

Bycatch Mitigation FACT-SHEET 9 (Version 1)

Practical information on seabird bycatch mitigation measures

Pelagic Longline: Side-setting

Side-setting appears to be effective in the waters of the North Pacific where it was developed. The ability to generalise its use across other oceans, with a higher diversity of seabirds with greater diving capabilities and more demanding sea conditions, remains untested.

What is side-setting?

Traditionally, hooks are deployed (set) from the stern of the vessel. As the name suggests, side-setting requires the setting



Figure 1. Casting baited hooks forward and close to the hull of the vessel allow baits to start sinking before passing the stern of the vessel.



Figure 2. Side-setting with a bird curtain in use.

operation to move to the side of the vessel. Birds are unable or unwilling to forage for bait close to the side of a vessel. Additionally, side-setting avoids setting baited hooks into the propeller wash, which slows the sink rate of stern set hooks. Deploying hooks from the side as far forward as possible enables the baited hook to sink to a certain depth before reaching the stern of the vessel.

Effectiveness at reducing seabird bycatch

All experimental trials of side-setting have occurred in the North Pacific near Hawaii on relatively small vessels. 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 with an assemblage of surface-feeding seabirds, and this method requires testing in the Southern Ocean with diving species and at a larger scale. Preliminary trials suggest that this method is operationally feasible on larger vessels (Yokota and Kiyota, 2006).

Best practice recommendation

Fishery regulations in Hawaii require side-setting vessels to also use line weighting (45 g within a metre of the hook, NOAA 2006) and a bird curtain. These combined standards were adopted by the Western Central Pacific Fisheries Commission (WCPFC, 2007). For the best results, side-setting should be used in combination with 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.

Other benefits

Operational efficiency

In Hawaii, not only has side setting proved to be effective at reducing seabird bycatch but it has also been found to deliver several operational advantages.

- By utilising a single work area for setting and hauling, more space may be available on deck for the crew to work in;
- The Captain is likely to have a better view of a side workstation, which has safety and efficiency implications; and
- Less bait may be lost in propeller turbulence and line tangles may be less common.

Potential problems and solutions

Conversion costs

A single one-off cost is incurred to refit the deck gear. In terms of overall running costs, this is a relatively minor expense.

Fouled gear

Side-setting could increase the likelihood of gear becoming entangled in the propeller especially in rough seas, although, in the Hawaii trial deliberate attempts to entangle gear in the propeller were unsuccessful.

Combinations of measures

Although baited hooks should be below the surface by the time they reach the stern of the vessel, diving seabirds would still be able to access them. To minimise seabird bycatch, side-setting should be used in combination with other measures including

- **Streamer lines** (Fact-sheet 7)
- **Line weighting** (Fact-sheet 8).

Further research

Further experimental trials are required to establish whether side-setting is feasible for all size classes of vessel, under a range of sea conditions and across diverse seabird assemblages. In particular, trials are lacking in southern hemisphere fisheries.

Compliance and implementation

Once converted there are very few issues concerning compliance, which could negate the need for costly monitoring. Further research is required before side-setting can be implemented in southern hemisphere fisheries.

References

- Gilman E., Brothers, N., Kobayashi, D., Martin, S., Cook, J., Ray, J., Ching, G. and Woods, B. (2003) *Performance Assessment of Underwater Setting Chutes, Side Setting, and Blue-Dyed Bait to Minimize Seabird Mortality in Hawaii Pelagic Longline Tuna and Swordfish Fisheries*. Final Report. National Audubon Society, Hawaii Longline Association, US National Marine Fisheries Service Pacific Islands Science Center, US Western Pacific Regional Fishery Management Council. Honolulu, Hawaii, pp. 42.
- NOAA (2006) *National Oceanographic and Atmospheric Administration – Summary of Hawaii Longline Fishing Regulations*. Honolulu, Hawaii.
- WCPFC (2007) Conservation and management measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds. *Conservation and Management Measure, 2007–04*.
- Yokota, K. and Kiyota, M. (2006) *Preliminary report of side-setting experiments in a large sized longline vessel*. WCPFC-SC2-2006/EB WP-15. Paper submitted to the Second meeting of the WCPFC Ecosystem and Bycatch SWG. Manila, 10th August 2006.