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Seabird Avoidance Measures for Small Alaskan Longline Vessels

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Executive Summary

Seabird Avoidance Measures for Small Alaskan Longline Vessels

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Executive Summary

The incidental mortality of seabirds in longline fisheries is an international marine conservation problem. Although estimates of worldwide totals are lacking, hundreds of thousands of seabirds are probably taken in longline fisheries annually. In the Alaskan groundfish longline fisheries, incidental seabird mortality averaged 13,540 birds per year from 1993 to 2003, peaking at 26,000 seabirds in 1998. Procellariiform (or "tubenose") seabirds, a category that includes albatross species, were the most commonly caught (69%). The short-tailed albatross, an endangered species under the US Endangered Species Act (ESA), is the focus of regulatory and conservation attention in the Alaskan longline fisheries. The U.S. Fish and Wildlife Service's Biological Opinion specifies that short-tailed albatross takes exceeding six within a 2-year period (four in the groundfish fishery and two in the Pacific halibut fishery) would trigger reinitiation of a Section 7 consultation in these respective fisheries, and consequently interrupt or close Alaska's $250 million (ex-vessel value) demersal longline fisheries (USFWS 2003).

In 2001, the North Pacific Fishery Management Council (Council) took final action on seabird avoidance measures required in the Alaska longline fisheries for groundfish and Pacific halibut. Streamer lines (also called tori or bird scaring lines) are central to the majority of these regulatory measures, based on recommendations from a collaborative industry–agency–academic research effort conducted in 1999 and 2000, which demonstrated that these lines nearly eliminated incidental seabird mortality. The research, however, focused exclusively on vessels over 55 ft LOA fishing with fixed gear (where individual gangions are permanently attached to the groundline), and the Council recognized that the recommended seabird avoidance measures may not be appropriate for some small vessels (55 ft and less) and for some gear types. Consequently, a separate set of regulations was established for vessels 55 ft and less, and large vessels using snap-on gear (where individual gangions are clipped on or off with snaps as the gear is deployed or retrieved). Given the lack of information on appropriate measures for these two categories of Alaska longline vessels, the Council also strongly encouraged the advancement of a cooperative research program to develop seabird bycatch mitigation measures for small vessels and all vessels using snap-on gear. The research reported herein stems from this directive.

This study was conducted from May to June 2002 on eight vessels ranging from >26 to 55 ft in length. Two vessels were salmon trollers with infrastructure (mast, poles, and rigging) deploying snap-on gear, three vessels were combination vessels with infrastructure deploying fixed gear, and three vessels were bowpickers with no infrastructure deploying snap-on gear. Addressing the effectiveness of seabird avoidance measures required characterizing two variables: (1) the "2-m access window," or the distance astern that longline hooks were accessible to surface foraging Alaska seabirds, which generally dive no deeper than 2 m; and (2) the distance astern that streamer lines were maintained aloft, because it is this aerial extent that deters birds from the sinking hooks. The 2-m access window was measured using two complementary techniques (bottle lines and time–depth recorders) under typical fishing conditions, and during experimental trials in which both vessel speed and weight added to the groundline varied. The performance of currently required mitigation techniques was tested to determine practical performance standards, and alternative materials and deployment approaches were also tested (e.g., streamer lines made of lighter material, weights added to increase streamer line drag, and height of streamer line attachment to the vessel).

For trollers and bowpickers using snap-on gear, the mean distances behind the vessel at which snap-on gear sank beyond the 2-m depth range of most Alaska seabirds were 28 and 38 m, respectively. Speed trials on both types of vessels demonstrated that increases in vessel speed dramatically increased the 2-m access window, lengthening the area behind the vessel in which seabirds are at risk of accessing baited hooks. Streamer line trials on trollers demonstrated that vessel speed and height of attachment point at the stern affected the ability of the lines to meet suggested performance standards. We determined that the current single streamer line requirement for snap-on gear vessels over 55 ft (a 45-m streamer line with a minimum aerial distance of 20 m) was achievable and practical, especially with a lighter streamer line design, and highly likely to be an effective seabird deterrent for vessels under 55 ft as well. For bowpickers, current seabird deterrent recommendations include deploying buoys beyond the entry point of the groundline. Our trials demonstrated that the suggested performance standards could not be met without significant risk of fouling gear; without further work, buoy lines are unlikely to be effective as practical seabird avoidance measures on bowpickers.

For small vessels setting fixed gear, the mean 2-m access window was 90 m, a distance over twice that of trollers and bowpickers setting snap-on gear. This 90-m access window exceeded the mean for fixed gear set by large vessels (68 m) and was more in the range of that measured for large auto-bait freezer/longline vessels fishing cod in the Bering Sea (66–107 m). Large vessels (>55 ft) fishing groundfish are currently required to deploy streamer lines in pairs and to meet performance standards based on vessel length (40 m if vessel length is 55–100 ft, 60 m if vessel length is ≥100 ft). These results suggest that gear type and vessel setting speed are more important than vessel length in determining risk to seabirds. We conclude that the current requirement of a single streamer line with no mandatory material or performance standards for this vessel category (≥26–55 ft setting fixed gear and with mast, boom, and rigging) is unlikely to provide sufficient protection to seabirds, should longline fishing overlap with seabirds.

We note that testimony to the Council has also emphasized that many of the vessels, for which this study is relevant, fish exclusively or primarily in inside waters, where tubenose seabirds are believed to be rare. During all this work with small vessels in Alaska's inside waters, no Procellariiform seabirds were sighted nor were any types of seabirds observed interacting with longline gear, further supporting the view that small vessels fishing in inside waters may pose only minimal risk to seabirds.

Recommendations

General

- An analysis of the extent of overlap between Procellariiform seabirds and longline fishing in Alaska's inside waters should be given the highest priority. On the basis of the results of this risk analysis, seabird mitigation requirements should be adjusted or eliminated wherever risk of seabird mortalities is minimal or absent.
- Gear type and vessel setting speed (as opposed to vessel length) should be primary factors used to determine appropriate mitigation measures, as they best predict the risk posed to seabirds by longline fishing gear.
- Reduced vessel setting speeds should be considered as an option for a secondary seabird avoidance requirement (or "other device," required by small vessels together with a single streamer line or buoy line when fishing outside waters [EEZ]). A slow setting speed can significantly reduce the likelihood of seabird mortality; however, because a maximum vessel setting speed requirement would prove difficult to enforce and a slow setting speed could lead to fouled gear, we do not recommend it as a primary mitigation measure.
- We strongly recommend that a lighter streamer line be designed and made available to longline vessels at no cost in addition to maintaining availability of the current design.
- The following recommendations for vessels using snap-on gear and fixed gear are based on the assumption that longline fishing occurs in locations where Procellariiform seabirds are likely to be present.

Snap-on gear

- The current streamer line requirement for snap-on gear vessels over 55 ft with infrastructure (45-m streamer line and the minimum 20-m performance standard) is appropriate and practical and should be extended to all snap-on gear vessels >26 ft with infrastructure.
- Given that seabird avoidance measures are difficult to deploy from bowpickers (which typify vessels >26–32 ft without infrastructure), and that they pose the same or more risk to seabirds as do vessels with infrastructure using the same gear, we recommend that either the buoy line be adapted so that the buoy can be positioned over the sinking groundline without fouling on the gear or other mitigation options be developed.

Fixed gear

- Current measures for vessels >26–55 ft setting fixed gear and with mast, poles, and rigging (single streamer line with no mandatory material or performance standards) are unlikely to be able to provide sufficient protection to seabirds. We recommend that additional seabird avoidance measures be developed in consultation with industry. Alternatives might include using one or two lightweight 90-m streamer lines with a maximized aerial extent approaching 60 m.

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