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Conservation concern for Antipodean wandering albatross

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Abstract

Antipodean wandering albatross (*Diomedea antipodensis antipodensis*) are endemic to the Antipodes Islands within New Zealand's EEZ. Due to the vulnerability of this long-lived and slow breeding sub-species to fisheries bycatch, their survival, productivity, recruitment and population trends have been monitored during almost all annual visits to Antipodes Island since 1994. The risk of fisheries bycatch to this species in the SPRFMO Area was highlighted by Baird et al in SWG-11-INF-02a.

Since 2004, this population has declined: males at 6% per annum and females at 12%. The population of breeding females is now only 25% of its 2004 level. Alongside this decline, there has been a reduction in nesting success. At the current rate of decline there will be only 500 pairs of Antipodean wandering albatrosses in 20 years, compared with 2900 nesting pairs in 2015-17.

The rapid drop in numbers has been caused by high adult mortality, especially of females. Recent tracking data has highlighted the extended foraging range of this population, particularly females. Birds are regularly foraging to the north-east of New Zealand and as far as the South American coast.

The foraging range of Antipodean wandering albatross to the north and east across the SPRFMO area highlights the importance of actions to understand and minimise bycatch in SPRFMO fisheries in order to address this conservation concern. Further understanding the causes of and solutions to the high female mortality is urgently required as the high and sustained rate of decline has put this species into New Zealand's "Nationally Critical" conservation status category, and it is proposed to be up-listed from "vulnerable" to "endangered" by the IUCN Red List of Threatened Species.

1. BACKGROUND

Antipodean wandering albatross (*Diomedea antipodensis antipodensis*) are endemic to the Antipodes Islands. Due to the vulnerability of this long-lived and slow breeding species to fisheries bycatch, their survival, productivity, recruitment and population trends have been monitored during almost all annual visits to Antipodes Island since 1994. The risk of fisheries bycatch to this species in the SPRFMO Area was highlighted by Baird et al in SWG-11-INF-02a. This paper provides an update on trends in population size, demographic traits, and tracking studies.

2. TRENDS IN POPULATION SIZE AND DEMOGRAPHIC TRAITS

2.1. Population size

The Antipodean wandering albatross, *Diomedea antipodensis* (consisting of two subspecies, *D. a. antipodensis* and *D. a. gibsoni*) is currently proposed to be up-listed from “vulnerable” to “endangered” by the IUCN because the species is in decline. Each subspecies is assessed separately by the New Zealand Threat Classification System and both are now regarded as “nationally critical” (Robertson et al. 2017). *D. a. antipodensis* is declining more rapidly than *D. a. gibsoni*.

The last full population census of *D. a. antipodensis* was undertaken in 1994, 1995 and 1996, when there was an average of 5,180 pairs nesting on Antipodes Island each year (Walker & Elliott 2005). Since then, three areas on Antipodes Island have been censused 20 times, with one of these areas supporting 2.7% of the population having been censused every year but one (Elliott & Walker 2017). These three areas comprise 15% of all the nests on Antipodes Island, and the annual census of these blocks provides a reliable estimate of population trends (Elliott & Walker 2017). The number of nests in the census blocks increased until 2004, declined dramatically between 2005 and 2007, and has continued to decline steadily ever since (Figure 1).

These counts suggest that the number of nesting pairs of Antipodean wandering albatross on Antipodes Island rose from about 5,180 pairs in 1994-96 to about 7,220 in 2003-05, then declined to about 2,900 nesting pairs in 2015-17. At the current rate of decline there will be only 500 nesting pairs of Antipodean wandering albatrosses in 20 years.

2.2. Demographic traits

There was a significant and dramatic decline in adult female survivorship in 2005, and significant, but much less dramatic declines in adult male survival and nesting success at the same time (Figures 2 & 3).

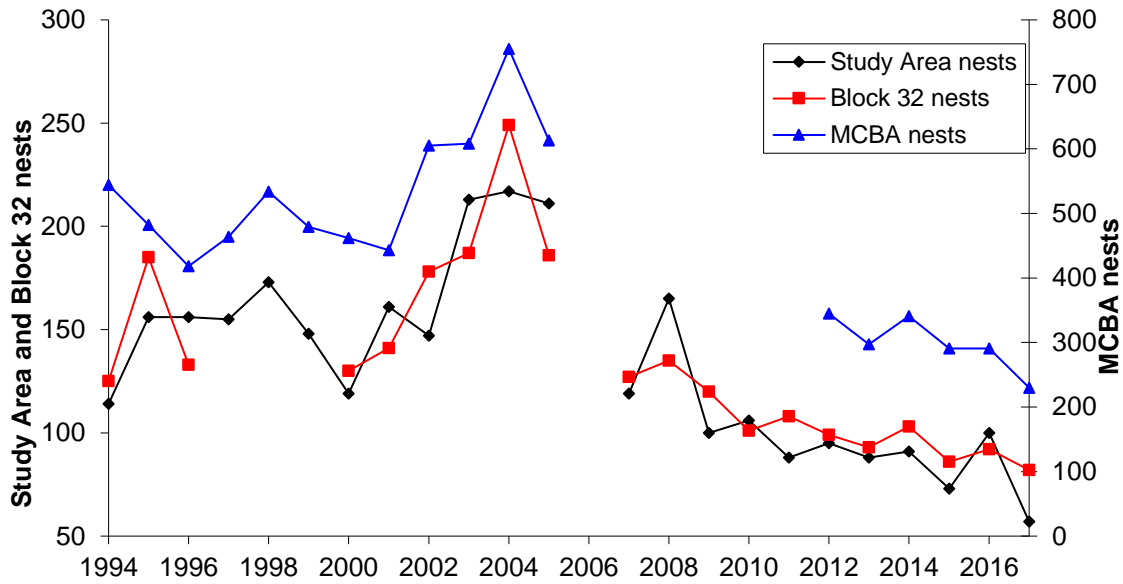


Figure 1. The number of Antipodean wandering albatross nests in three blocks on Antipodes Island since 1994 (from Elliott & Walker 2017).

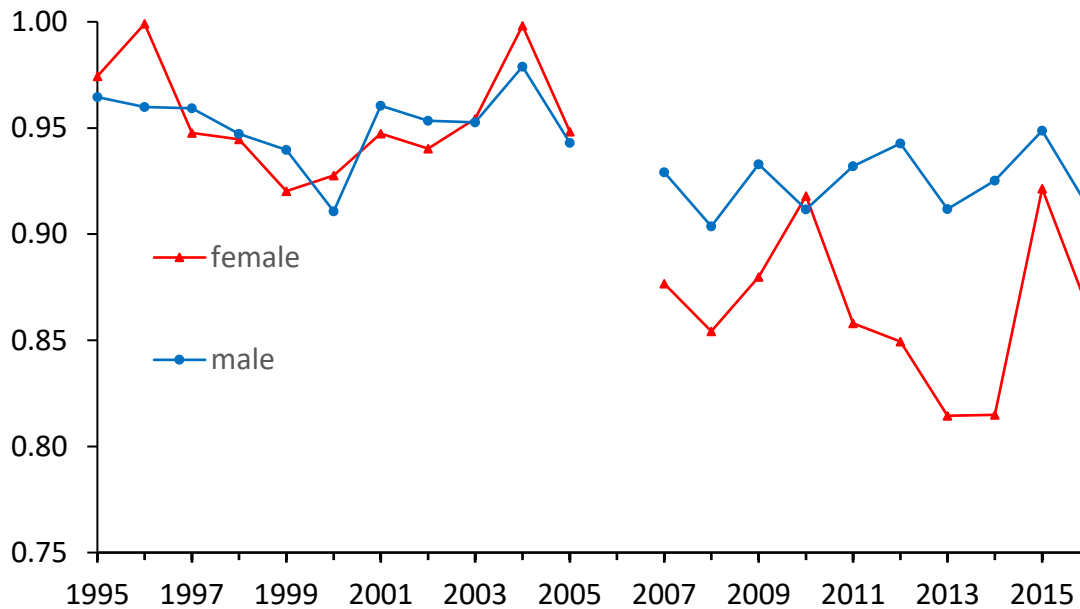


Figure 2: Adult survivorship of Antipodean wandering albatrosses nesting in a study area on Antipodes Island estimated by mark-recapture (from Elliott & Walker 2017).

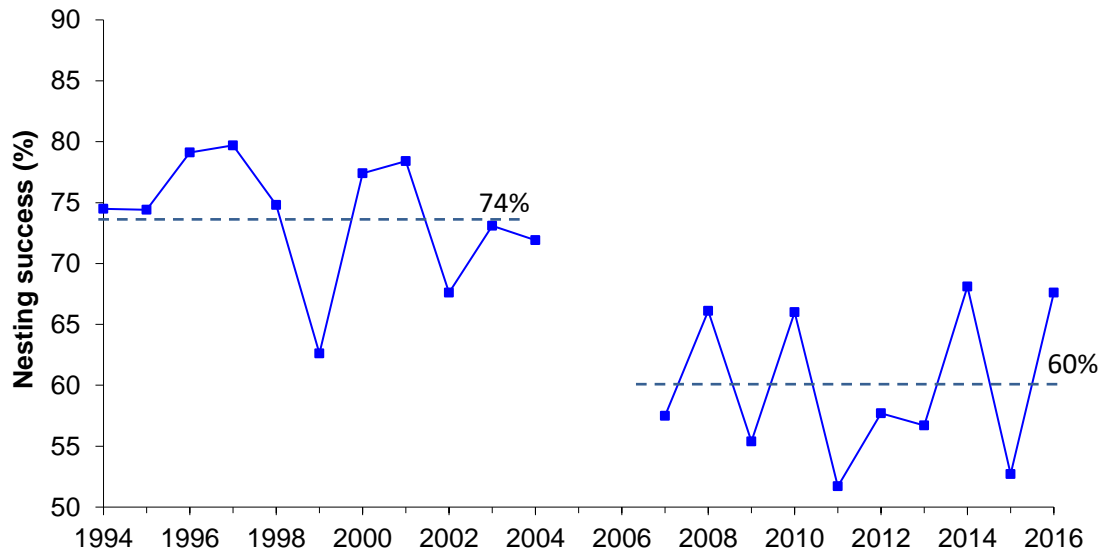


Figure 3: Nesting success of Antipodean wandering albatrosses nesting in a study area on Antipodes Island (from Elliott & Walker 2017).

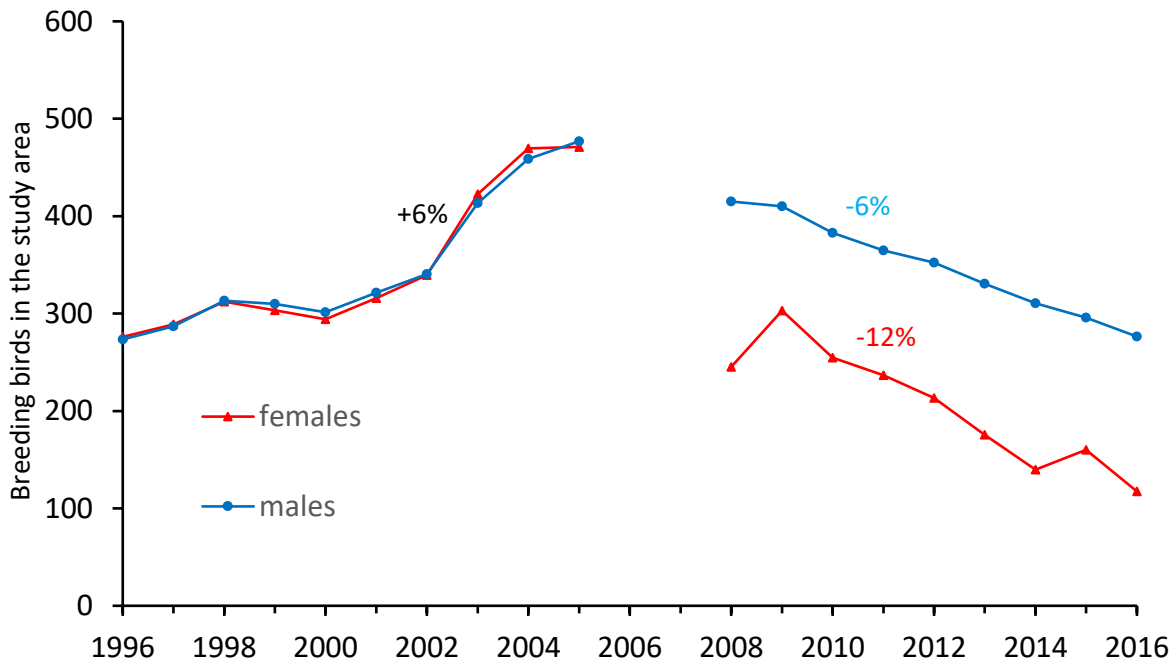


Figure 4: Mark-recapture estimates of the number of breeding adult Antipodean wandering albatrosses in the study area on Antipodes Island (from Elliott & Walker 2017).

Mark-recapture estimates of the population size using the statistical software M-Surge (Choquet et al. 2005) indicate that the breeding population was increasing at about 6% per annum before 2004, but since then it has been declining at 12% per year. The decline has been much greater in females than males, with males declining at about 6% per annum while females have declined at 12% per annum (Figure 4). Whereas the number of males and females in the breeding population before 2004 was approximately equal, there are now more than two adult males for every adult female.

2.3. Land-based threats

There is no evidence of any substantial land-based threats to Antipodean wandering albatrosses at Antipodes Island such as human disturbance, introduced species or disease. Mice were present until mid-2016 but despite intensive monitoring, there is no evidence they were having an impact on Antipodean wandering albatross nesting success or adult survival. The recent programme to eradicate mice from the island has reduced the possibility of future land-based threats.

2.4. Threats from fisheries

Although pelagic longline fisheries pose the greatest risks to wandering albatrosses (Richard & Abraham 2015), bycatch of these birds has been observed in both trawl and demersal longline fisheries in New Zealand (Abraham & Thompson 2015a,b), including of Antipodean albatross. Observed captures, particularly in trawl fisheries, are likely to represent only a small proportion of total fishing related mortality, as unobserved mortality associated with warp strikes is thought to be high (Debski & Pierre 2015; SC-02-13). Not all bycaught birds are identified to subspecies level, but at least one of the wandering albatrosses observed bycaught in New Zealand trawl fisheries was identified as *D. a. antipodensis*. As these birds spend much of their time foraging in international waters, the bycatch estimates from within the New Zealand EEZ are likely to be significantly underestimating total fisheries bycatch. There have been 41 band recoveries of *D. a. antipodensis*, many of which came from international waters in the central and eastern Pacific (Walker & Elliott 2006), six of them since 2007 (Figure 5).

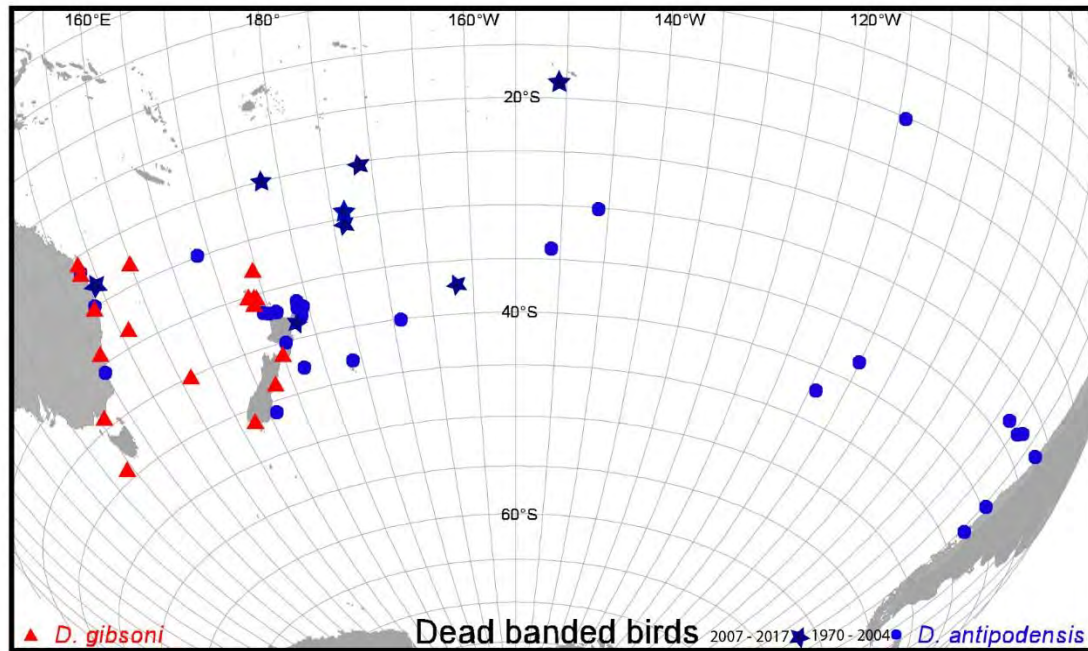


Figure 5: Distribution of dead banded-bird recoveries between 1970 and 2017 of 41 *D. a. antipodensis* banded on Antipodes Island (48°S, 178°E), and between 1970 and 2004 of 18 *D. a. gibsoni* banded on Adams Island (50°S, 166°E).

The foraging range of *D. a. antipodensis* was investigated using satellite tags between 1996 and 2004, and using GLS loggers between 2011 and 2017 (Elliott & Walker 2017). Spatial distributions of non-breeding birds (breeding birds have much more restricted ranges) from tracking before and after the population decline began are summarised in Figure 6. Data collected after 2011 show the foraging ranges for both sexes extend north and east right across the SPRFMO Area. There appears to have been a shift in foraging areas, particularly for non-breeding females, with most birds tracked after 2004 visiting areas as far away as the South American coast, which they rarely visited before 2004 (Figure 6).

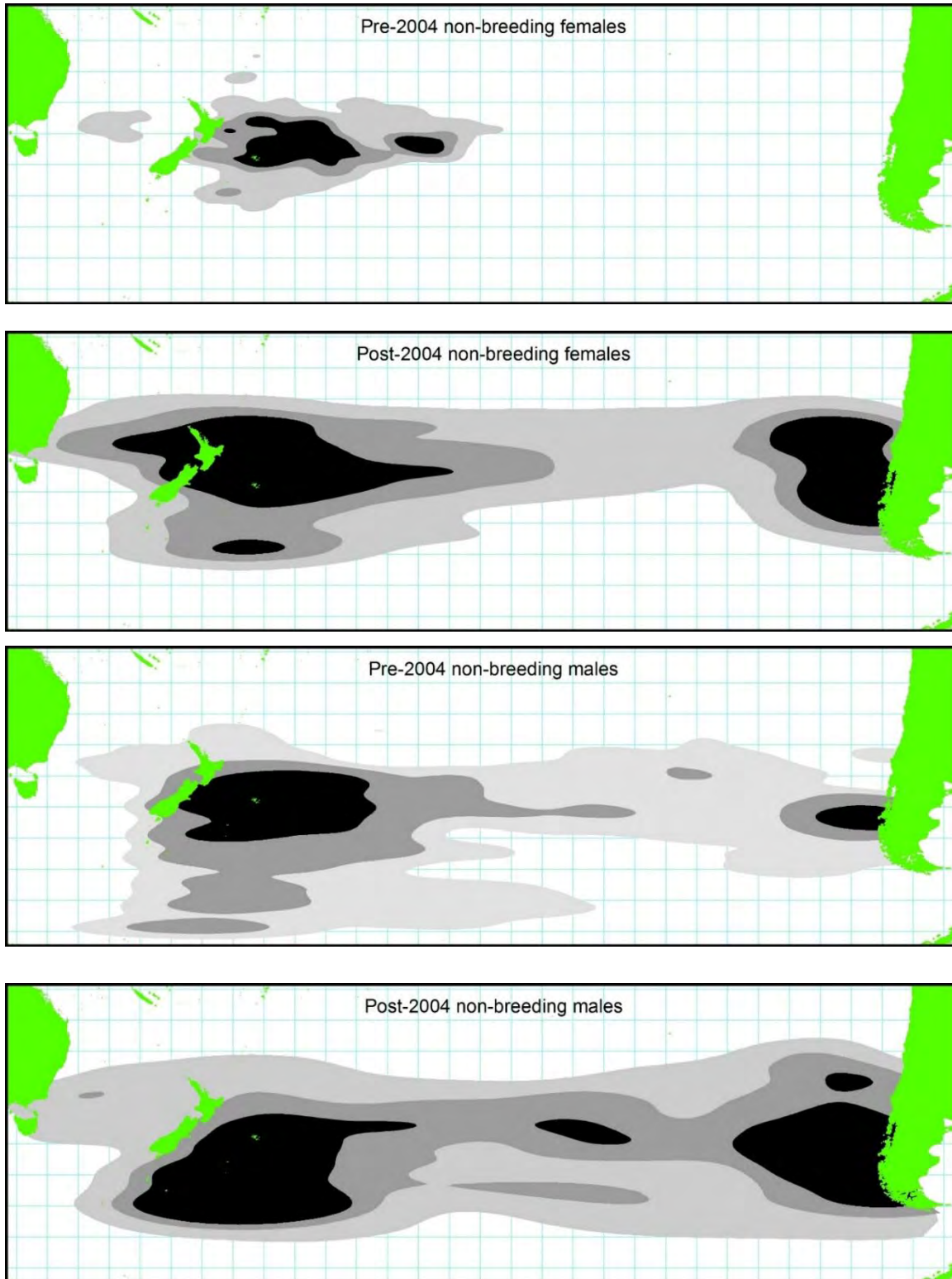


Figure 6: Kernel density plots of breeding and non-breeding *D. a. antipodensis* tracked in 1996–2001 and in 2011–17. Black indicates the 50% contour, dark grey the 75% contour, and light grey the 90% contour.

2.5. Conclusion

The population trends of Antipodean wandering albatross observed since 2008 raises particular concern for this taxon. Due to the lack of land-based threats to this population we identify the major human-induced cause of decline as incidental mortality in fisheries.

Antipodean wandering albatross can be difficult to identify at-sea, but genetic techniques are available for determining the source population using samples from bycaught birds. We encourage not only the collection and reporting of data on bycatch through representative observer coverage, but also the implementation of methods to ensure correct identification of bycaught birds to the lowest possible taxonomic level.

The foraging range of Antipodean wandering albatross north and east across the SPRFMO area highlights the importance of actions to minimise bycatch in SPRFMO fisheries to address this conservation concern.

3. RECOMMENDATIONS

It is recommended that the Scientific Committee:

- **notes** the increased conservation concern for Antipodean wandering albatross based on the most recent demographic information.
- **recognises** that, because the foraging range of Antipodean wandering albatross has extended further north and east across the SPRFMO Area since 2004, it has become increasingly important to better understand and minimise bycatch in SPRFMO fisheries in order to address this conservation concern.
- **encourages** observers to identify and report bycaught wandering albatross to the lowest possible taxonomic level, using photographic or genetic methods as required, to allow better identification of higher risk areas and fishing methods.
- **reviews** available data on seabird mitigation used by vessels (as required by CMM 09-2017) to assess the extent to which adequate mitigation measures are being used to minimise bycatch.

4. REFERENCES

- Abraham E. R., Thompson F. N. 2015a. Captures of wandering albatrosses in trawl fisheries, in the New Zealand Exclusive Economic Zone, from 2002–03 to 2014–15. Retrieved from <https://psc.dragonfly.co.nz/2016v1/released/wandering-albatrosses/trawl/all-vessels/eez/2002-03-2014-15/>, Aug 2, 2017.
- Abraham E. R., Thompson F. N. 2015a. Captures of wandering albatrosses in bottom longline fisheries, in the New Zealand Exclusive Economic Zone, from 2002–03 to 2014–15. Retrieved from <https://psc.dragonfly.co.nz/2016v1/released/wandering-albatrosses/bottom-longline/all-vessels/eez/2002-03-2014-15/>, Aug 2, 2017.
- Baird K, Taylor P., Small C. 2012. Seabird distribution maps for the SPRFMO Area. 11th Meeting of the Science Working Group. Lima, Peru, 15-19 October 2012. SWG-11-INF-02a Choquet R, Reboulet AM, Pradel R, Gimenez O, Lebreton JD (2004) m-surge: new software specifically designed for multistate capture–recapture models. *Animal Biodiversity and Conservation* 27(1):207–215.
- Choquet R., Reboulet A.M., Pradel R., Gimenez O., Lebreton J.D. 2005. M-SURGE 1.8 User’s Manual CEFE, UMR 5175, CNRS, Montpellier, France.
- Debski I.; Pierre J. 2014. Seabird cryptic mortality and risk from fisheries. 2nd Meeting of the Scientific Committee Honolulu, Hawaii, USA. 1-7 October 2014. SC-02-13.
- Elliott, G.; Walker, K. 2017. Antipodean wandering albatross census and population study 2017. <http://www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/meetings/antipodean-albatross-research-report-2017.pdf>
- Richard, Y.; Abraham, E.R. 2015. Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2012–13. *New Zealand Aquatic Environment and Biodiversity Report* 162. 85 p.
- Robertson, H.A.; Baird, K.; Dowding, J.E.; Elliott, G.P.; Hitchmough, R.A.; Miskelly, C.M.; McArthur, N.; O’Donnell, C.F.J.; Sagar, P.M.; Scofield, R.P.; Taylor, G.A. 2017: Conservation status of New Zealand birds, 2016. *New Zealand Threat Classification Series* 19. Department of Conservation, Wellington. 23 p.
- Walker, K.; Elliott, G. 2005. Population changes and biology of the Antipodean Wandering Albatross *Diomedea antipodensis*. *Notornis* 52:206-214.
- Walker, K.J.; Elliott, G.P. 2006. At-sea distribution of Gibson's and Antipodean wandering albatrosses, and relationships with longline fisheries. *Notornis* 53: 265-290.
- Walker, K.; Elliott, G.; Rexer-Huber, K.; Parker, G. 2017. Gibson’s wandering albatross population study and census 2016/17. Report prepared for the Department of Conservation, Wellington. <http://www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-conservation-services/reports/gibsons-albatross-adams-island2017-finalreport.pdf>