SEABIRD-SAFE FISHING: GOOD FOR BIRDS AND GOOD FOR BUSINESS

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Seabird bycatch could be reduced substantially by the implementation of mitigation measures. Though obviously being good for the birds, this would also be of benefit to fishing companies which have to meet increasingly stringent market demands that all forms of bycatch must be prevented or at least, minimised. The Southern Seabirds Trust and New Zealand Department of Conservation are supporting the transition to seabird-safe fishing by developing a 'one stop shop' web-based toolkit for longline companies.

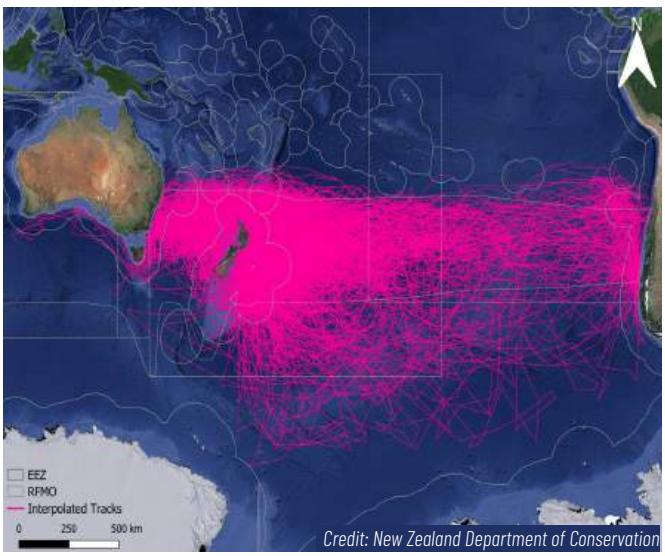
Blue 837 has been waiting at the nest for his mate to return for the last 17 summers

Each summer Blue 837 returns from the sea to his breeding colony and waits for his mate to return. But she never does. He has been waiting for her each season for the last seventeen years.

Blue 837 is a 37 year-old Antipodean albatross. Over the last 20 years two-thirds of the breeding population has disappeared and the species could become extinct within our lifetime.[1] To make matters worse, the female albatrosses are dying at a faster rate, and now, for every three males, only one female is alive.

Scientists Kath Walker and Graeme Elliott have spent the last thirty summers monitoring the population on the birds' breeding island, an uninhabited rugged Sub-Antarctic island off the coast of New Zealand. "Every summer we return to the Antipodes Island and do a roll-call of birds in our study area. It is a heart-breaking job. Albatrosses normally live for 50 or 60 years, and mate for life. But with so few females left, widowed males like Blue 837 are a common sight".

So, how and where are the birds dying, and why are the females so badly affected? The island itself is a safe haven, so Drs Walker and Elliott turned their attention to the albatrosses' lives at sea.



Each pink line shows an Antipodean albatross flight

[1] *Walker, K. and Elliot, G. 2017. ACAP priority population assessment: Antipodean albatross at Antipodes Island. Fourth Meeting of the Population and Conservation Status Working Group, Wellington, NZ, 7-8 Sept 2017. Online: https://acap.aq/working-groups/population-and-conservation-status-working-group/population-and-conservation-status-wg-meeting-4/pacswg4-meeting-documents/2949-pacswg4-doc-03-acap-priority-population-assessment-antipodean-albatross-at-antipodes-island/file; Richard, Y. 2021. Integrated population model of Antipodean albatross for simulating management scenarios,31pages. Technical report prepared for NZ Department of Conservation–June2021.*

The scientists embarked on an ambitious multi-year satellite tracking programme, gluing small tracking devices to the feathers of 200 albatrosses and monitoring their flights.[2] The results were astonishing. Birds were travelling thousands of miles across the Pacific Ocean and Tasman Sea to find food; squid and fish to feed their chick and themselves.

The tracking program solved the mystery of the disappearing females. The study found males and females feed in different ocean areas, and unfortunately for the females, their range overlaps with an area of intense tuna longline fishing.[3] Seven albatrosses carrying tracking devices have stopped transmitting near longline fishing boats, and in two instances the companies confirmed they had caught the bird.

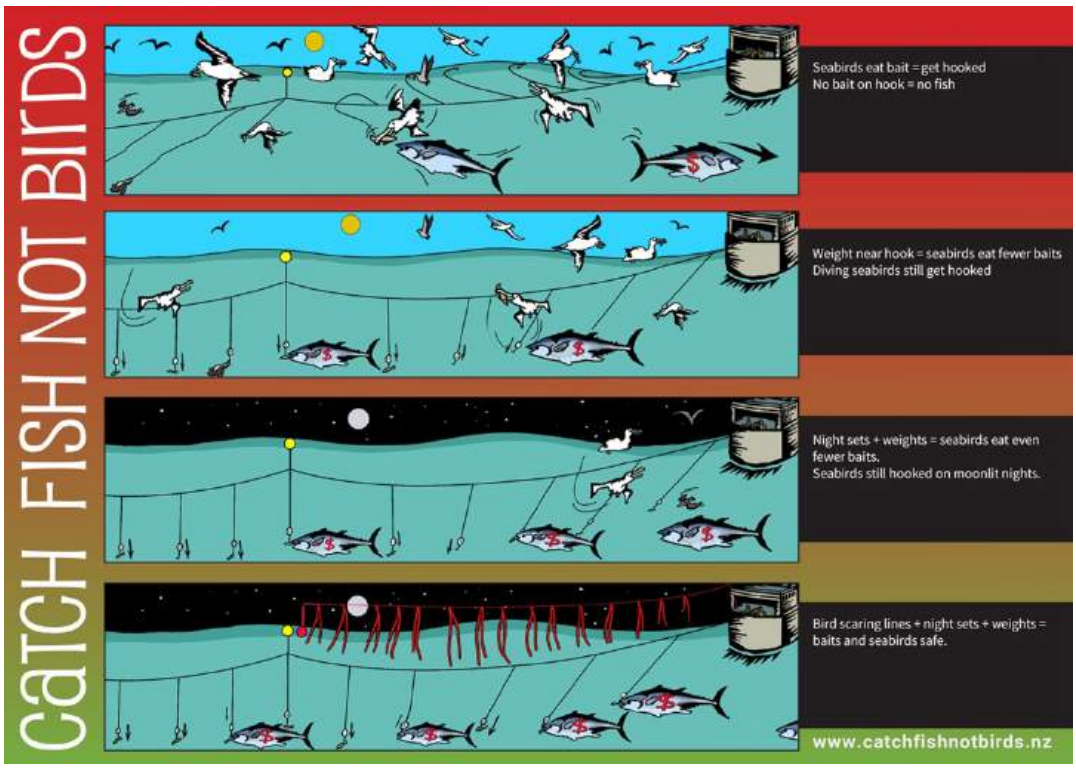
Because there are so many fishing vessels, even if only a few albatrosses are caught by one vessel, it is a problem. For example, if a vessel hooks one Antipodean albatross every two months, and this is scaled up to the 400 vessels fishing in the same area as the birds, then 2 400 Antipodean would be hooked in a year. This would be enough to cause the population to collapse, which is in fact happening.

Unlike some albatross species, Antipodean albatrosses are not suffering from the many other threats that seabirds face such as plastic ingestion, rats eating chicks, nest disturbance and loss of habitat.[4] Fishing is the main threat. In some ways this is good news, because compared to these other problems this one is solvable. But we don't have much time, with the population continuing to decline. Efforts to recover Antipodean albatross will benefit a wide range of other threatened seabirds, so we will get a great return for our efforts.

Two-thirds of Antipodean albatross breeders have perished since 2004

Keeping baited hooks out of sight

Another piece of good news is that solutions to this problem exist and have been shown to be highly effective.[5] We don't have to wait for new technology. And the solutions, called 'mitigation measures', were developed by fishers themselves on the decks of fishing boats, and later proven by scientists.



Seabird-safe fishing solutions, developed by fishers for fishers

Albatrosses and other types of pelagic seabirds find food using their incredible sense of smell and eyesight. A bait on a hook is an irresistible but dangerous meal. The highest risk period for seabirds is when the longline is being set, before baited hooks have sunk below the birds' diving depths. One way to reduce the risk of hooking a seabird is to add a weight near the hook. This means the bait and hook sink below the seabird diving zone quicker, shortening the risk time. However, deep-diving birds like petrels may still reach the bait as it sinks and bring it back to the surface where albatrosses can still be hooked. Setting lines at night further reduces the

[2] *Bose, S. and Debski, I. 2022. Antipodean albatross spatial distribution and fisheries overlap. 18th Regular Session of the Scientific Committee WCPFC: SC18-EB-IP-10. Online: https://meetings.wcpfc.int/node/16338 Elliot, G. and Walker, K. 2022. Antipodean wandering albatross satellite tracking and population study on Antipodes Island in 2021 and 2022. Albatross Research, 31 July 2022. Report prepared for the NZ Department of Conservation, July 2022. Online: https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/non-csp-reports/antipodean-wandering-albatross-satellite-tracking-and-population-study-on-antipodes-island-in-2021-and-2022-final-report.pdf ; Parker et al 2023, ibid*

[3] *Bose, S. and Debski, I. 2022, ibid*

[4] *Walker, K. and Elliot, G. 2017, ibid*

[5] *Melvin, E.F., Guy, T.J. and Read, L.B. 2014. Best practice seabird bycatch mitigation for pelagic longline fisheries targeting tuna and related species. Fisheries Research 149: 5-18*

Robertson, G., Ashworth, P., Carlyle, I., Jiménez, S., Forselledo, R., Domingo, A. and Candy, S.G. 2018. Setting baited hooks by stealth (underwater) can prevent the incidental mortality of albatrosses and petrels in pelagic longline fisheries. Biological Conservation 225: 134-143

Sullivan, B.J., Kibel, B., Kibel, P., Yates, O., Potts, J.M., Ingham, B., Domingo, A., Gianuca D., Jiménez, S., Lepepe, B., Maree, B.A., Neves, T., Peppes, F., Rasehlomi, T., Silva-Costa, A., and Wanless, R.M. 2018. At-sea trialling of the Hookpod: a 'one-stop' mitigation solution for seabird bycatch in pelagic longline fisheries. Animal Conservation 21: 159-167.

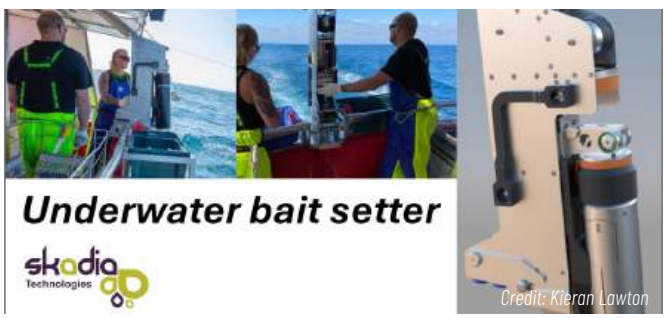
risk, but some seabirds have excellent night vision particularly when the moon is full. So, to be completely seabird-safe, adding a bird-scaring line completes the protection. When these three measures are used together the risk of catching a seabird is close to zero.[6]

There are two more recent innovations, both proven to be highly effective. The Hookpod is a small device that a crew member closes over the barb of the hook during the line-setting operation.[7] This means if a seabird attempts to take a bait it cannot be hooked. The Hookpod has a pressure sensor, and it opens up once it reaches a pre-set depth, usually 20 meters.

The Hookpod covers the hook barb until the hook has sunk below seabird diving depth

The second innovation, an underwater bait setter, is the brainchild of a New Zealand tuna fisher. This is a computer-operated and hydraulically-powered machine that releases baited hooks underwater. Setting baited hooks underwater keeps them out of sight and reach of seabirds. Baited hooks are placed inside a capsule, which travels down a track underwater. When the capsule reaches its pre-set depth, baits are flushed from the capsule with water pressure from a spring-loaded door in the bottom section of the capsule.[8] The underwater bait setter is commercially available through Skadia Technologies.

Albatrosses and other types of seabirds spend most of their lives on the high seas, beyond the jurisdictions of individual countries.[9] And because the high seas are where most tuna longline fishing effort occurs globally, this is where we need to focus our efforts if we want to recover threatened seabirds like the Antipodean albatross, and shift tuna longline fishing onto a strong sustainable footing.



The underwater bait setter delivers baited hooks underwater out of sight of seabirds

[6] *ACAP Summary Advice for Reducing the Impact of Pelagic Longline Fisheries on Seabirds. Reviewed at the 13th Meeting of the Advisory Committee, Edinburgh, UK, 22-26 May 2023. Online: https://www.acap.aq/resources/bycatch-mitigation/mitigation-advice/4548-acap-2023-pelagic-longlines-mitigation-review-and-bpa/file*

[7] *Sullivan et al 2018, ibid*

[8] *Robertson et al 2018, ibid*

[9] *Beal et al 2021. Global political responsibility for the conservation of albatrosses and large petrels. Science Advances Volume 7, number 10.*

Complete web-based information toolkit

Our organisation, the Southern Seabirds Trust, in partnership with the New Zealand Department of Conservation, is working alongside leading tuna companies to accelerate uptake of seabird-safe measures. Information is key, to help fishing companies make informed decisions that support their transition to seabird-safe fishing. We are developing a web-based toolkit to make the transition as straightforward as possible. The toolkit will contain all of the information a company needs to reduce their seabird captures. We are developing the toolkit with fishing companies in mind, but it will be available for anyone in the supply chain from those catching the fish, to those selling the fish.

So, if you are a fishing company wanting to reduce your risk of catching threatened seabirds, what do you need to know? You will probably want to know if your fishing operations overlap with threatened seabirds. The toolkit will include global maps showing seabird risk zones. In each zone, you will be able to find out what seabird species are present, and how threatened they are.

You might also find it helpful to assess how seabird-safe your current fishing is, and how to improve this. By selecting your fishing zone, and your current mitigation measures, you will be able to assess how well you are currently reducing seabird captures, and what additional measures will provide you with more protection. Information on the cost of the measures, where to source them, and how to use them safely and effectively, will be included.

And finally, you may be interested in communicating your efforts to reduce seabird captures to your important audiences, so you might find it helpful to learn how to verify the measures that are being used on your vessels. The toolkit will describe the ways this can be done; the most well-known methods being dockside inspections, electronic monitoring or human observers. A South African company has developed a device that shows whether a bird-scaring line is in use, by measuring and recording tension.[10] Also, Global Fishing Watch has developed an algorithm that uses a Vessel Monitoring System (VMS) and Automatic Identification System (AIS) to show whether a vessel is setting their lines at night.[11]

Each verification method has its strengths and weaknesses. Electronic monitoring, for instance, can detect whether a bird-scaring line is being used, and the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) has developed Artificial Intelligence (AI) that will make the footage review process faster and cheaper.[12] But cameras

[10] *ACAP Small Grant project "Development of a bird-scaring line compliance monitoring device" gets underway in South Africa. ACAP Latest News, 2020. Online: https://www.acap.aq/latest-news/acap-small-grant-project-development-of-a-bird-scaring-line-compliance-monitoring-device-gets-underway-in-south-africa*

[11] *Kroodsma, D., Turner, J., Luck, C., Hochberg, T., Miller, N., Augustyn, P., Prince, S. 2023. Global prevalence of setting longlines at dawn highlights bycatch risk for threatened albatross. Biological Conservation 283: 110026.*

[12] *G Tuck, personal communication*

Skippers and crew need support to use seabird-safe fishing practices

cannot pick up some important design details about bird-scaring lines. This is where combining dockside inspections with electronic monitoring can provide greater assurance to stakeholders that the measures are well-designed and being used.

Ultimately, it will be up to the skipper and crew to implement and maintain the seabird-safe practices on a day-to-day basis. We need to support them. There are training and education schemes in place already, but we are considering what additional support fishers may need. In New Zealand, we have port-based seabird liaison officers, who are available 24/7 for the skipper to call for advice. This has proven to be important from a practical standpoint, but the program also helps to remind skippers of the importance of taking care of seabirds while fishing, recognising that skippers and crew have a lot of responsibilities and seabirds may not be their top priority.[13]

Summary

No one wants to catch seabirds and hooks with birds won't catch tuna. Furthermore, customers in high-value markets are becoming more environmentally aware and concerned about bycatch of marine wildlife. To meet customer demands, large retailers are starting to exclusively buy tuna that is certified by the Marine Stewardship Council, or in Fisheries Improvement Plans.[14] This means that tuna longline businesses may be excluded from high-value markets unless they can effectively demonstrate that they are minimising bycatch of wildlife such as seabirds.

We want both the tuna industry and seabirds to thrive – the health of each depends on the other. We encourage those of you who work in, and with, the industry to use your influence to encourage rapid uptake of seabird-safe measures by tuna longline vessels. What is good for the birds is good for business.

Blue 837 still has a chance to find a new mate in his lifetime if we stem the losses of female Antipodean albatrosses and ensure young birds grow up to breeding age.

Note: The first iteration of the online Seabird-Safe Fishing Toolkit is available for testing and feedback at: (https://www.doc.govt.nz/seabird-safe-fishing-toolkit). For further details, contact Janice Molloy (janice@southernseabirds.org)

Janice Molloy *is the Convenor of Southern Seabirds Trust. She has been supporting fishing fleets and industry groups in their journey towards seabird-safe fishing for over twenty years. In 2006 Janice established a collaboration called the Southern Seabirds Trust, made up of the New Zealand fishing industry, WWF-New Zealand, indigenous fishing interests, and the New Zealand government. The Trust provides fleets in New Zealand and elsewhere in the world with the knowledge and practical support they need to address seabird captures, and finds ways to publicly acknowledge industry efforts. The Trust organises skipper exchanges between countries, delivers port-based workshops, presents awards for industry leadership, and helps fund research to develop new mitigation solutions.*

Stephanie Good*, Principal Consultant at Good4Seas, is the project coordinator for the Seabird-Safe Fishing Toolkit. She has worked in fisheries management and sustainability for the last 15 years, including at MRAG Ltd, the Marine Stewardship Council and Assurance Services International. She recently completed a PhD at the University of Exeter reviewing best practices in managing fisheries impacts on seabirds. She currently runs her own consultancy, Good4Seas.*

Mandy Leathers *is a Senior International Advisor for the New Zealand Department of Conservation. She leads international engagement and collaborative work focused on seabird conservation. This includes representing New Zealand in regional fisheries management organisations and multilateral fora such as the Asia Pacific Economic Forum. Mandy develops collaborative work programmes, projects, and relationships across governments and private sectors to protect seabirds and support sustainable and resilient industries.*

[13] *Plencner, T. 2023. Liaison Programme Annual Report. MIT2021-01 (2021-22 Fishing Year). Technical Report for NZ Department of Conservation. Online: https://www.doc.govt.nz/globalassets/documents/conservation/marine-and-coastal/marine-conservation-services/reports/202122-annual-plan/mit2021-01-protected-species-liaison-project-annual-report-2021-22.pdf*

[14] *Marine Stewardship Council. 2024. Sustainable Tuna Yearbook 2024: Market data, innovations and insights from communities protecting our ocean. MSC. Online: https://www.msc.org/docs/default-source/default-document-library/stakeholders/tuna-news/msc-sustainable-tuna-yearbook-2024.pdf?Status=Master&sfvrsn=99c3a154_14/MSC-Sustainable-Tuna-Yearbook-2024%20.pdf*