



Agreement on the Conservation of Albatrosses and Petrels

Second Meeting of Seabird Bycatch Working Group

Hermanus, South Africa, 17 – 18 August 2008

Title: Mitigation Fact Sheets

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SBWG-2 Doc 9
Agenda Item No. 6

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Submitted by: BirdLife International



Introduction to Seabird Bycatch

Mitigation Fact Sheets

The BirdLife Global Seabird Programme is in the process of developing a series of fact sheets that describe potential mitigation measures currently available, and those that are emerging, for pelagic and demersal longline and trawl fisheries. The fact sheets are designed to inform managers of the options available and assist in decision-making on the most appropriate measures for their fisheries. The fact sheets will:

- describe the measure and its adoption (including a drawing)
- summarise its effectiveness
- where possible, recommend best practice specifications
- review most about appropriate measures that can be used in combination
- highlight potential problems and solutions
- discuss compliance and implementation issues, and
- recommend relevant literature

The threat to seabirds

Seabirds are characterised as being late to mature and slow to reproduce, many albatrosses do not breed before they are ten years old and thereafter a maximum of a single egg is produced each year with many species only breeding every other year. To compensate for this seabirds are very long lived and have low rates of adult mortality. These features make any human induced increase in adult mortality highly significant, often resulting in overall population declines.

Fisheries bycatch is the single greatest threat facing many seabird populations. Albatrosses, in particular, are under extreme pressure with 18 of the 22 species threatened with extinction (BirdLife International 2008). Seabird bycatch is

unnecessary and preventable. In fact, it not only has disastrous consequences for the birds but renders fishing operations less efficient. Fortunately, there are simple and effective solutions that can prevent seabird bycatch in longline and trawl fisheries.

Seabird bycatch in longline fisheries

Seabirds are most vulnerable to mortality on longline hooks during the short period between hooks leaving the vessel and sinking beyond the diving range of foraging seabirds. If the sink rates of baited hooks, the speed of vessels and the behaviour of foraging birds are known, the distance astern of the vessel where birds are susceptible to bycatch can be calculated. This distance is known as the '**access window**.' The majority of mitigation measures are designed to prevent contact between seabirds and hooks within this critical period.

Sink rate

Sink rates are determined by the configuration of fishing gear, weather and the actions of the crew. The use of an appropriate weighting regime is key to achieving the desired sink rate.

Vessel speed

In Alaska, analysis has shown that vessel speed is a primary determinant of the distance astern that baited hooks are available to seabirds and therefore determines the performance standards required of streamer lines. Vessel speed during setting is routinely recorded but the implications this has for seabird bycatch are rarely considered.

Seabird diving capabilities

The safe depth, below which seabirds are no longer vulnerable to becoming caught, is a function of the foraging bird's diving proficiency. Albatross diving ability ranges from zero (wandering albatross) to about 12 metres (light-mantled albatross), most species (mollymawks) fall somewhere in between. Of other species regularly caught on longlines, northern fulmars are restricted to surface waters, white-chinned petrels dive to depths of 13 metres while sooty shearwaters have been recorded diving to 67 metres. The deeper diving species are not only caught themselves but can seize baited hooks at depth and bring them to the surface; making them available to less proficient divers, like albatrosses.

Mitigation measures

Bait lost to seabirds is no longer available to catch fish. Fortunately, there are several simple, inexpensive yet effective mitigation measures available that when used conscientiously can reduce the number of seabirds killed in longline and trawl fisheries.

Many different mitigation measures are in common use, existing measures are constantly being improved and new approaches developed. However, to date no single mitigation measure has proved to be successful at eliminating seabird bycatch

in all situations. In most cases, it is necessary to use a number of mitigation measures in combination to minimise seabird bycatch. Each fishery has different operational characteristics and interacts with a specific assemblage of seabirds therefore, it is important to assess each fishery individually.

Lokkeborg (2008) defines a mitigation measure as a modification to gear design or fishing operation that reduces the likelihood of catching seabirds. Mitigation measures for longline fishing have been classified somewhat differently, but can be divided into four main categories:

1. Avoid peak areas and periods of bird foraging (e.g. night setting, area and seasonal closures).
2. Limit bird access to baited hooks (e.g. underwater setting chute, weighted lines, thawed bait, line shooter, side-setting).
3. Deter birds from taking baited hooks (e.g. streamer (bird-scaring) lines)
4. Reduce the attractiveness or visibility of the baited hooks (e.g. dumping of offal, artificial baits, blue-dyed bait).

Secondary hooking

Although most birds are caught during line setting, birds are also vulnerable to hooking during line hauling or during the soak period. Strong currents can bring shallow-set pelagic longlines to, or close to, the surface during the soak period. Birds can become snagged while attempting to grasp bait from these hooks. Similarly, birds may attempt to feed on baits as the line is hauled or become foul hooked, usually in the leg or wing. Birds hooked in this way are often still alive when the line is retrieved; however, the injuries sustained are likely to affect the long-term survival of birds.

Seabird bycatch in trawl fisheries

Over recent years, mortality of albatrosses and petrels in trawl fisheries has been identified as a major threat.

Seabird mortality in trawl fisheries can be broadly grouped into two categories: (1) birds colliding with trawl warp, netsonde and paravane cables, which particularly impacts larger birds such as albatrosses, and (2) birds becoming entangled in nets during shooting and hauling which more commonly affects the smaller of seabird species such as petrels. Like longline fisheries, there is considerable potential for underestimating incidental mortality because an unknown proportion of birds that are killed by warp strikes are not recovered onboard, and therefore recorded, as they are dislodged or fall off the cables during the fishing process. It has been argued that the relative impact of trawl fisheries on seabird population declines could be disproportionately high due to the neritic (shelf and shelf-break) nature of many trawl fisheries, which brings them into high level of overlap with breeding seabirds. Breeding birds are relatively constrained in their foraging distributions, and typically

concentrate their feeding trips around their colonies during the early stages of the breeding season.

Mitigation measures

The key to many of these problems is reducing the attractiveness of fishing vessels to foraging birds by managing the discharge of offal and discards. Considerable research is required to investigate the most cost-effective and operationally suitable method of managing and/or processing discharge to reduce seabird mortality in trawl fisheries

However, there are short to medium-term mitigation options available. Warp strike can be managed with seabird deterrents, such as streamer lines. Net entanglement during the shot can be reduced by good net –cleaning practices prior to shoot and by applying net-binding, which prevents the net from lofting on the waters surface and increases its sink rate. Net entanglements during the haul are more difficult to mitigate, but maintaining tension on the net during hauling and reducing the time the net is on the surface have been shown to be effective measures to reduce seabird mortality.

Reference:

BirdLife International (2008) "<http://www.birdlife.org/datazone/species/index.html>"

Løkkeborg, S. (2008) Review and assessment of mitigation measures to reduce incidental catch of seabirds in longline and trawl fisheries. FAO.... *in press*)