for Albatrosses and Giant-Petrels 2001-2005*. http://www.deh.gov.au/biodiversity/threatened/publications/recovery/albatross/index.html.
12. Department of Environment and Heritage. 2006. *Threat Abatement Plan for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations* http://www.environment.gov.au/biodiversity/threatened/tap-approved.html.
13. Department of Environment and Conservation. 2008. Wildlife Conservation Act 1950 - Wildlife Conservation (Specially Protected Fauna) Notice 2008(2). *Western Australian Government Gazette* 134: 3477-3485.
14. Gouvernement de la République Française. 1998. Arrêté du 14 août 1998 fixant sur tout le territoire national des mesures de protection des oiseaux représentés dans les Terres australes et antarctiques françaises. *Le Journal Officiel de la République Française n°236 du 11 octobre 1998.* p. 15405 http://www.legifrance.gouv.fr/home.jsp
15. Weimerskirch, H., Brothers, N., and Jouventin, P. 1997. Population dynamics of wandering albatross *Diomedea exulans* and Amsterdam albatross *D. amsterdamensis* in the Indian Ocean and their relationships with long-line fisheries: Conservation implications. *Biological Conservation* 79: 257-270.
16. Ramsar Convention on Wetlands. http://www.ramsar.org/.
17. Gouvernement de la République Française. 2006. Décret n°2006-1211 du 3 octobre 2006 portant création de la Réserve Naturelle des Terres Australes Françaises. *Journal Officiel de la République Française n°230 du 4 octobre 2006.* p.14673. http://www.legifrance.gouv.fr/home.jsp
18. Terres Australes et Antarctiques Françaises. 1985. *Arrêté n°14 du 30 Juillet 1985 relatif à la création de zones réservées à la recherché scientifique et technique dans les TAAF. Mises à jour / extensions : Décisions n°2006 – 22, n°108 du 16 juin 1989, n°147 du 13 septembre 1990, du 19 juillet 1991 ; arrêté 2002 - 42 du 18 décembre 2002*. http://www.taaf.fr/spip/spip.php?article354.
19. Weimerskirch, H. 2004. Diseases threaten Southern Ocean albatrosses. *Polar Biology* 27: 374-379.

20. Inchausti, P. and Weimerskirch, H. 2001. Risks of decline and extinction of the endangered Amsterdam albatross and the projected impact of long-line fisheries*. Biological Conservation* 100: 377-386.
21. Pannekoek, J. and A, v.S. 2006. *TRIM 3.53 (TRends & Indices for Monitoring data).* http://www.cbs.nl/en-GB/menu/themas/natuur-milieu/methoden/trim/default.htm.
22. Jouventin, P., Martinez, J., and Roux, J.P. 1989. Breeding biology and current status of the Amsterdam Island Albatross *Diomedea amsterdamensis. Ibis* 131: 171-182.
23. Micol, T. and Jouventin, P. 1995. Restoration of Amsterdam Island, South Indian-Ocean, following control of feral cattle*. Biological Conservation* 73: 199-206.
24. del Hoyo, J., Elliott, A., and Sargatal, J., eds. 1992. *Genus Diomedea*. Handbook of the birds of the World. Vol. 1. Lynx Edicions: Barcelona. 211-215.
25. Shirihai, H. 2007. *A complete guide to Antarctic wildlife: the birds and marine mammals of the Antarctic Continent and Southern Ocean*. Second ed., London: A&C Black Publishers Ltd. 544 pp.
26. Birdlife International. 2007. *Species factsheet: Diomedea amsterdamensis*. http://www.birdlife.org.
27. BirdLife International. 2004. *Tracking ocean wanderers: the global distribution of albatrosses and petrels. Results from the Global Procellariiform Tracking Workshop, 1-5 September, 2003, Gordon's Bay, South Africa*. Cambridge UK: Birdlife International.
28. Gales, R., 1997. *Albatross populations: status and threats.*, in *Albatross Biology and Conservation.* G. Robertson and R. Gales (Eds). Surrey Beatty & Sons: Chipping, Norton. 20-45.

COMPILED BY

Michael C. Double, Rosemary Gales, and Nadeena Beck.

CONTRIBUTORS

Henri Weimerskirch,
Centre d'Etudes Biologiques de Chizé, Centre National de la Recherche Scientifique (CEBC-CNRS), France.

Mark Tasker
Vice-Chair, ACAP Advisory Committee

ACAP Breeding Sites Working Group
Contact: Richard Phillips
raphil@bas.ac.uk

ACAP Seabird Bycatch Working Group
Contact: Barry Baker
barry.baker@latitude42.com.au

ACAP Status and Trends Working Group
Contact: Rosemary Gales
Rosemary.Gales@dpiw.tas.gov.au

ACAP Taxonomy Working Group
Contact: Michael Double
Mike.Double@aad.gov.au

Birdlife International,
Global Seabird Program:
Contact: Cleo Small
Cleo.Small@rspb.org.uk
Maps: Frances Taylor
Tracking data contributors: Henri Weimerskirch (Centre d'Etudes Biologiques de Chizé)

RECOMMENDED CITATION

Agreement on the Conservation of Albatrosses and Petrels. 2010. Species assessments: Amsterdam Albatross *Diomedea amsterdamensis*. Downloaded from http://www.acap.aq on 30 September 2010.

GLOSSARY AND NOTES

(i) Years.

The "split-year" system is used. Any count (whether breeding pairs or fledglings) made in the austral summer (e.g. of 1993/94) is reported as the second half of this split year (i.e. 1994).

The only species which present potential problems in this respect are *Diomedea* albatrosses, which lay in December-January, but whose fledglings do not depart until the following October-December. In order to keep records of each breeding season together, breeding counts from e.g. December 1993-January 1994 and productivity counts (of chicks/fledglings) of October-December 1994 are reported as 1994.

If a range of years is presented, it should be assumed that the monitoring was continuous during that time. If the years of monitoring are discontinuous, the actual years in which monitoring occurred are indicated.

(ii) Methods Rating Matrix (based on NZ rating system)

METHOD

A Counts of nesting adults (Errors here are detection errors (the probability of not detecting a bird despite its being present during a survey), the "nest-failure error" (the probability of not counting a nesting bird because the nest had failed prior to the survey, or had not laid at the time of the survey) and sampling error).

B Counts of chicks (Errors here are detection error, sampling and nest-failure error. The latter is probably harder to estimate later in the breeding season than during the incubation period, due to the tendency for egg- and chick-failures to show high interannual variability compared with breeding frequency within a species).

C Counts of nest sites (Errors here are detection error, sampling error and "occupancy error" (probability of counting a site or burrow as active despite it's not being used for nesting by birds during the season).

D Aerial-photo (Errors here are detection errors, nest-failure error, occupancy error and sampling error (error associated with counting sites from photographs), and "visual obstruction bias" - the obstruction of nest sites from view, always underestimating numbers).

E Ship- or ground- based photo (Errors here are detection error, nest-failure error, occupancy error, sampling error and "visual obstruction bias" (the obstruction of nest sites from view from low-angle photos, always underestimating numbers)

F Unknown

G Count of eggs in subsample population

H Count of chicks in subsample population and extrapolation (chicks x breeding success - no count of eggs)

RELIABILITY

1 Census with errors estimated

2 Distance-sampling of representative portions of colonies/sites with errors estimated

3 Survey of quadrats or transects of representative portions of colonies/sites with errors estimated

4 Survey of quadrats or transects without representative sampling but with errors estimated

5 Survey of quadrats or transects without representative sampling nor errors estimated

6 Unknown

(iii) Population Survey Accuracy

High Within 10% of stated figure;

Medium Within 50% of stated figure;

Low Within 100% of stated figure (eg coarsely assessed via area of occupancy and assumed density)

Unknown

(iv) Population Trend

Trend analyses were run in TRIM software using the linear trend model with stepwise selection of change points (missing values removed) with serial correlation taken into account but not overdispersion.

(v) Productivity (Breeding Success)

Defined as proportion of eggs that survive to chicks at/near time of fledging unless indicated otherwise

(vi) Juvenile Survival
defined as:

1 Survival to first return/resight;
2 Survival to x age (x specified), or
3 Survival to recruitment into breeding population
4 Other
5 Unknown

(vii) Threats
level of threat:
A combination of scope (proportion of population) and severity (intensity) provide a level or magnitude of threat. Both scope and severity assess not only current threat impacts but also the anticipated threat impacts over the next decade or so, assuming the continuation of current conditions and trends.

		Scope (% population affected)			
		Very High (71-100%)	High (31-70%)	Medium (11-30%)	Low (1-10%)
Severity (likely % reduction of affected population within ten years)	Very High (71-100%)	Very High	High	Medium	Low
	High (31-70%)	High	High	Medium	Low
	Medium (11-30%)	Medium	Medium	Medium	Low
	Low (1-10%)	Low	Low	Low	Low

(viii) Maps
Tracking maps shown were created from platform terminal transmitter (PTT) and global-positioning system (GPS) loggers. The tracks were sampled at hourly intervals and then used to produce kernel density distributions, which have been simplified in the maps to show the 50%, 75% and 95% utilisation distributions (i.e. where the birds spend x% of their time). The full range (i.e. 100% utilisation distribution) is also shown. Note that the smoothing parameter used to create the kernel grids was 1 degree, so the full range will show the area within 1 degree of a track. In some cases the PTTs were duty-cycled: if the off cycle was more than 24 hours it was not assumed that the bird flew in a straight line between successive on cycles, resulting in isolated 'blobs' on the distribution maps. It is important to realise that these maps can only show where tracked birds were, and blank areas on the maps do not necessarily indicate an absence of the particular species.