Developments in the use of sliding lead weights in an Australian pelagic longline fishery: voluntary uptake, compliance and methods to minimise lead loss to the environment[1]

Graham Robertson, Australian Antarctic Division, Department of the Environment, Australia

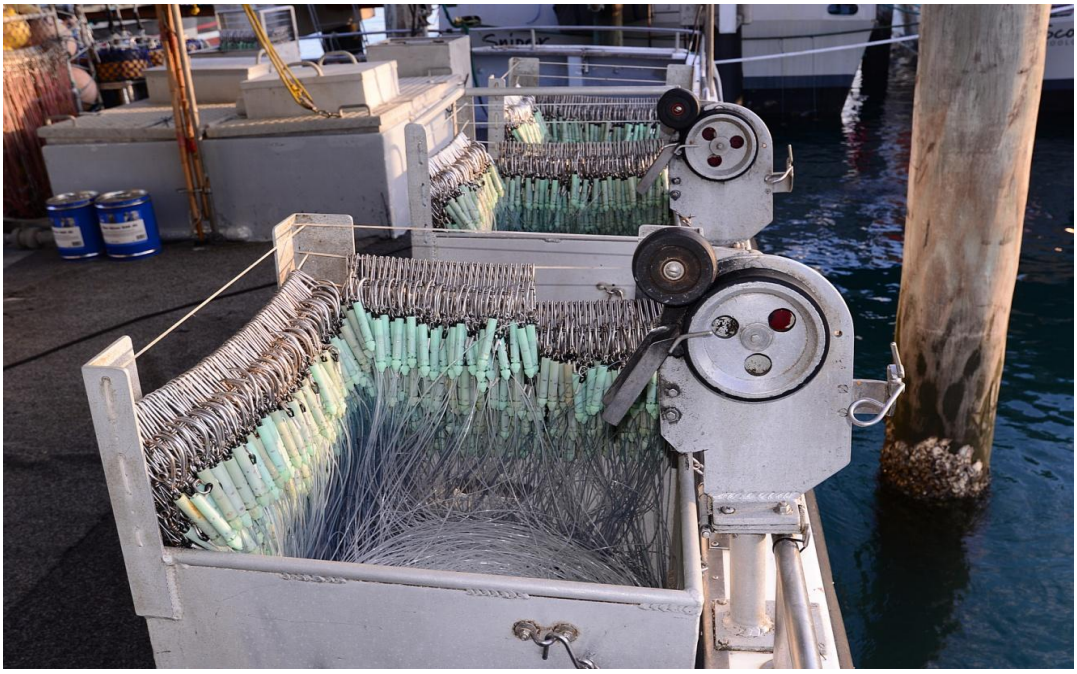
SUMMARY

There is an increasing voluntary uptake of sliding lead weights in an Australian pelagic longline fishery. Compliance benefits are identified not only for in port inspections, but also for self-regulation by crew on fishing vessels, to ensure the sliding lead weights are correctly positioned on branch lines. Information is provided on new methods to minimise loss of sliding lead weights to the environment, and to minimise other environmental impacts.

INTRODUCTION

This document reports on developments with the use of branch lines fitted with sliding lead weights placed at the hook by fishing operators in an Australian pelagic longline fishery. Examples of sliding lead weights positioned at the hook are shown in Figure 1 (below).

Figure 1. Examples of branch lines configured with sliding lead weights (pale green) at the hook in gear bins in an Australian pelagic longline fishery.



VOLUNTARY UPTAKE OF SLIDING LEAD WEIGHTS

Prescriptions governing Australian pelagic longline fisheries were amended in January 2012 to permit fishing operators to use sliding lead weights at the hook. The amendment applied only to operators fishing wholly with dead bait. The new conditions were based on data

[1] This document was originally presented in modified form to the Sixth Meeting of the Seabird Bycatch Working Group (SBWG6) of the Advisory Committee to the Agreement on the Conservation of Albatrosses and Petrels, Punta del Este, Uruguay, 10 - 12 September 2014.

indicating hook-based weighting regimes improved sink profiles, without any effect on the catch rate (for target and non-target species), with improved outcomes for crew safety (Robertson et al., 2013). As of July 2014, six vessels in the main tuna fishing port in eastern Australia (Mooloolaba) were using sliding leads placed at the hook. This level of uptake (six out of a fleet of 44 longline fishing vessels) has occurred voluntarily. Fishing operators have became familiar with the operational benefits of sliding leads located at the hook (particularly fast sink rates) and benefits to crew safety, and have gained an appreciation, via word-of-mouth around the port, that the scientific evidence indicates fish catches are unlikely to be affected by sliding leads at the hook (see Robertson, et al., 2013; Gianuca, et al., 2011; Gianuca, et al., 2013; Jiménez, et al. 2013; Robertson et al., 2010;, Robertson, et al., 2013; Robertson, 2013; Robertson & Candy, 2014). Fishing operators recognise the link between the superior sink rates associated with the use of sliding leads at or near the hook and the potential positive implications for seabird conservation. Uptake is a work in progress and it is expected that other vessels will adopt the new branch line weighting in the future.

CREW SELF REGULATION

Sliding leads are hand tightened onto (not crimped into) branch lines and are designed to slide along the branch line to dissipate the energy of dangerous recoils when gear is bitten off or when lines break under tension during hauling. Their capacity to slide is essential to improved crew safety. Improved crew safety and the fast sink rates associated with leads at or very close to the hook depends on the ability of crews to maintain the leads in the correct position in branch lines. This requires self regulation by vessel crews.

The fifth meeting Seabird Bycatch Working Group (SBWG5) of the Advisory Committee to the Agreement on the Conservation of Albatrosses and Petrels: La Rochelle, France, 1-3 May 2013 considered information on crew self regulation for three fishing vessels from Mooloolaba using sliding leads at the hook in 2013 (see SBWG5 Doc 52, 2013). Table 1 (below) updates information in SBWG5 Doc 52, increasing to six the number of vessels assessed for evidence of the correct positioning of leads in branch lines.

The results for the six vessels assessed provides confidence fishing operators are likely to voluntarily maintain the specifications of best practice line weighting in the absence on onboard observers. This is contrasted with the compliance risks associated with self-regulation of deployment and configuration of bird-scaring lines, and night setting.

Table 1. Results of unannounced port-based inspection of gear storage bins of six fishing vessels in an Australian pelagic longline fishery. The inspections occurred immediately following the return of the vessels from fishing trips. The leads were required to be positioned at the hook.[2]

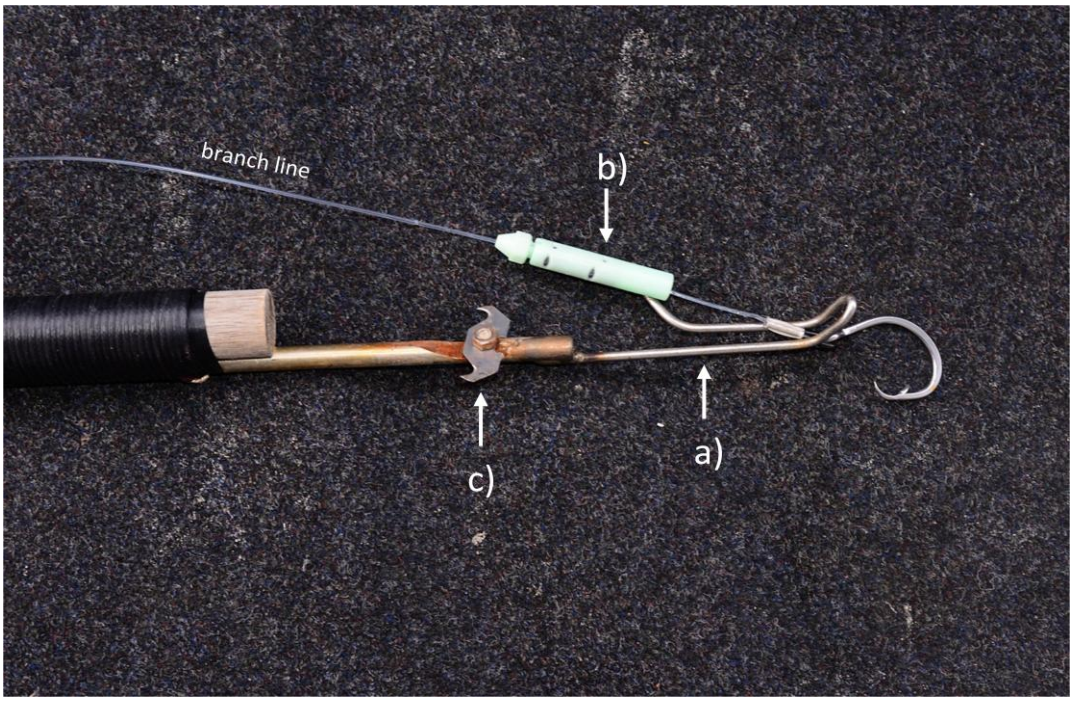
Vessel	Inspection date	#branch lines examined	#branch lines non-compliant	Comments
1	26/11/2012	930	2	Leads ~2 cm from hooks
	2/2/2013	1150	0	All compliant
	18/2/2013	1320	0	All compliant
	21/3/2013	1250	0	All compliant
	22/7/2014	1360	0	All compliant
2	6/12/2012	2250	0	All compliant
	3/2/2013	2200	0	All compliant
	2/3/2013	1700	0	All compliant
	11/3/2013	1650	0	All compliant
3	19/12/2012	790	0	All compliant
	30/1/2013	900	0	All compliant
	2/3/2013	1150	0	All compliant
	17/3/2013	1380	0	All compliant
	17/3/2013	1380	0	All compliant
*4	22/7/2014	2600	0	All compliant
*5	22/7/2014	1050	0	All compliant
*6	22/7/2014	700	0	All compliant

NEW METHODS FOR MINIMISING LEAD LOSS TO THE ENVIRONMENT

Fish and sharks that are caught, but not hauled onboard fishing vessels are cut free from branch lines near the sea door. If sliding leads are placed at the hook, cutting-away sharks and fish in this manner can result in the loss of leads to the environment (the hooks are usually sacrificed; they are embedded in the fishes mouth and not practical to remove). Leads can be retrieved by use of the custom made tool shown in Figure 2 (below). The tool comprises a long handled gaff pole, shepherds crook and double-sided cutting blade. The shepherds crook is used to expose the monofilament near the hook, and the blade is used to cut the monofilament.

[2] Note: The asterisk denotes data additional to that in Table 1 of SBWG5 Doc 52.

Figure 2. Custom made tool to retrieve sliding hook leads from fish/sharks cut off the line. With the fish (shark) in the sea near the sea door the shepherd's crook (a) is placed between the shark's mouth and the sliding lead (b) at the crimp. The sliding lead is pulled a few centimetres up the branch line as shown. The monofilament at the hook is then cut with the double-sided cutting blade (c), freeing the shark while retaining the lead for re-use.[3]



Up to one per cent (1%) of sliding leads at the hook may be lost due to bite offs (Robertson et al., 2013). This loss can be greatly reduced if the leads are positioned beyond the common bite-off distance of blue sharks (*Prionace glauca*), which are one of the main species involved in bite offs. Experience has shown that in areas where the number of bite-offs is considered to be unsatisfactory the loss of leads can be minimised if leads are positioned about 0.5 m from the hook. If leads are placed ~0.5 m from the hook lead weights of ≥60 g, not 40 g, should be adopted if adequate line sink rates are to be achieved and maintained.

MINIMISING WASTAGE OF MONOFILAMENT

Fishing operators using branch lines with conventional leaded swivels several metres from the hook routinely shorten the section of monofilament between hook and leaded swivel (the leader) to remove monofilament weakened by shark bite. When the leader becomes too short it is replaced with a new length of monofilament. Only the leader is replaced, not the entire length of branch line. This means the section from the clip to the leaded swivel is used for a longer period before being replaced with new line. Branch lines with sliding leads at the hook do not have a leader; the branch line comprises a single section of monofilament from clip to hook. Shortening the line to remove sections damaged by sharks ultimately results in a branch line that is too short, so the entire branch line must be replaced. This may result in increased wastage of monofilament line. The significance of this depends on gear management practices by fishing operators - it may or may not be an issue of concern. If it is

[3] Credit for device: Mr Chris White, F/V Sao Pedro, Mooloolaba, Australia.

an issue of concern, a solution is to place a small (<10 g) box swivel at an appropriate distance from the hook. The monofilament between the box swivel and the hook would be the section of the branch line routinely shortened and replaced.

DISCUSSION

Sliding lead weights are a recent development and their effective use is a work in progress. Sliding weights enable weighting regimes at or near the hook to be readily implemented by crews to improve sink profiles, without any effect on the catch rate (for target and non-target species) and to improve outcomes for crew safety. Potential losses of sliding leads can be significantly reduced through placement of the leads beyond the bite-off distance of species commonly involved in bite offs—about 0.5 m from the hook. New methods to retrieve sliding leads when fish and sharks are cut off the line, as indicated in this document, will further reduce losses to the environment. Although using sliding leads potentially may increase monofilament wastage, when compared to using conventional leaded swivels several metres form the hook, this potential wastage may be minimised by placing a small swivel (<10 g) at an appropriate distance from the hook.

CONCLUSION

The dissemination of the information presented in this document about sliding lead weights, particularly concerning ways to minimise loss of sliding lead weights to the environment and other environmental impacts, among fishing operators, and fisheries managers will assist in the uptake of innovative approaches to seabird bycatch mitigation in pelagic longline fisheries.

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