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ACAP SUMMARY ADVICE FOR REDUCING THE IMPACT OF PELAGIC LONGLINE FISHING ON SEABIRDS

ACAP Secretariat[1]

SUMMARY

A combination of weighted branch lines, bird scaring lines and night setting are best practice mitigation in pelagic longline fisheries. These measures should be applied in areas where fishing effort overlaps with seabirds vulnerable to bycatch to reduce the incidental mortality to the lowest possible levels. Other factors such as safety, practicality and the characteristics of the fishery should also be recognised. Currently, no single mitigation measure can reliably prevent the incidental mortality of seabirds in most pelagic longline fisheries. The most effective approach is to use the above measures in combination.

KEYWORDS by-catch, seabirds

1. Introduction

The incidental mortality of seabirds, mostly albatrosses and petrels, in longline fisheries continues to be a serious global concern and was major reason for the establishment of the Agreement on the Conservation of Albatrosses and Petrels (ACAP). In longline fisheries seabirds are killed when they become hooked and drowned while foraging for baits on longline hooks as the gear is deployed. They also can become hooked as the gear is hauled; however, many of these seabirds can be released alive with careful handling. Although most mitigation measures are broadly applicable, the application and specifications of some will vary with local longlining methods and gear configurations. For example, most scientific literature on seabird bycatch mitigation in pelagic fisheries relates to larger vessels, with little research attention to smaller vessels and the gear configuration and methods of artisanal fleets; seabird bycatch mitigation advice is under development. ACAP has comprehensively reviewed the scientific literature dealing with seabird bycatch mitigation in pelagic fisheries, most recently at the Eighth Meeting of the Advisory Committee in Uruguay in September 2014, and this document is a distillation of that review (http://www.acap.aq/en/resources/bycatch-mitigation/mitigation-advice/200-acap-review-of-mitigation-measures-and-summary-advice-for-reducing-the-impact-of-pelagic-longlines-on-seabirds/file).

2. Best practice measures

2.1 Branch line weighting

Weights will shorten but not eliminate the zone behind the vessel in which birds can be caught. Branch lines should be weighted to sink the baited hooks rapidly out of the diving range of feeding seabirds. Weighted lines sink faster and more consistently, resulting in dramatic reductions in seabird attacks on baited hooks. Scientific studies have demonstrated that branch line weighting configurations with more mass close to the hook sinks the hooks most rapidly, reduces seabird attacks on baits and consequently is most likely to reduce mortalities. Studies of a range of weighting regimes, including regimes with weight at the hook, have shown no negative effect on target catch rates. Continued refinement of line weighting configurations (mass, number and position of weights and materials) with regard to effectively reducing seabird bycatch and safety concerns through controlled research and application in fisheries, is encouraged.

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Line weighting has been shown to improve the effectiveness of night setting and bird scaring lines in reducing seabird bycatch. Of this combination that makes up this best practice mitigation, line weighting is integral to the fishing gear and has the advantage of being more consistently implemented and thus facilitates compliance and port monitoring. On this basis it is important to enhance the priority accorded to line weighting, providing certain pre-conditions can be met, inter alia:

- weighting regime characteristics adequately specified;
- safety issues adequately addressed;
- issues relating to application to artisanal fisheries are taken into account.

Current recommended minimum standards for branch line weighting configurations are:

- Greater than 45 g attached within 1 m of the hook or;
- Greater than 60 g attached within 3.5 m of the hook or;
- Greater than 98 g weight attached within 4 m of the hook.

Positioning weight farther than 4 m from the hook is not recommended.

The working group anticipates further research on line weighting and that these regimes may be revised in the future.

2.2 Night setting

Setting longlines at night, between nautical twilight and nautical dawn, is highly effective at reducing incidental mortality of seabirds because the majority of vulnerable seabirds are inactive at night.

2.3 Bird scaring lines

Properly designed and deployed bird scaring lines deter birds from sinking baits, thus dramatically reducing seabird attacks and related mortalities. A bird scaring line is a line that runs from a high point at the stern to a device or mechanism that creates drag at its terminus. As the vessel moves forward, drag lifts the section of line closest to the vessel from the water into the air. Brightly coloured streamers hanging from the aerial extent of the line scare birds from flying to and under the line preventing them from reaching the baited hooks. It is the aerial extent (out of water) section with suspended streamers that scares birds from the sinking baits.
Bird scaring lines should be the lightest practical strong fine line. Lines should be attached to the vessel with a barrel swivel to minimise rotation of the line from torque created as it is dragged behind the vessel.
Towed objects, applied to increase drag, and with it bird scaring line aerial extent, are prone to tangling with float lines leading to lost bird scaring lines, interruptions in vessel operations and in some cases lost fishing gear. Alternatives, such as adding short streamers to the in-water portion of the line, can enhance drag while minimising tangles with float lines. Weak links (breakaways) should be incorporated into the in-water portion of the line safety and operational problems should lines become tangled.

Given operational differences in pelagic longline fisheries due to vessel size and gear type, bird scaring lines specifications have been divided into recommendations for vessels greater than 35 metres and those less than 35 metres.

2.3.1 Bird scaring lines: recommendations for vessels > 35 m total length

Simultaneous use of two bird scaring lines, one on each side of the sinking longline, provide maximum protection from bird attacks under a variety of wind conditions and are recommended as best practice for larger vessels.

Bird scaring lines should include the following specifications:

- Bird scaring lines should be deployed to maximise the aerial extent. Aerial extent is a function of vessel

speed, height of the attachment point to the vessel, drag, and weight of bird scaring line materials.

- Vessels should deploy bird-scaring lines with a minimum aerial extent of 100 m. To achieve a minimum aerial extent bird scaring lines line should be attached to the vessel such that it is suspended from a point a minimum of about 8 m above the water at the stern.
- Streamers should be: brightly coloured, a mix of long and short streamers, placed at intervals of no more than 5 m, and long streamers attached to the line with swivels that prevent streamers from wrapping around the line. All streamers should reach the sea-surface in calm conditions.
- Baited hooks shall be deployed within the area bounded by the two bird scaring lines. Bait-casting machines shall be adjusted so as to land baited hooks within the area bounded by the bird scaring lines.
- If large vessels use only one bird scaring line, the bird scaring line should be deployed windward of sinking baits. If baited hooks are set outboard of the wake, the bird scaring line attachment point to the vessel shall be positioned several meters outboard of the side of the vessel that baits are deployed. This position is best achieved using a purpose build davit (tori pole) located as close to the stern and as far aft as practical. Proper outboard positioning also minimises the likelihood of bird scaring lines tangling on float lines.

2.3.2 Bird scaring lines: recommendations for vessels < 35m total length

- A single bird scaring line using either long and short streamers, or short streamers only, has been found effective on smaller vessels.
- Streamers should be brightly coloured. Short streamers (>1 m) should be placed at 1 m intervals along the length of the aerial extent. Two designs have been shown to be effective: a mixed design that includes long streamers placed at 5 m intervals over the first 55 m of the bird scaring line and a design that does not include long streamers.
- Vessels should deploy bird-scaring lines with a minimum aerial extent 75 m. To achieve a minimum aerial extent bird scaring lines line should be attached to the vessel such that it is suspended from a point a minimum of about 7 m above the water at the stern.

3. Other considerations

Area and seasonal closures: The temporary closure of important foraging areas (e.g. areas adjacent to important seabird colonies during the breeding season when large numbers of aggressively feeding seabirds are present) to fishing will eliminate incidental mortality of seabirds in that area.

Mainline tension: Setting mainline, branch lines and baited hooks into propeller turbulence (wake) slows sink rates and should be avoided.

Live vs. dead bait: Use of live bait should be avoided. Individual live baits can remain near the water surface for extended periods (e.g. up to 120 seconds), thus increasing the likelihood of seabird captures.

Bait hooking position: Baits hooked in either the head (fish), or tail (fish and squid), sink significantly faster than baits hooked in the mid-back or upper mantle (squid).

Offal and discard discharge management: Seabirds are attracted to discards, offal and used baits. Used baits should be retained during line hauling. Ideally offal and used baits should be discharged on the side of the vessel opposite of line hauling. Offal and discards should not be discharged during line setting. All hooks should be removed and retained on board before discards are discharged from the vessel.

Side-setting with line weighting and bird curtain: Research results indicate that side-setting was more effective than other simultaneously trialled mitigation measures, including setting chutes and blue-dyed bait, in a single pilot scale trial (14 days; Gilman et al., 2003). It should be noted that these tests were conducted in the North Pacific with an assemblage of surface-feeding seabirds. This method requires testing in the Southern Ocean with deeper-diving species and at a larger spatial scale. Preliminary trials suggest that this method is operationally

feasible on larger vessels (Yokota and Kiyota, 2006). Side-setting must be used in combination with ACAP best practice recommendations for line weighting in order to increase sink rates forward of the vessel's stern, and hooks should be cast well forward of the setting position, but close to the hull of the vessel, to allow hooks time to sink as far as possible before they reach the stern. Bird curtains, a horizontal pole with vertical streamers, positioned aft of the setting station, may deter birds from flying close to the side of the vessel. The combined use of side-setting, line weighting and a bird curtain should be considered as a single measure.

4. New technologies

New technologies that set or release baited hooks at depth (underwater setting device) or disarm hooks to specific depths, which have the potential to prevent seabird access to baits, are currently under development and undergoing sea trials.

5. Mitigation measures that are not recommended

Line shooters: There is no experimental evidence that line shooters reduce seabird bycatch in pelagic longline fisheries; therefore, they should not be considered a seabird bycatch mitigation option.

Olfactory deterrents: Olfactory deterrents (fish oils) have not been demonstrated to prevent or reduce seabird mortalities in pelagic longline fisheries.

Hook size and design: Changes to hook size and design may reduce the chance of seabird mortality in longline fisheries, but have not been sufficiently researched.

Blue dyed bait: Blue dyed squid bait has been insufficiently researched and cannot be recommended.

Bait thaw status: In practical terms the thaw status of baits has no effect on the sink rate of baited hooks set on weighted lines.

6. Ongoing review

At each of its meetings, ACAP's Seabird Bycatch Working Group reviews the research outputs relating to seabird bycatch mitigation measures in pelagic longline and other fisheries, and if necessary updates the ACAP summary advice. As already indicated there are a number of new technologies that are currently under development, or continue to be researched. In addition, members of the Seabird Bycatch Working Group are progressing work to assess further the relative efficacy of different line weighting options, including those that form part of ACAP's best practice advice. Work is also underway to investigate the safety issues relating to the use of different line weighting options. It is intended that the outcomes of these, and other, initiatives will form part of the ACAP review process at its next meeting, in 2016.