Antipodean Albatross
Diomedea antipodensis

Albatros de las Antípodas
Albatros des Antipodes

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

Sometimes referred to as
Gibson's Wandering Albatross
Antipodean Wandering Albatross
New Zealand Albatross

D. antipodensis on Antipodes Island. Photo © Tui De Roy, not to be used without photographer's permission

TAXONOMY

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

Debate has long surrounded the taxonomy of the Wandering Albatross which until the early 1980s was thought to be one species: *Diomedea exulans* (Linnaeus 1758). In 1990, Warham [1] proposed five subspecies within the *D. exulans* complex: *Diomedea exulans exulans, D. e. chionoptera*, *D. e. amsterdamensis* plus two others subspecies later named *D. e. antipodensis* and *D. e. gibsoni* by Robertson & Warham [2]. Robertson & Nunn [3] elevated the five subspecies to species level (*Diomedea exulans; D. chionoptera; D. amsterdamensis; D. antipodensis* and *D. gibsoni*). However, Gales [4] and Croxall & Gales [5] followed Medway's [6] nomenclature and recognised the following five species: *Diomedea exulans* (replacing *chinoptera*)*; D. dabbenena* (replacing *exulans*)*; D. amsterdamensis; D. antipodensis* and *D. gibsoni*. A detailed genetic study by Burg & Croxall [7] showed four distinct taxa: *Diomedea exulans*; *D. dabbenena; D. amsterdamensis* plus *D. antipodensis* and *D. gibsoni* as a single grouping. Currently, the treatment of *D. antipodensis* and *D. gibsoni* varies between a single species, two subspecies, and two species [e.g. 8, 9, 10, 11]. At the second meeting of the ACAP Advisory Committee in 2006 it was agreed that available data do not currently justify the recognition of *D. antipodensis* and *D. gibsoni* as separate species [12] and therefore these taxa were subsumed under the single name *D. antipodensis* (Antipodean Albatross) [13], as recommended by Burg & Croxall [14]. This remains a contentious decision and one that is likely to be revisited when new data are published. Currently ACAP does not list subspecies separately and so the trinomial nomenclature (e.g. *Diomedea antipodensis antipodensis*) is not adopted here. However, as data for breeding sites are reported separately there is no loss of information.

CONSERVATION LISTINGS AND PLANS

International

- Agreement on the Conservation of Albatrosses and Petrels - Annex 1
- 2008 IUCN Red List of Threatened Species - Vulnerable (since 2000) [15]
- Convention on Migratory Species - Appendix II (as *D. exulans*) [16]

Australia

- *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC ACT*) [17]
  - Vulnerable (as *D. exulans antipodensis and D. exulans gibsoni)*
  - Listed Migratory Species
  - Listed Marine Species
- Recovery Plan for Albatrosses and Petrels (2001) [18]

- Threat Abatement Plan 2006 for the incidental catch (or bycatch) of seabirds during oceanic longline fishing operations [19]

New South Wales

- *Threatened Species Conservation Act 1995* – Vulnerable [20]

Chile

- National Plan of Action for reducing by-catch of seabirds in longline fisheries (PAN-AM/CHILE) 2007 [21]

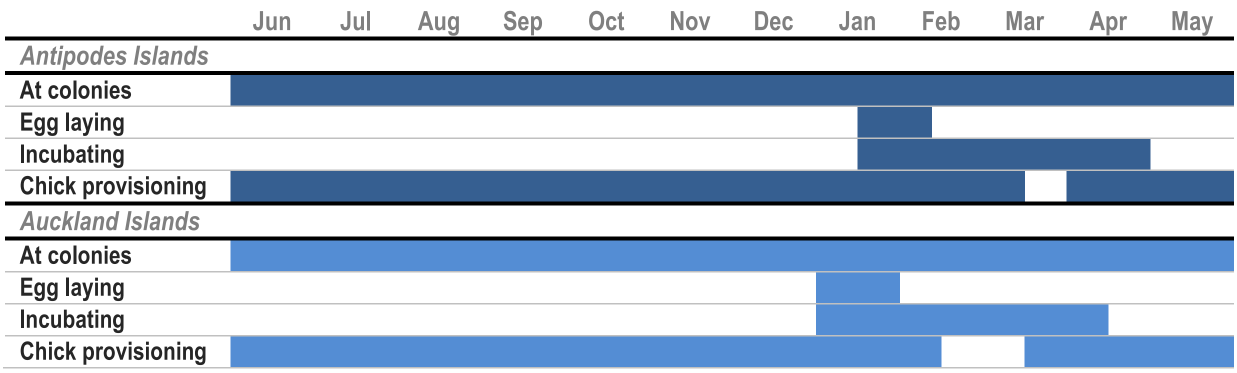
New Zealand

- *New Zealand Wildlife Act 1953* [22]
- Action Plan for Seabird Conservation in New Zealand; Part A: Threatened Seabirds [23]
- New Zealand Conservation Status 2008 – as *D. a. gibsoni*, Nationally Vulnerable; and *D. a. antipodensis*, Naturally Uncommon

BREEDING BIOLOGY

Diomedea antipodensis is a biennially breeding species, with the breeding season on the Antipodes three weeks later than on Auckland Islands. Most eggs on Auckland Island are laid between 26 December and 25 January (median 4-7 January), while most Antipodes birds lay between 7 January and 14 February (median 23-26 January) [24, 25]. Hatching takes place in March and April after a mean incubation period of *c.* 79 days (K. Walker and G. Elliott unpubl data). Chicks fledge after nine months, departing in mid December to early March [24, 26, 27, 28] (Table 1). The age of first return is at least three years old. The youngest age of first breeding is seven years for Antipodes Island birds and eight years for those from Auckland Islands (K. Walker and G. Elliott unpubl. data).

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



BREEDING STATES

Table 2. *Distribution of the global* D. antipodensis *population among ACAP Parties.*

	New Zealand
Breeding pairs	100%

BREEDING SITES

Diomedea antipodensis is endemic to the New Zealand subantarctic islands of Antipodes, Auckland and Campbell (Tables 2 and 3, Figure 1). The total breeding population on Antipodes Island *(D. a. antipodensis*) was estimated at approximately 12,572 pairs, with an average of 4,565 pairs breeding annually over three seasons between 2007 and 2009 (G. Elliott & K. Walker unpubl. data). The total breeding population on the Auckland Islands (*D. a. gibsoni)* was estimated at approximately 9,682 pairs in 2006-09, with an average of 3,277 pairs breeding annually over the four seasons (G. Elliott & K. Walker unpubl. data). A higher than normal number of established breeding pairs deferred breeding for two, rather than the typical one year, during this period (see Table 3). About six pairs (of *D. a. antipodensis)* were also reported to breed on Campbell Island each year in the 1990s [29], and in 2005, a breeding pair was reported on Pitt Island in the Chatham Islands (C. Miskelly in [10, 24]). Although of interest as a breeding range extension, this pair is not considered further in this assessment. The total average annual breeding population of approximately

8,050 pairs on all islands was thought to represent 44,508 mature individuals in 2009 (G. Elliott and K. Walker unpubl. data).

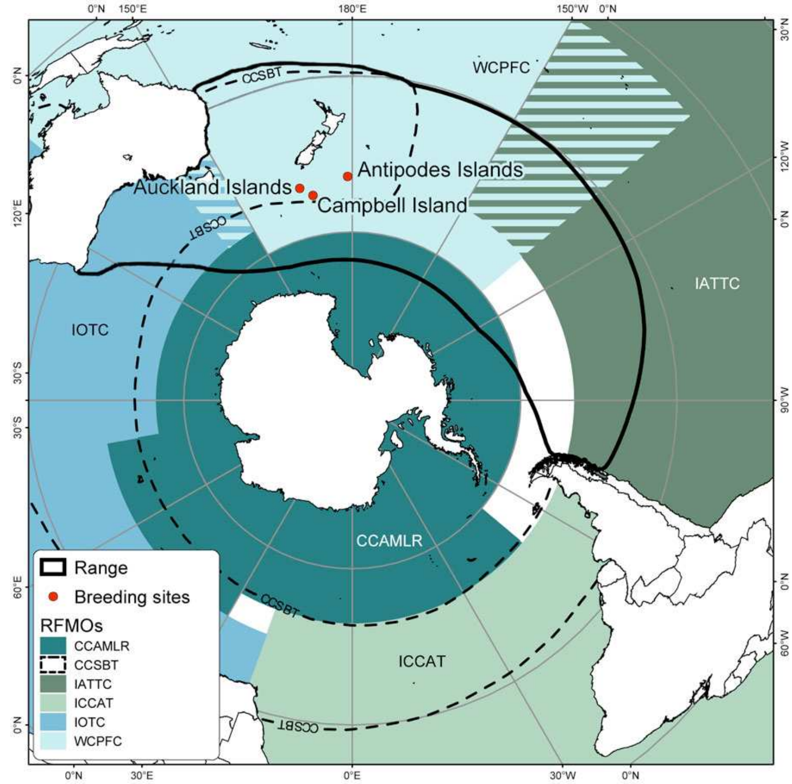


Figure 1. The location of main breeding sites and approximate range of D. antipodensis. *The boundaries of selected Regional Fisheries Management Organisations (RFMOs) are also shown.*

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 most recent estimates of the population size (annual breeding pairs) for each breeding site. Table based on G. Elliott and K. Walker unpublished data and published references as indicated.

Breeding site	Jurisdiction	Years monitored	Monitoring method	Monitoring accuracy	Annual breeding pairs (last census)
Antipodes Islands *(D. a. antipodensis)* 49° 75'S, 178° 80'E	New Zealand				
Antipodes Island		1969, 1994-2005, 2007-2009	A	High	6,286 [1] (2007-09)
Auckland Islands *(D. a. gibsoni)* 51° 00'S, 166° 00'E	New Zealand				
Adams Island		1973,1991-2009	A	High	4,841 [1] (2006-09)
Disappointment Island		1993	A	High	352 (1997)[2] [25]
Auckland Island		1995	D	Medium	72 (1997)[2] [25]
Campbell Island *(D. a. antipodensis)* 52° 33'S, 169° 09'E	New Zealand	1995	A	High	6 (1995) [29]
Total					***11,557***

[1] average annual number of breeding pairs alive between 2006/2007 and 2009 but not necessarily breeding biennially
[2] estimates based on 1997 Adams Island census

CONSERVATION LISTINGS AND PLANS FOR THE BREEDING SITES

International

Auckland Islands, Campbell Island, and Antipodes Islands

- UNESCO World Heritage List (inscribed 1998) [30]

New Zealand

Auckland Islands, Campbell Island, and Antipodes Islands

- National Nature Reserve – *New Zealand Reserves Act 1977* [31]
- Conservation management strategy: subantarctic islands 1998-2008 [32]

POPULATION TRENDS

Although it is difficult to determine past population sizes on the seldom visited subantarctic islands, it is probable that both Island groups supported larger populations which suffered fisheries-induced declines in the 1960s-1980s, before a reduction in fishing effort in the region [10, 24, 25].

Mark–recapture analyses of the Antipodes Island population indicate that the number of breeding adults increased by 5.1% per annum between 1996 and 2004, whereas the number of breeding adults on Adams Island in the Auckland group increased by 2.2% per annum during the same period (Table 4). In 2005-2008, however, numbers of breeding birds on Antipodes Island and Adams Island declined by 6.1% and 12.2% per annum respectively (G. Elliott & K. Walker, unpubl data). Despite the observed increase between 1996 and 2004, the total Auckland Islands breeding population decreased from an estimated 14,606 pairs in 1997 to 8,463 pairs in 2009 (G. Elliott & K. Walker, unpubl. data). There is a suggestion that this steep decline may be linked to oceanographic changes in the Tasman Sea [33].

Table 4. *Summary of population trend data for* D. antipodensis *at each breeding site*. Table based on G. Elliott & K. Walker unpublished data.

Breeding site	Current Monitoring	Trend Years	% average change per year	Trend	% of population for which trend calculated
Antipodes Islands	Yes	1996-2004 2005-2008	5.1% -6.1%	Increasing Declining	*c.* 6% *c.* 6%
Auckland Islands					
Adams Island	Yes	1996-2004 2005-2008	2.2% -12.2%	Increasing Declining	*c.* 6% *c.* 6%
Disappointment Island	No	-	-	Unknown	-
Auckland Island	No	-	-	Unknown	-
Campbell Island	No	-	-	Unknown	-

Breeding success was consistently much lower on Adams Island than on Antipodes Island [10] (Table 5), which together with the greater mean age of recruitment may explain the lower population growth rate on Adams Island between 1996-2004. Mean adult survival rates on Adams Island was similar to that of the Antipodes Island population in 1991/1994-2004, but considerably lower in 2005-5007, although in all cases were within the range documented for other albatross species [34].

Table 5. *Summary of* demographic *data for* D. antipodensis *at each breeding site. Table based on K. Walker and G. Elliott unpublished data and published references as indicated.*

Breeding site	Mean breeding success %/year (±SE; Years)	Mean juvenile survival %/year (±SE; Years)	Mean adult survival %/year (±SD; Years)
Antipodes Islands	74.0 ±1.6 (1994-2004) [10] 61.8 ±6.1 (2005-2008)	87.4 (1995-1997) [1] 89.6-91.2 (1995-1997) [2]	96.0 ±0.7 (1994-2004) 94.8 ±5.2 (2005-2007)
Auckland Islands			
Adams Island	63.1 ±2.0 (1991-2004) [10] 30.3 ±3.3 (2005-2008)	90.0 (1994-1997) [1] 91.7 (1994-1997) [2]	95.9 ±0.6 (1991-2004) 88.3 ±2.6 (2005-2007)
Disappointment Island	No data	No data	No data
Auckland Island	No data	No data	No data
Campbell Island	No data	No data	No data

[1] survival to age 5

[2] survival to age 8

BREEDING SITES: THREATS

All breeding sites of *D. antipodensis* are legally protected and access is restricted. Currently, few land-based threats could be considered to cause population level changes in the two main populations (Table 6).

Table 6. *Summary of known threats at the breeding sites of* D. antipodensis *causing population level changes. Table based on information 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 by alien species	Contamination
Antipodes Islands	No	No	No	No	No	No [a]	No
Auckland Islands							
Adams Island	No	No	No	No	No [b]	No	No
Disappointment Island	No	No	No	No	No [b]	No	No
Auckland Island	No	No	No	No	No [b]	No [c]	No
Campbell Island	No	No	No	No	No	No	No

[a] Although introduced house mice *Mus musculus* are present on Antipodes Island, they do not appear to pose a threat to *D. antipodensis* [23].

[b] The main colonies on Adams and Disappointment Islands are free of introduced mammals but feral pigs *Sus scrofa* on the Auckland Island mainland cause major habitat degradation [23].

[c] Feral pigs take eggs and chicks and may be limiting potential growth of numbers of birds breeding on Auckland Island. Feral cats *Felis catus* may also kill some chicks, but house mice do not appear to pose a threat [23].

D. antipodensis on Adams Island, Photo © Tui De Roy, not to be used without photographer's permission

FORAGING ECOLOGY AND DIET

Diomedea antipodensis feeds by surface seizing [35] but the diet is poorly known. Cephalopods (100% of occurrence, 11 families), followed by fish, were the main food items in five samples from the Auckland Islands collected during chick-rearing [36]. Although members of the Histioteuthidae were the most common, with the Cranchiidae, Gonatidae, and Chiroteuthidae also numerous (10% or more of all beaks), the Onychoteuthidae (particularly *Kondakovia longimana*) were more important in terms of weight [36]. The frequency of cephalopod species that are vertical migrants, and often bioluminescent, in the diet of *D. antipodensis* may be indicative of a high degree of nocturnal feeding [36, 37].

In winter, birds from the Auckland Islands, and to a much lesser extent those from the Antipodes, as well as other *Diomedea* species, feed on the giant cuttlefish *Sepia apama* off the New South Wales coast of eastern Australia, where the species spawns in July and August, and the dead or moribund cuttlefish float to the surface [38].

MARINE DISTRIBUTION

Satellite-tracking data indicated limited overlap in the foraging ranges of the Auckland and Antipodes Islands populations. Auckland Islands birds mostly foraged in the Tasman Sea (24°S to 57°S) and Antipodes Islands birds in the Pacific Ocean east of New Zealand (24°S to 73°S in Antarctic waters) [39, 40, 41] (Figure 2). Breeding and non-breeding birds used similar core foraging areas [40] (Figure 3). Males from the Antipodes had a much larger foraging range than did females, venturing into Antarctic waters to the south and tropical South Pacific to the north of New Zealand. Non-breeding and juvenile males from the Antipodes also migrated east to waters off Chile, whereas non-breeding males and females from the Aucklands foraged westward to the south-eastern Indian Ocean (to 112°E), avoiding Antarctic waters [39, 40, 42]. The distribution of populations from both island groups shifted northward (above 40°S) during June – November, and the Auckland Islands birds also moved from the eastern to the western Tasman Sea during spring (September - November) [40].

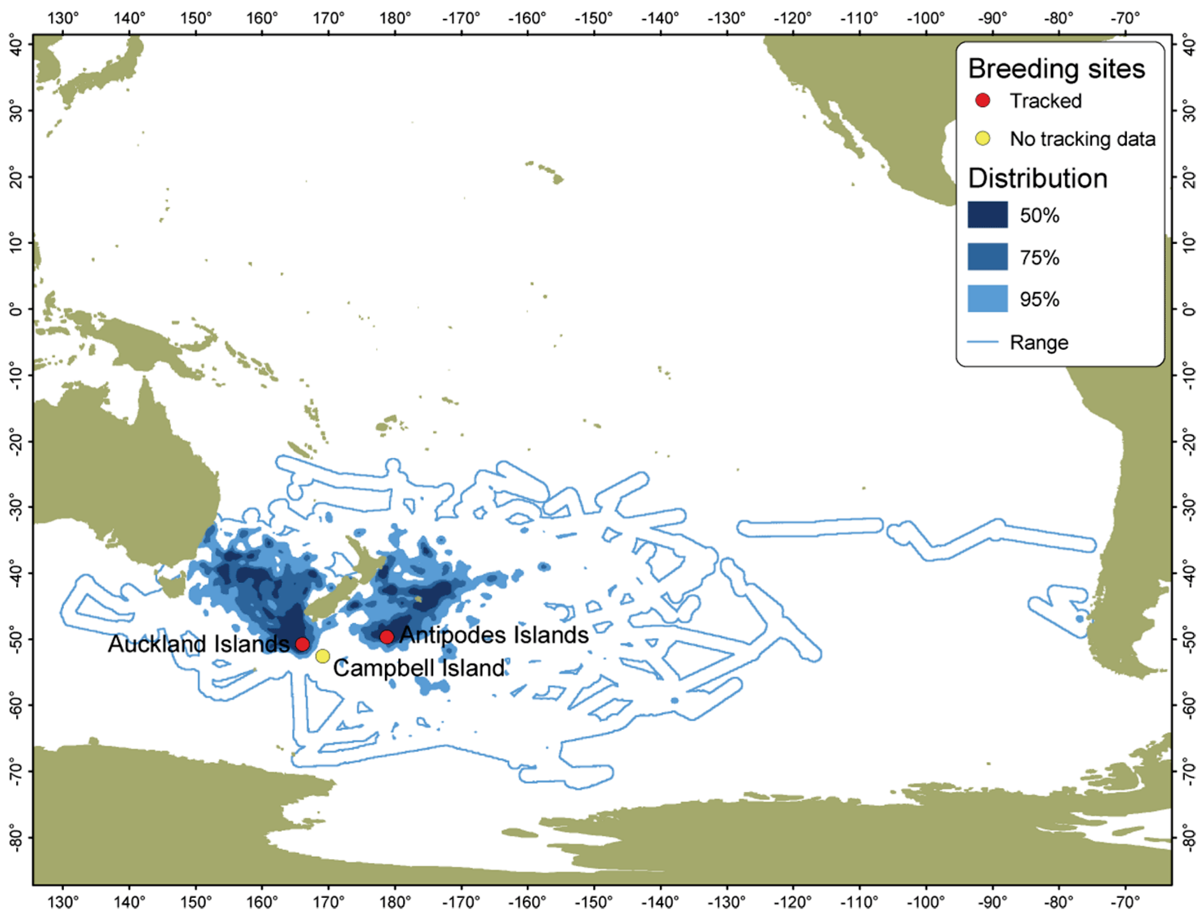


Figure 2. Satellite-tracking data from breeding adult D. antipodensis *(Number of tracks = 122). Map based on data contributed to the BirdLife Global Procellariiform Tracking Database.*

Foraging was concentrated mostly over pelagic waters and deep shelf slope (up to 6000 m deep), with peaks of activity around 1000 m depth (associated with seamounts and shelf break areas where strong currents and eddies resulted in enhanced productivity), and in addition, at 4500 m deep for birds from the Auckland Islands (over mid-Tasman sea) and 5000 m deep for Antipodes Islands birds (South Pacific Basin) [39, 40]. Foraging flights are longer during incubation (7-13 days) than during chick rearing (mean of 4 days) [40, 41].

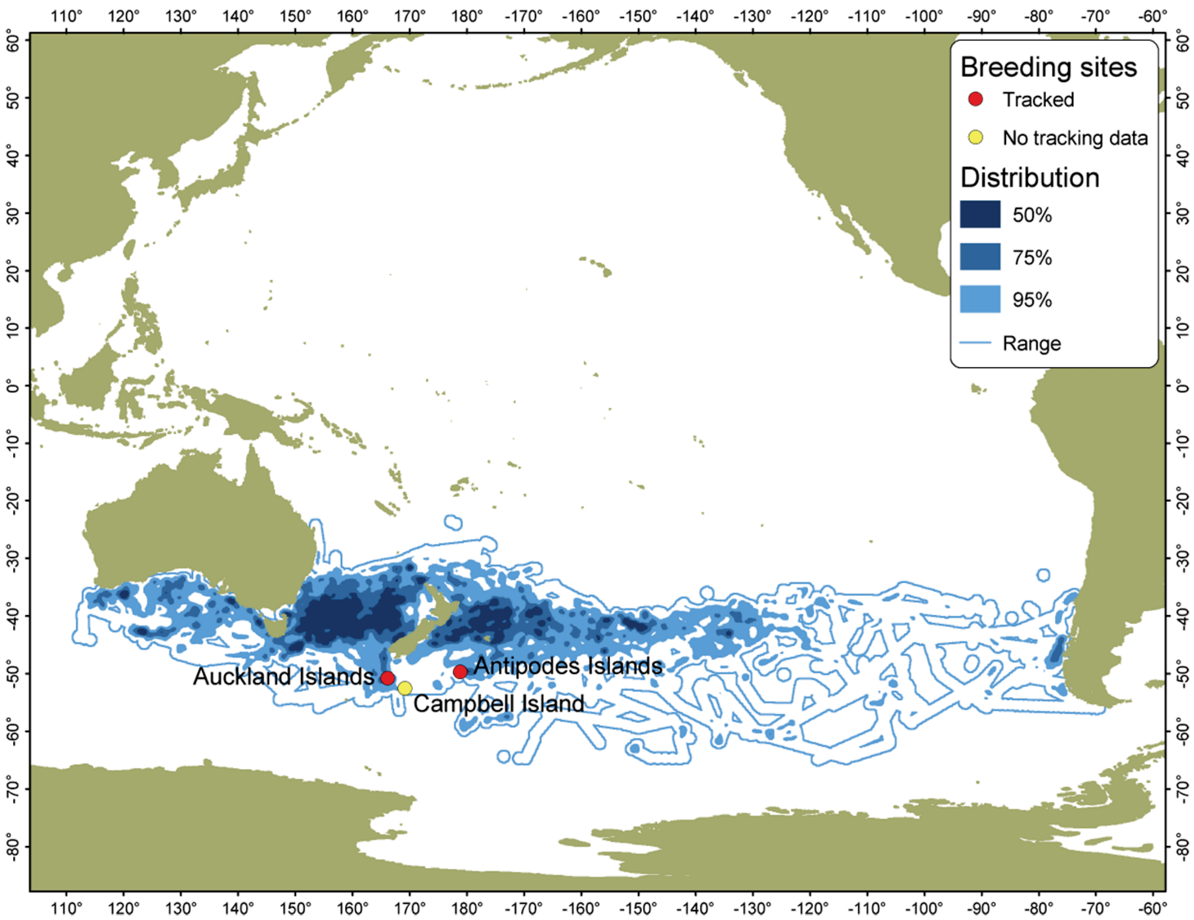


Figure 3. Satellite-tracking data of non-breeding D. antipodensis *(Number of tracks =51). Map based on data contributed to the BirdLife Global Procellariiform Tracking Database.*

Diomedea antipodensis overlap with five current Regional Fisheries Management Organisations but principally the WCPFC and CCSBT, which encompass the breeding sites (Figure 1; Table 7). The species also overlaps with IOTC, IATTC and CCAMLR. Consultations are currently underway to establish the South Pacific Regional Fisheries Management Organisation (SPRFMO) that would cover both pelagic and demersal fisheries in the region and which would overlap with the foraging range of *D. antipodensis*. Satellite-tracking studies indicate that non-breeding birds spend over 50% of their time in the Exclusive Economic Zones (EEZs) of Australia, New Zealand and Chile [42].

Table 7. *Summary of the known ACAP Range States, non-ACAP Exclusive Economic Zones and Regional Fisheries Management Organisations that overlap with the marine distribution of* D. antipodensis*.*

	Resident/ Breeding and feeding range	Foraging range only	Few records - outside core foraging range
Known ACAP Range States	New Zealand	Australia Chile	South Africa
Exclusive Economic Zones of non-ACAP countries	-	-	Fiji? New Caledonia?
Regional Fisheries Management Organisations [1]	WCPFC CCSBT SPRFMO [2]	CCAMLR IOTC IATTC	-

[1] See Figure 1 and text for list of acronyms
[2] Not yet in force

MARINE THREATS

The major threat affecting *D. antipodensis* is incidental mortality in longline fishing operations [29]. The growth of the southern bluefin tuna *Thunnus maccoyii* longline fishery around New Zealand in the 1960 and 1970s [43] and the Japanese longline fishery for *Thunnus* spp. around Australia until the mid 1990s [44, 45] is likely to have impacted populations on both island groups. *Diomedea antipodensis* comprised at least 8% of the observed seabird bycatch in Japanese tuna longlines in New Zealand waters from 1989 to 1992 [43], and 14% of the identified birds caught on southern bluefin tuna longlines in New Zealand waters between 1988 and 1997 (Baird *et al*. 1998 in [23]). Between 1998 and 2004, 70 *D. antipodensis* have been observed caught in the New Zealand surface longline fishery operating around the eastern coast of North Island, but observer coverage in the New Zealand EEZ was less than 5% of total fishing effort [46]. The trawl fishery has also been assessed during that period but only one individual was observed killed [46]. Similarly, *D. a. antipodensis* and *D. a. gibsoni* comprised 5.6% and 2.4% respectively of the albatross species observed killed and returned for autopsy (1,652 individuals) between 1996 and 2005, with the vast majority caught by joint venture tuna longliners [47] which have good observer coverage, whereas the much larger domestic tuna long-line fleet does not.

Bycatch of *D. antipodensis* has been identified recently as a problem in the Chilean pelagic longline swordfish fishery, with 'Wandering Albatross' the second most abundant species grouping (after White-chinned Petrels *Procellaria aequinoctialis*) returned to shore for autopsy in 2005-2006 [48]. Foraging areas of this species also overlap with longlining activities in the Australian Eastern Tuna and Billfish fishery [49], where around 3.4 million hooks are set annually [50], and with the Korean and Taiwanese fleets in the central Pacific, which target mostly albacore tuna *T. alalunga* [51]. However, seabird bycatch information for the distant-water pelagic fleets is poor.

KEY GAPS IN SPECIES ASSESSMENT

The extent of incidental mortality, especially in unregulated longline fisheries operating in the central and south east Pacific and the central Tasman Sea requires urgent investigation. Improved bycatch assessment and identification of taxa within the "wandering albatross" group in distant-water and South American fisheries is needed.

The diet of this species has not been comprehensively examined and the cause of the recent sharp decline in the Adams Island population is still unknown. The possible impacts of increased ocean temperatures and changes in productivity in the Tasman Sea on this population in particular warrant research. Juvenile movements and distribution are also largely unknown. Continued monitoring of numbers, productivity, recruitment, adult survival, and breeding frequency is needed to allow modelling of population trends, and to clarify the relationship between population declines, fisheries interactions and competition, and oceanic productivity changes.

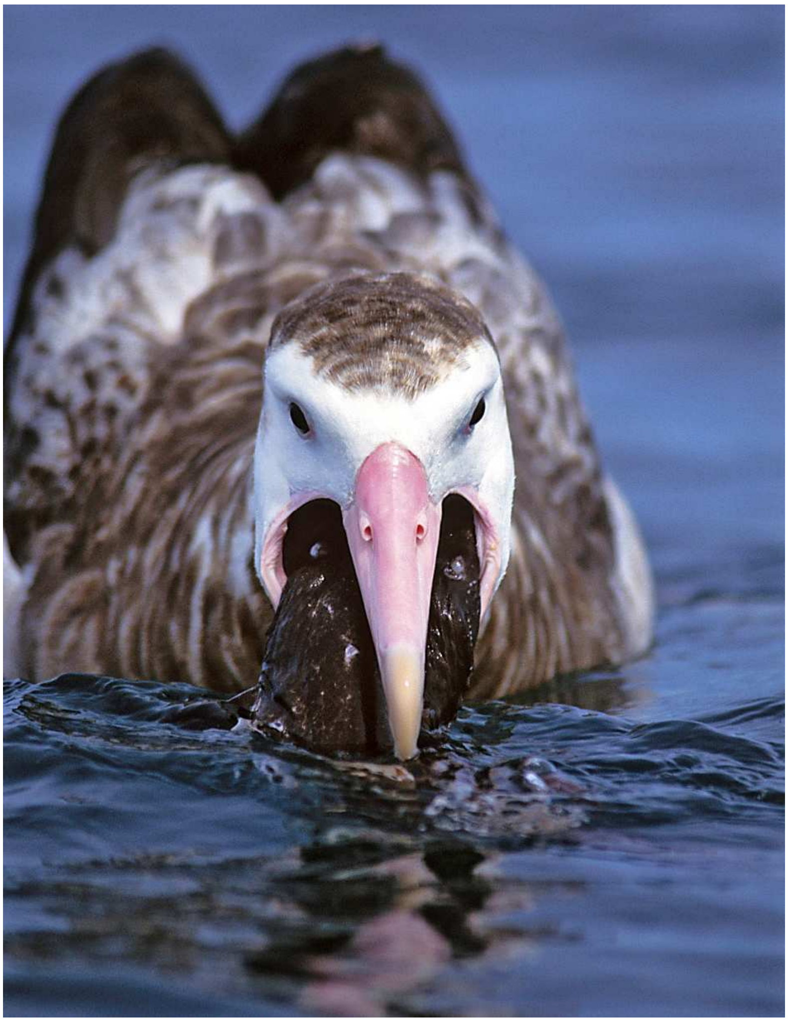


Photo © Mark Jones, not to be used without photographer's permission

REFERENCES

1. Warham, J., 1990. *A checklist of the Procellariiformes (Appendix 1)*, Academic Press Limited: London. 424 - 434.
2. Robertson, C.J.R. and Warham, J. 1992. Nomenclature of the New Zealand Wandering Albatrosses *Diomedea exulans. Bulletin of the British Ornithologists' Club* **112**: 74-81.
3. 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. 13-19.
4. Gales, R., 1998. *Albatross populations: status and threats*, in *Albatross Biology and Conservation*, G. Robertson and R. Gales (Eds). Surrey Beatty & Sons: Chipping Norton. 20-45.
5. Croxall, J.P. and Gales, R., 1998. *An assessment of the conservation status of albatrosses*, in *Albatross Biology and Conservation*, G. Robertson and R. Gales (Eds). Surrey Beatty & Sons: Chipping Norton. 46-65.
6. Medway, D.G. 1993. The identity of the Chocolate Albatross *Diomedea spadicea* of Gmelin, 1789 and of the Wandering Albatross *Diomedea exulans* of Linnaeus, 1758. *Notornis* **40**: 145-162.
7. Burg, T.M. and Croxall, J.P. 2004. Global population structure and taxonomy of the wandering albatross species complex. *Molecular Ecology* **13**: 2345-2355.
8. 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.
9. Holdaway, R.N., Worthy, T.H., and Tennyson, A.J.D. 2001. A working list of breeding bird species of the New Zealand region at first human contact [Review]. *New Zealand Journal of Zoology* **28**: 119-187.
10. Elliott, G. and Walker, K. 2005. Detecting population trends of Gibson's and Antipodean wandering albatrosses. *Notornis* **52**: 215-222.
11. Brooke, M. 2004. *Albatrosses and petrels across the world*. Oxford: Oxford University Press.
12. Brooke, M., Chambers, G.K., Double, M.C., Ryan, P.G., and Tasker, M.L. 2006 - report. *Report by the Taxonomy Working Group to the third meeting of the ACAP Advisory Committee - Brasilia, Brazil 2006.* Second Meeting of the ACAP Advisory Committee. Agreement on the Conservation of Albatrosses and Petrels: Brasilia, Brazil. http://www.acap.aq/
13. Agreement on the Conservation of Albatrosses and Petrels. 2006. *Report of the Second Session of the Meeting of the Parties*. Christchurch, New Zealand. 13 - 17 November 2006. http://www.acap.aq/english/english/advisory-committee/ac-2/ac2-final-report/view-category
14. Burg, T.M. and Croxall, J.P. 2004. Global population structure and taxonomy of the wandering albatross species complex. *Molecular Ecology* **13**: 2345-2355.
15. Birdlife International. 2007. *Diomedea exulans. In: IUCN 2007. 2007 IUCN Red List of Threatened Species*. http://www.iucnredlist.org/.
16. *Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals). http://www.cms.int/*.
17. *Australian Government Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). http://www.deh.gov.au/epbc/.*
18. 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.
19. 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.
20. Department of Environment and Climate Change. 2005. *Threatened Species Conservation Act, 1995, New South Wales*. http://www.legislation.nsw.gov.au/viewtop/inforce/act+101+1995+FIRST+0+N.

21. Subsecretaría de Pesca. 2006. *Plan de Acción Nacional para reducir las capturas incidentales de aves en las pesquerías de palangre (PAN-AM/CHILE).* 26 pp. www.subpesca.cl/mostrararchivo.asp?id=5768
22. New Zealand Government. *New Zealand Wildlife Act 1953, No 31*. http://www.legislation.govt.nz/act/public/1953/0031/latest/DLM276814.html?search=ts_act_wildlife_resel&sr=1.
23. Taylor, G.A. 2000. *Action plan for seabird conservation in New Zealand. Part A: threatened seabirds.* Threatened Species Occasional Publication No. 16. Department of Conservation: Wellington.
24. Walker, K. and Elliott, G. 2005. Population changes and biology of the Antipodean wandering albatross (*Diomedea antipodensis*). *Notornis* **52**: 206-214.
25. Walker, K. and Elliott, G. 1999. Population changes and biology of the wandering albatross *Diomedea exulans gibsoni* at the Auckland Islands. *Emu* **99**: 239-247.
26. 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.
27. Clark, G., Amey, J., and McAllister, G. 1995. Unexpectedly large number of Wandering Albatross (Diomedea exulans) breeding on Antipodes Island, New Zealand. *Notornis* **42**: 42-46.
28. Brooke, M. 2004. *Albatrosses and petrels across the world*. Oxford: Oxford University Press. 499 pp.
29. Gales, R., 1998. *Albatross populations: status and threats*, in *Albatross Biology and Conservation*, G. Robertson and R. Gales (Eds). Surrey Beatty & Sons: Chipping Norton. pp 20-45.
30. United Nations Educational Scientific and Cultural Organzation. *World Heritage List*. http://whc.unesco.org/en/list.
31. New Zealand Government. 1977. *New Zealand Reserves Act 1977*. http://www.legislation.govt.nz/.
32. Department of Conservation. 1988. *Conservation Management Strategy: Subantarctic Islands 1998-2008.* Southland Conservancy Conservation Management Planning Series No. 10. Department of Conservation. Invercagill. 114 pp.
33. Elliot, G. and Walker, K. 2008. *What's wrong with Gibson's Albatross Diomedea antipodensis gibsoni? Fouth International Albatross and Petrel Conference*. Cape Town, South Africa. 11-15 August 2008.
34. Veran, S., Gimenez, O., Flint, E., Kendall, W.L., Doherty, P.F., and Lebreton, J.D. 2007. Quantifying the impact of longline fisheries on adult survival in the black-footed albatross. *Journal of Applied Ecology* **44**: 942-952.
35. Harper, P.C. 1987. Feeding behaviour and other notes on 20 species of Procellariiformes at sea. *Notornis* **34**: 169-192.
36. Imber, M.J. and Russ, R. 1975. Some foods of the Wandering Albatross (Diomedea exulans). *Notornis* **22**: 27-36.
37. Imber, M.J. 1992. Cephalopods eaten by wandering albatrosses (*Diomedea exulans* L.) breeding at six circumpolar localities. *Journal of the Royal Society of New Zealand* **22**: 243-263.
38. Tickell, W.L.N. 2000. *Albatrosses*. Sussex, UK: Pica Press.
39. Nicholls, D.G., Robertson, C.J.R., Prince, P.A., Murray, M.D., Walker, K.J., and Elliott, G.P. 2002. Foraging niches of three *Diomedea* albatrosses. *Marine Ecology-Progress Series* **231**: 269-277.
40. Walker, K. and Elliott, G. 2006. At-sea distribution of Gibson's and Antipodean wandering albatrosses, and relationships with longline fisheries. *Notornis* **53**: 265-290.
41. Walker, K., Elliott, G., Nicholls, D., Murray, D., and Dilks, P. 1995. Satellite tracking of wandering albatross (*Diomedea exulans*) from the Auckland Islands: preliminary results. *Notornis* **42**: 127-137.
42. Nicholls, D.G., Murray, M.D., Butcher, E.C., and Moors, P.J. 2000. Time spent in Exclusive Economic Zones of Southern Oceans by non-breeding wandering albatrosses (*Diomedea* spp.): Implications for national responsibilities for conservation. *Emu* **100**: 318-323.

43. Murray, T.E., Bartle, J.A., Kalish, S.R., and Taylor, P.R. 1993. Incidental capture of seabirds by Japanese southern bluefin tuna longline vessels in New Zealand waters, 1988-1992. *Bird Conservation International* **3**: 181-210.
44. Klaer, N. and Polacheck, T. 1997. By-catch of albatrosses and other seabirds by Japanese longline fishing vessels in the Australian Fishing Zone from April 1992 to March 1995. *Emu* **97**: 150-167.
45. Gales, R., Brothers, N., and Reid, T. 1998. Seabird mortality in the Japanese tuna longline fishery around Australia, 1988-1995. *Biological Conservation* **86**: 37-56.
46. Waugh, S.M., MacKenzie, D.I., and Fletcher, D. 2008. Seabird bycatch in New Zealand trawl and longline fisheries 1998-2004. *Papers and Proceedings of the Royal Society of Tasmania* **142**: 45-66.
47. Conservation Services Programme. 2008. *Summary of autopsy reports for seabirds killed and returned from observed New Zealand fisheries: 1 October 1996 - 30 September 2005, with specific reference to 2002/03, 2003/04, 2004/05.* DOC Research and Development Series 291. Department of Conservation: Wellington. 110 pp.
48. BirdLife Global Seabird Programme. 2008. *Albatross Task Force Annual Report 2007.* Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire, UK.:
49. Lawrence, E., Giannini, F., Bensley, N., and Crombie, J. 2009. *Estimation of seabird bycatch rates in the Eastern Tuna and Billfish Fishery.* Bureau of Rural Sciences: Canberra. 11 pp.
50. Baker, G.B., Double, M.C., Gales, R., Tuck, G.N., Abbott, C.L., Ryan, P.G., Petersen, S.L., Robertson, C.J.R., and Alderman, R. 2007. A global assessment of the impact of fisheries-related mortality on shy and white-capped albatrosses: Conservation implications. *Biological Conservation* **137**: 319-333.
51. Tuck, G.N., Polacheck, T., and Bulman, C.M. 2003. Spatio-temporal trends of longline fishing effort in the Southern Ocean and implications for seabird bycatch. *Biological Conservation* **114**: 1-27.

COMPILED BY

Wiesława Misiak
ACAP Secretariat

CONTRIBUTORS

Kath Walker and Graeme Elliott
Department of Conservation,
New Zealand

Mark Tasker
Vice Chair, ACAP Advisory Committee

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

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

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

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

BirdLife International,
Global Seabird Programme
Contact: Cleo Small
Cleo.Small@rspb.org.uk

Maps: Frances Taylor

Tracking data contributors:
David Nicholls (Chisholm Institute), M.D. Murray, E.C. Butcher (La Trobe University), Kath Walker, Graeme Elliott (Department of Conservation, New Zealand).

PHOTOGRAPHS

Tui De Roy and Mark Jones,
The Roving Tortoise Worldwide
Nature Photography
photos@rovingtortoise.co.nz

RECOMMENDED CITATION

Agreement on the Conservation of Albatrosses and Petrels. 2009. ACAP Species assessment: Antipodean Albatross *Diomedea antipodensis.* Downloaded from http://www.acap.aq on 18 September 2009.

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
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.