THREATS TO NATURE

Case Studies in Success

SAVING SEABIRDS FROM LONGLINE FISHING BYCATCH

invasive species council

In the late 1980s, it became clear that longline fishing was killing thousands of threatened seabirds each year in Australian waters. An albatross would fly thousands of kilometres over the ocean only to have their life cut short – snagged on a fishing hook and drowned.

This case study explains how a combination of federal leadership, industry engagement, conservation advocacy, and the implementation of safer fishing methods have achieved a major reduction in the numbers of seabirds killed as bycatch. This is a standout examplar of how Australia's national threat abatement system can work.

THE THREAT OF LONGLINE FISHING

Millions of baited hooks are set each day on the world's oceans, on thousands of lines that each trail up to a hundred kilometres or more. Petrels, albatrosses and shearwaters, which use smell to search over vast areas for patchily distributed prey, are lured to longline fishing vessels by the smell of discarded offal. To them, the trailing baits look just like prey. As the lines float near the surface (while being set or hauled in), the birds dive and try to snatch the bait. But they often become impaled on the hook and then drown as the sinking line drags them underwater. Worldwide, 160,000 to 320,000 or more seabirds die this way each year (2011 estimate).[1,2]

In the late 1980s, declining albatross populations and emerging information about deaths in longline fisheries led to suspicions that fisheries bycatch was a major threat to seabirds.[3] It was estimated that 8700 birds were killed on longlines in Australian waters in 1994, three-quarters of them albatrosses.[4]

Longline fishing occurs in almost all Australian waters. Seabirds are mainly at risk in seven Commonwealth fisheries targeting large fish such as tuna, billfishes, toothfish and snappers: the Antarctic, Coral Sea, Eastern Tuna and Billfish, Heard Island and McDonald Islands, Macquarie Island Toothfish, Southern and Eastern Scalefish and Shark, and Western Tuna and Billfish fisheries.[5,6]

At least 30 seabird species in Australian waters are killed by longline fishing (Table 1 shows those assessed as moderately to highly affected).[5] Most are albatrosses and large petrels, and most are listed as threatened. These species have long lifespans, low reproductive rates and low rates of natural mortality, making them highly vulnerable to decline from even very low levels of additional mortality.[4] Wandering albatrosses, for example, can live 60 or more years, usually breed at about 10 years of age and produce a chick only every second year (Box 1).[7]

Albatrosses, petrels and other sea-birds swirl around a longline fishing vessel that has bird scaring lines hanging off the cables. Photo: Matt Brady ©

Table 1. Seabirds in Australian waters most affected by longline fishing[5]

Species name	National conservation status
Grey-headed albatross (*Thalassarche chrysostoma*)	Endangered
Wandering albatross (*Diomedea exulans*)	Vulnerable
Black-browed albatross (*Thalassarche melanophris*)	Vulnerable
Shy albatross (*Thalassarche cauta*)	Vulnerable
Campbell albatross (*Thalassarche impavida*)	Vulnerable
White-capped albatross (*Thalassarche steadi*)	Vulnerable
Indian yellow-nosed albatross (*Thalassarche carteri*)	Vulnerable
White-chinned petrel (*Procellaria aequinoctialis*)	Not listed
Great-winged petrel (*Pterodroma macroptera*)	Not listed
Grey petrel (*Procellaria cinerea*)	Not listed
Wedge-tailed shearwater (*Ardenna pacifica*)	Not listed
Flesh-footed shearwater (*Ardenna carneipes*)	Not listed

ABATING THE LONGLINE FISHING THREAT

In 1995, the Australian Government listed the bycatch of seabirds by longline fishing as a key threatening process. The scientific committee advised that 'even low kill rates' presented 'substantial threats to the survival of albatross species'.[4]

Stakeholders from the fishing industry, research organisations, conservation groups and state and federal government agencies worked together to develop the *Threat Abatement Plan for the Incidental Catch (or by-catch) of Seabirds during Oceanic Longline Fishing Operations*, released in 1998. The goal of this five-year plan was to reduce the bycatch rate to less than 0.05 per 1000 hooks in all longline fisheries.[8] The problem was tackled from several angles: fisher education, research and monitoring to improve knowledge of seabird impacts and develop safer fishing techniques, and independent onboard observers to verify bycatch rates. The main change was a requirement for lines to be set at night, when seabirds are less active. Although this substantially reduced the seabird bycatch, it wasn't enough to achieve the goal.[8]

In the two decades since, the threat abatement plan has been reviewed and revised three times, with the latest revision released in 2018. Each has specified that the ultimate aim is to achieve zero seabird bycatch in all longline fisheries, but that this is not realistic in the short-term. The 2018 plan requires five longline fisheries to reduce their bycatch rate to less than 0.01 per 1000 hooks and the other two fisheries to reduce it to 0.05. They can use a variety of measures to achieve this, including night fishing, weights to rapidly sink baits beyond the reach of seabirds and bird scaring lines.

Great progress has been made. By 2007 the bycatch for all Commonwealth fisheries was estimated to be less than 200 a year[9] and by 2018 it was thought to be less than 50.[10]

BOX 1

A life in the sky tragically cut short

Wandering albatrosses are among the biggest birds in the world, with a whopping 3.5 metre wingspan. They spend most of their time soaring over the ocean and can travel more than 120,000 kilometres a year, landing only to mate, breed and take care of their young. They live 60 or more years, mate for life and produce only a single chick every second year. These life history traits put them at risk of population decline even if only a small proportion of birds are lost as bycatch in longline fishing.

The wandering albatross is listed as vulnerable by both the Australian Government and the IUCN. While the major threat worldwide is capture as fishing bycatch, the species is also threatened by invasive cats and mice eating chicks in some of their breeding sites (on subantarctic islands). Climate change is expected to have a severe impact due to shifts in their foraging habitat.

Photo: A wandering albatross off the coast at Port Fairy, Victoria. Photo: Ed Dunens | CC BY 2.0

THE ELEMENTS OF SUCCESS

Federal leadership and multi-stakeholder engagement: Because the seabird bycatch problem is mainly confined to fisheries under the control of the Australian Fisheries Management Authority (AFMA), the Australian Government has been able to exercise leadership and mandate the adoption of safe fishing measures. The involvement of a multi-stakeholder threat abatement team, which has met annually to review progress, has been vital for ensuring rapid responses to issues as they arise and promoting continuous improvement. The fishing industry has been motivated to trial and adopt new methods. The involvement of an environmental NGO, Humane Society International, has been important to sustain the ambition under the abatement plan to achieve zero bycatch.

Clear objectives and robust consequences: Each iteration of the abatement plan has defined clear measurable performance criteria and responses when the criteria are not met. The specified escalating responses to breaches – ranging from investigation to closure of a fishing area – provide the industry with a strong incentive to comply with bycatch limits.

Monitoring and research: When longline fishing was listed as a key threatening process, little was known about the scale of the problem and the first abatement plan covered just one fishery. Requirements for independent observers on board fishing vessels have provided much more reliable information and fostered compliance with the abatement plan. Trials of different fishing gears have helped develop cost-effective mitigation measures that reduce bycatch while maintaining productivity. The development of new electronic monitoring systems will reduce costs, improve compliance and enable more effective data collection.[10]

Financial commitment: The Australian Government spent about $1–2 million over the 5 years to 2018 to implement the threat abatement plan and the fishing industry invested at least $0.5 million on research and development.[10] Australian Government agencies and philanthropic organisations (both here and overseas) have also invested in research.[6]

The great-winged petrel is one of 12 seabirds in Australian waters most affected by longline fishing. Photo: JJ Harrison | CC BY-SA 4.0

WHERE WE ARE NOW

Thanks to a 25-year threat abatement effort, Australia has made excellent progress in reducing seabird bycatch. However, persistence is needed to further improve fishing technologies and practices to achieve the goal of zero seabird bycatch. Globally, many seabird species are in trouble, with 30% of all species now threatened.[11,12,13] Incidental capture in fisheries (mainly longline and trawl) is their greatest threat.[2] Having demonstrated the potential for abating bycatch threats, Australia can play an important role encouraging other countries to adopt similar measures.

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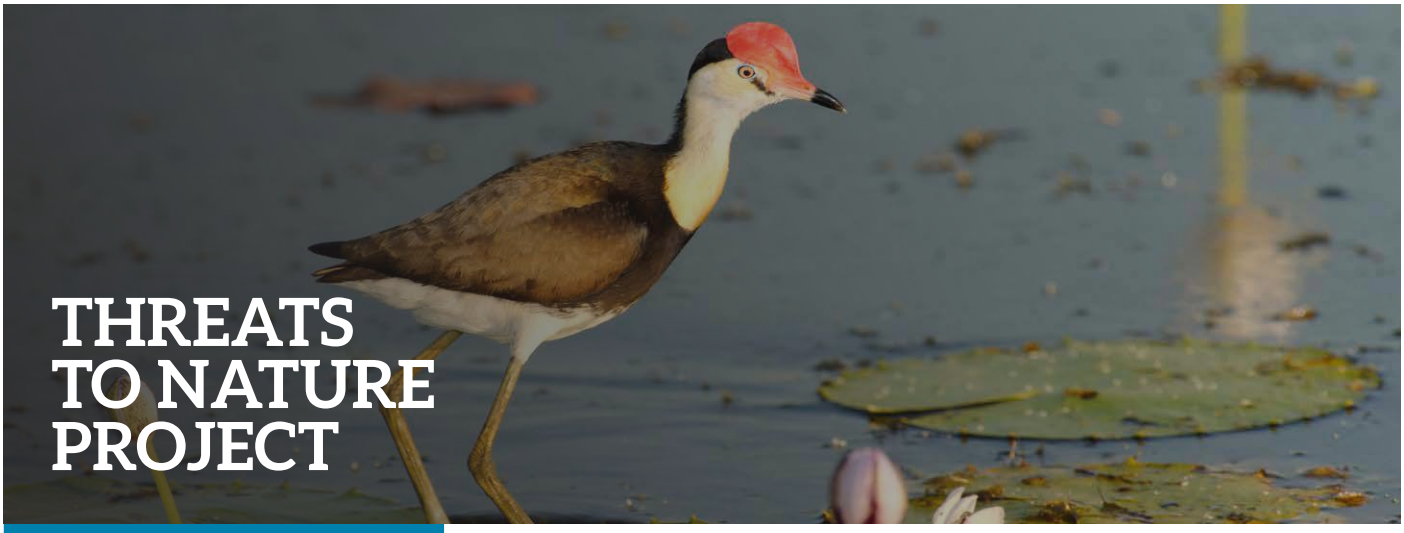

THREATS TO NATURE PROJECT

If Australians are to protect what is most distinctive about this country – our unique plants, animals and ecological communities – we urgently need to overcome the key threats facing them.

It is not possible to recover all of our threatened species one by one through species-focused efforts. We also need a concerted national focus to overcome the major threats our native plants and animals have in common – in particular **invasive species**, **climate change**, **habitat destruction**, **adverse fire regimes** and **changes to natural water flows**.

Australia's threat abatement system needs to be more ambitious, better funded and nationally coordinated.