

Field Evaluation of Seabird Deterrent Gear and Alternatives for Alaska Small Longline Vessels

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Executive Summary

Where seabirds are present, commercial longline vessels in Alaska have the potential to catch seabirds in their gear, in particular, species of special concern such as the endangered short-tailed albatross. As a result, the National Marine Fisheries Service (NMFS) in conjunction with the United States Fish and Wildlife Service (USFWS) developed regulations requiring commercial fishermen to deploy bird deterrent devices while fishing.

In 2003 and 2004, the Alaska Sea Grant Marine Advisory Program undertook a collaborative demonstration project, with funds provided by the USFWS, to develop practical ways of reducing bird interactions with longline gear deployed by small vessels. We relied upon the cooperation and ingenuity of small vessel owners to accomplish this goal. We did not evaluate the novel methods for effectiveness in deterring seabirds; rather, we examined the logistical and economic practicalities of using the new methods. Six projects were undertaken with halibut longline vessels from ports ranging from Southeast Alaska to Kodiak.

One project involved construction and **testing of a custom-made davit** that allowed a small sternpicker vessel to fly the required streamer lines with less risk of fouling the streamer line on the sinking groundline. The davit and adapted streamer line were tested against the NMFS published performance standard

for 32 ft LOA vessels setting snap gear, which requires that the streamer remain aloft for 65.6 ft (20 m) behind the vessel and within 6.6 ft (2 m) horizontally of the point where the main groundline enters the water. Streamer line performance standards for this vessel type can be met using this device and a lightweight streamer line.

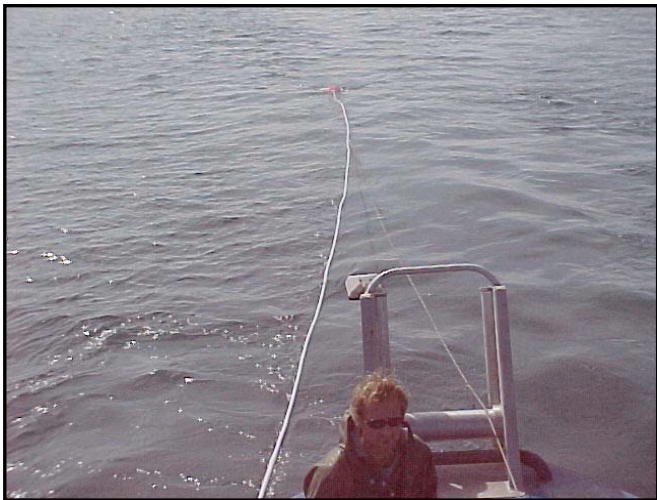


Groundline sink rates were measured using flagged bottles attached to 2-m gangions - *F/V Cape Fear*

Two projects tested the ability of variously **weighted groundline** to increase the sink rate of baited gear and thus reduce gear exposure to seabirds. Sink rate was measured against an international standard target rate of 0.3 m/s. Heavier, 3/8-in leaded Manline and standard 11/3-in, 5/16-in, and 1/4-in unleaded groundline were tested on a twin jet bowpicker side-setting conventional gear, a single outdrive bowpicker setting and retrieving gear over the bow with

snap-on gear, and a single-prop sternpicker setting and retrieving snap-on gear over the stern. Sink rates ranged from 0.08 to 0.2 m/s and did not reach the international standard.

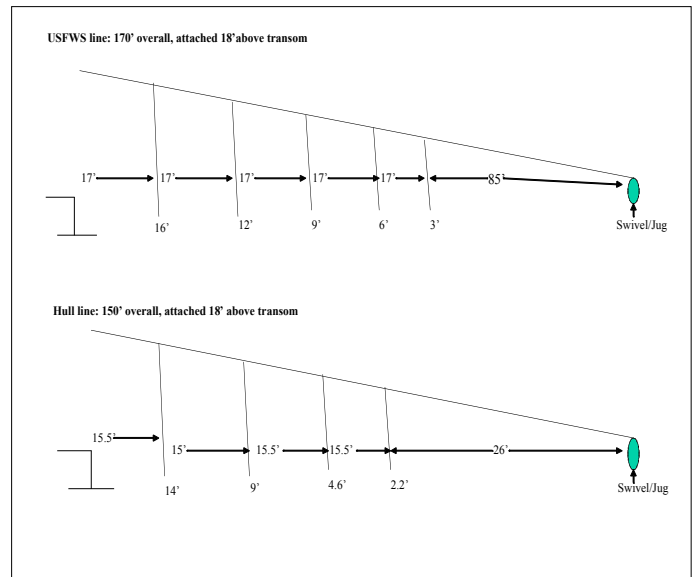
In a related project, nine 5-lb snap-on weights and two 8-lb junction weights were added to the 3/8-in leaded Manline, and a sink rate of 0.26 m/s was achieved. While this configuration approached the international target sink rate, the gear was found to be impractical. Using 56 lbs or 11 weights per skate would require a vessel to carry upwards of 1,000 additional pounds if 10 skates were being deployed. For smaller vessels, this amount would have a considerably negative impact on deck safety, boat handling, and stowage requirements.



Covering the drag line on buoys with hose decreased the chances of sinking gear catching the line - F/V *Salmo*

Methods for improving the practicality of two types of deterrent gear currently required by regulation were evaluated in two additional projects. The first involved **covering the drag line** on buoys deployed as bird deterrents behind vessels with various diameters and types of discharge hoses to decrease the chance of the drag line fouling on the circle hooks. Two types of hose were tested, and both were found to decrease the likelihood of fouling because the hose-covered drag line was wider than the hook opening. The second project addressed the difficulty smaller vessels have in achieving recommended per-

formance standards with **streamer lines** distributed for free by USFWS at that time. A lighter-weight line was constructed and tested on a 37 ft LOA sternpicker with overhead rigging. As with all of our projects, we did not evaluate effectiveness in reducing seabird interactions, but in winds less than 15 knots, light seas, and setting speeds of 2.8 to 3.2 knots, this line reached the performance standard.



Streamer line adaptation proposed and tested by Dan Hull.

Another project examined the idea that, when longline gear is **set off the side of the vessel**, the vessel itself acts as a deterrent to birds attacking the bait. The project applicant had observed that flying seabirds avoid approaching too close to a vessel, and proposed that a boat “shadow” existed in which seabirds would avoid attacking bait. Using sink rate measurements and a measurement buoy, it was determined that, in most cases, the average distance of the groundline sinking to a desired depth of 2 m was well beyond the theoretical “shadow” of the boat.

A final project evaluated converting a **net wash-down** system commonly used on gillnetters to create a stream of water that would fall over the sinking groundline and deter bird attacks. Such a system was created on a 34 ft LOA bowpicker using a three-inch Pacer pump. Cloudiness of the spray was recorded

with still photographs. A slight breeze was observed to blow the spray off the setting gear. In calm conditions, the total length of the area covered by spray fore of the vessel ranged from 1-15 m and the spray fell to the water 30 m fore of the vessel, which was moving in reverse.



Spray hitting line marked at 5-m intervals - *F/V Sonship II*

Conclusions and recommendations

In consultation with project skippers and an advisory committee of industry members and researchers, we conclude:

- No seabirds were seen actively pursuing baited hooks during any of our studies;
- heavier streamer lines distributed by Pacific States Marine Fisheries Commission for USFWS are too heavy to be used effectively on many small longline vessels, but lighter-weight streamer lines can achieve the required performance standards;
- construction and use of a davit may allow some smaller vessels to deploy streamer lines away from their gear and thus reduce the chances of fouling;
- reaching desired groundline sink rates by using heavier groundline or by adding additional weight is a serious challenge for a small vessel and international standards for sink rates were not met under test conditions;

- covering buoy drag lines with pliable hose can decrease fouling of buoy lines with halibut gear;
- side-setting conventional gear from a small bow-picker does not appear to significantly reduce the distance behind the stern that gear sinks to a 2 m depth; and
- a 3-in Pacer pump can be adapted to create a 1.5 m wide by 12-15 m long area of spray on the water at a maximum distance of 30 m behind a vessel. However, light winds can blow this spray off the center plane in which the gear would be sinking.

Recommendations as a result of this project are: 1) consideration be given to testing seabird deterrence of lighter-weight streamer lines, 2) if found effective, lighter-weight streamer lines be constructed and distributed for free to small boat operators, 3) research on the use of integrated weight groundline on smaller vessels be continued, particularly on the 40 - 50 ft LOA vessel class, and 4) outreach efforts be undertaken to inform smaller vessel owner/operators about buoy line covering, davit designs and associated costs.



Testing a custom-made davit and experimental streamer line design - *F/V Dues Payer II*

Epilogue

The full report of this project can be downloaded at www.marineadvisory.org or by contacting Sunny Rice, Alaska Sea Grant Marine Advisory Program, Box 1329, Petersburg, AK 99833; 907-772-3381; fnar@uaf.edu.

Since the completion of this work, an additional project funded by USFWS was undertaken to create and distribute free lighter weight streamer lines. Details of this work are also available for download at www.marineadvisory.org.



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