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Proposal to study seabird-fishery interactions in global longline fisheries

Geoff Tuck
CSIRO Marine Research, AUSTRALIA.
PO Box 1538
Hobart, Australia 7000
Geoff.Tuck@csiro.au

Introduction:

Many Southern Ocean species of seabird have shown marked declines in abundance over the last three to four decades. The incidental catch of seabirds from longlines has been implicated in these declines. The major Southern Ocean longline fisheries that have recorded incidental mortality include those targeting pelagic tunas and billfish and demersal fisheries targeting Patagonian toothfish, hakes and ling. Longline vessels targeting southern bluefin tuna are known to catch seabirds (Brothers, 1991; Murray et al., 1993; Klaer and Polacheck, 1997; Gales et al., 1998; Takeuchi, 1998). The Japanese distant-water fleet has a long history of operation in the Southern Ocean since its beginning and rapid expansion in the 1960s. The Taiwanese fleet has also increased capacity markedly over the last decade and is currently one of the largest fleets fishing in the Pacific, Indian and Atlantic Oceans. The pelagic longline fleets of the Southern Ocean have been implicated in the declines of several species of seabird, and in particular albatrosses (Nel et al. 2002b; Weimerskirch et al., 1997). There are indications that bycatch for some populations has reduced due to changes in effort distributions and the increased use of mitigation measures following the identification and acceptance of the problem during the 1990's (Baker et al., 2002; Tuck et al., 2003). However, estimates of mortality remain high and, for some fleets (e.g. Taiwan), are largely unknown (Anon., 1997; Takeuchi 1998; Tuck et al., 2003).

While seabird bycatch is clearly an issue for fleets targeting southern bluefin tuna, this project will look at all fleets where seabird bycatch has, and continues to, impact populations. This proposal seeks to synthesise data on fishing operations that have the potential to impact oceanic seabirds and summarise knowledge of seabird bycatch from these fisheries. This will be achieved through the establishment of collaborative links with fishing agencies from the major high-seas fishing nations, regional fisheries management organizations, and local seabird and fishery experts. These data will then be used to analyse the potential impacts of fishing on specific vulnerable seabird populations. Broad-scale synthesised information and impact analyses are vital for the effective conservation of seabirds and other incidentally caught species.

Need/Background:

Albatrosses and other seabirds are incidentally caught during demersal and pelagic longline operations in both the Northern and Southern Hemisphere and the bycatch from these fisheries has been identified as a significant source of mortality for a number of species of seabirds (Brothers, 1991; Gales, 1993; Murray et al., 1993; Klaer and Polacheck, 1997; Baker et al., 2002; Nel et al., 2002a). Several species are attracted to the baits and offal discharge of fishing vessels, whereupon they attempt to remove the bait from hooks of longlines. Many subsequently become caught and drown. Because many seabirds are long-lived, have low reproductive rates and show delayed maturity, any additional mortality can have a severe impact on their sustainability. To gain insights into the potential impact of longlining on Southern Ocean seabirds, an understanding of the historical and current distributions of longline effort and associated bycatch rates is important.

Major commercial pelagic longline operations began in the early 1950s, targeting tunas and tuna-like species on the high seas of the Northern Hemisphere and equatorial regions (Caton and Ward, 1996). The Japanese distant-water fleet began expanding rapidly into the Southern Ocean from the mid 1960s, while the Taiwanese, mainly targeting southern populations of albacore *T. alalunga*, gradually increased effort south of 30°S through the 1970s. The Japanese and Taiwanese fleets are currently the largest and most expansive pelagic longline fleets fishing the Southern Ocean. The pelagic fisheries' southern extent is

typically to 45ºS and directed at temperate water species such as albacore, swordfish and southern bluefin tuna. Pelagic longline vessels generally operate on the high seas, and the highly migratory habit of many species of seabirds, in particular albatrosses, often leads to interactions between these vessels and foraging birds. Demersal vessels pose an additional threat. The demersal longline fisheries for Patagonian toothfish, hake and ling rapidly developed during the 1990s. The fleets of Chile, Argentina, New Zealand and those fishing under the jurisdiction of CCAMLR are the principal operators in the Southern Ocean. As these vessels target finfish species that inhabit shelf and slope waters, they pose a serious threat due to their proximity to the breeding sites of many species of seabirds (Tuck et al., 2003).

The incidental catch of seabirds from the Southern Ocean will clearly vary according to the overlap between distributions of fishing effort (measured as number of hooks set) and the foraging distributions of Southern Ocean populations of seabirds. Knowledge of the distributions of foraging populations of seabirds is also critical in any assessment of the potential impacts of the various Southern Ocean longline fleets. Many species of seabird, in particular albatrosses, are known to traverse widely across the southern oceans, and most, if not all, are likely to come in contact with pelagic and/or demersal longline fleets at some point during their lifetime (Prince et al., 1992; Weimerskirch et al., 1997; Tuck et al., 1999). Recognising the overlap between distributions of effort and seabird abundance can have great beneficial consequences for minimising fisheries related mortality. For example, seabird mortality in the regulated demersal longline fishery at South Georgia has been virtually eliminated by modifying the time of fishing to avoid periods when birds are brooding (SC-CAMLR-XX, 2001). The introduction of bird-scaring devices, line-weighting and night setting has also greatly reduced seabird bycatch in some longline fisheries.

Restrictive quotas and the high price for tunas and toothfish have led to a marked increase in IUU fishing since the 1990s. This uncontrolled effort is placing extreme pressure on target and incidentally caught species and undermines attempts to manage stocks in an ecologically sustainable manner. As illegal vessels are unlikely to be implementing bycatch mitigation measures to the same level as those regulated by conservation measures, the potential impact of these vessels on seabirds may be substantial. Estimates of bycatch from IUU fishing for toothfish alone would suggest that current levels of seabird mortality are not sustainable (SC-CAMLR-XX, 2001). When combined with the impacts from regulated fisheries, some of which show either inconsistent use of mitigation measures or none at all, the long-term viability of many Southern Ocean species of seabird may be in jeopardy.

There is clearly a need to compile and synthesise data on fishery operations that may be causing population declines in seabirds. As seabirds are highly migratory, their foraging distributions can overlap with several fleets and cover several water bodies. This dictates a large-scale project with multi-national collaboration. This project will compile fishery and seabird bycatch data, summarise trends in fishing effort and other operational influences (e.g. mitigation measures used), identify gaps in knowledge, and initiate population analyses for selected vulnerable species. In doing so it will provide a quantitative source of information for fishery managers and policy makers.

Methods:

1) Review literature (including grey-literature) on seabird bycatch and fishing operations relevant to incidental mortality
2) Establish a network of collaborators from RFMOs, national fishery agencies, local fishery and seabird experts
3) Source and compile data (seabird and fishing) into a database
4) Establish protocols for appropriately authorized information on fisheries operations and seabird bycatch to be accessed
5) Evaluate potential impacts of fishing on selected vulnerable seabird populations

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