



Report on invited expert's visit to Fiji; seabird bycatch mitigation measure: bird-scaring lines

for component 3.2.1 of the

Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the ABNJ

08-12 May 2018
Suva, Fiji

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Food and Agriculture Organization
of the United Nations



Report on invited expert, Dave Goad's visit to Suva, Fiji

Project: FAO-GEF Project *Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the ABNJ (GCP/GLO/365/GFF)*

Reporting organisation: BirdLife South Africa

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Introduction

A tori line or bird-scaring line (BSL) is a line attached to a high point at the stern of a vessel and towed behind the vessel whilst fishing gear is deployed. Streamers attached to the tori line, and the line itself, disrupt the flight path of birds, and deter them from entering the area above where baited hooks are deployed (Figure 1).

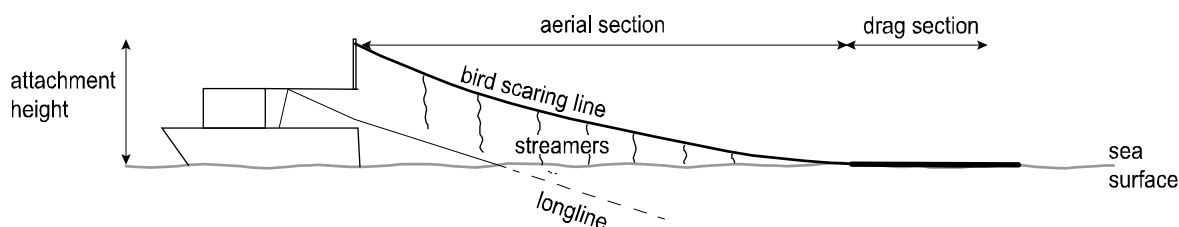


Figure 1: Bird-scaring line components

Brothers (1991) first recorded use of BSLs in the literature. Some Japanese fishers operating in Australian waters used bird-scaring or 'tori' lines when setting fishing gear and this resulted in a 69% reduction in the number of times birds were observed taking baits.

Since first appearing in the literature bird-scaring lines have become one of the most thoroughly-tested seabird bycatch reduction measures available and have been proven effective in reducing seabird bycatch in both trawl and longline fisheries worldwide (Bull, 2007; Løkkeborg, 2011; Melvin, Guy, & Reid, 2014).

Best practice advice from the Agreement for the Conservation of Albatrosses and Petrels (ACAP) (ACAP, 2017) and Western Central Pacific Fisheries Commission Conservation Measure 2017-061 (WCPFC, 2017) have been recently revised to provide more workable guidelines for BSL deployment on vessels under 35 m in length, based on work carried out by Goad and Debski (2017).

Following discussions with vessel operators and skippers of Chinese vessels landing in Fiji, BSLs were identified as the mitigation measure most likely to be accepted by fishers (J. Nagan pers obs). Bird-scaring lines are relatively cheap and safe and result in little change to the fishing operation when compared to night setting and line weighting. However, in Fiji, materials and expertise to produce BSLs are limited.

This report outlines the activities undertaken during Dave Goad's visit to Suva, Fiji during May 2018 to facilitate the construction and uptake of BSLs on vessels landing in Fiji. It provides recommendations for further work to produce tori lines for vessels landing into Fiji.

Aim:

The overall aim of the visit was to ensure that bird-scaring lines are available locally for Chinese vessels that dock in Fiji.

Objectives

To meet this aim, three specific objectives were identified:

- ✚ Teach PBO officer how to make BSLs.
- ✚ Conduct a workshop with the local women's group on making BSLs.
- ✚ Investigate the availability of materials for making BSL locally.

Day one: sharing ideas

Day one discussions focused on bringing Dave up-to-date with the Port-based Outreach (PBO) operating in Fiji. Dave outlined liaison work with longliners in New Zealand and many similarities were identified. Dave brought a complete model of a BSL used in New Zealand to guide discussions and demonstrations throughout the week. James was given the opportunity to build a complete BSL, with Dave's guidance, and materials that he had brought over from New Zealand (Figure 2).



Figure 2: Dave Goad (invited expert) teaching James Nagan (Port-based Outreach Officer – Fiji) how to construct a bird-scaring line.

Day two: Women's group involvement

In order to be able to supply the vessels docking in Fiji with BSLs, the project requires BSLs to be available for distribution. We are opting to use one of the women's groups in Suva to assist in building the BSLs for the project, as part of our commitment in giving back to the community and helping grass roots people earn some income for their family. These women are unemployed and have very limited sources of income.

A mini-workshop was organised with one of the Methodist women's groups at Makoi, Nasinu, where two main representatives were taught how to make BSLs. The day was a success, with the women managing to complete a BSL and showing eagerness to continue to build more. At the end of the day, the women also provided their proposed labour charges if given the opportunity to work on this project in the near future.



Figure 3: Mini workshop where Dave Goad teaches the women's group how to construct BSLs.

Day three: availability of materials in Fiji

Our team visited a few chandlers to investigate the availability of materials suitable for the construction of BSLs in Fiji. More importantly, we checked that it would be sufficient to cater for the number of Chinese vessels that dock in Fiji and fish south of 25 degrees South. The team came up with the following important findings:

- a) Most of the items required are available at the chandler - Dae Myung Fishing Gear MFG Limited.
- b) Other attachments, such as clips, can be bought from the local hardware store.
- c) Braided lines are not available at the chandlers. They are, however, available at the yacht shop in low supply and at a high price. It is cheaper to get this from New Zealand and shipped to Fiji. Braided ropes are used to create drag at the seaward end of the BSL that is in the water.
- d) The chandlers only sell three-strand polyethylene ropes which can be easily pierced. However, in the longer term Dae Myung Fishing Gear may be able to supply 16 mm diameter braided rope.

Dave also had a chance to visit a few vessels and witness the PBO awareness pilot project in action. It provided him the opportunity to observe the fishing gear and provide recommendations on the

suitable location to install tori poles on vessels so that they are able to correctly attach and deploy BSLs.

Bird-scaring line design

Bird-scaring line designs were based on Goad and Debski (2017), as these have received positive feedback from skippers operating in New Zealand. The design comprises a thin lightweight aerial streamer section connected to a thicker, braided rope in water drag section. Figure 4 shows a construction diagram of the aerial section used during training at the women's group. Construction details, including the aerial section, streamer attachment and the join to the thicker rope drag section are shown in Figure 5.

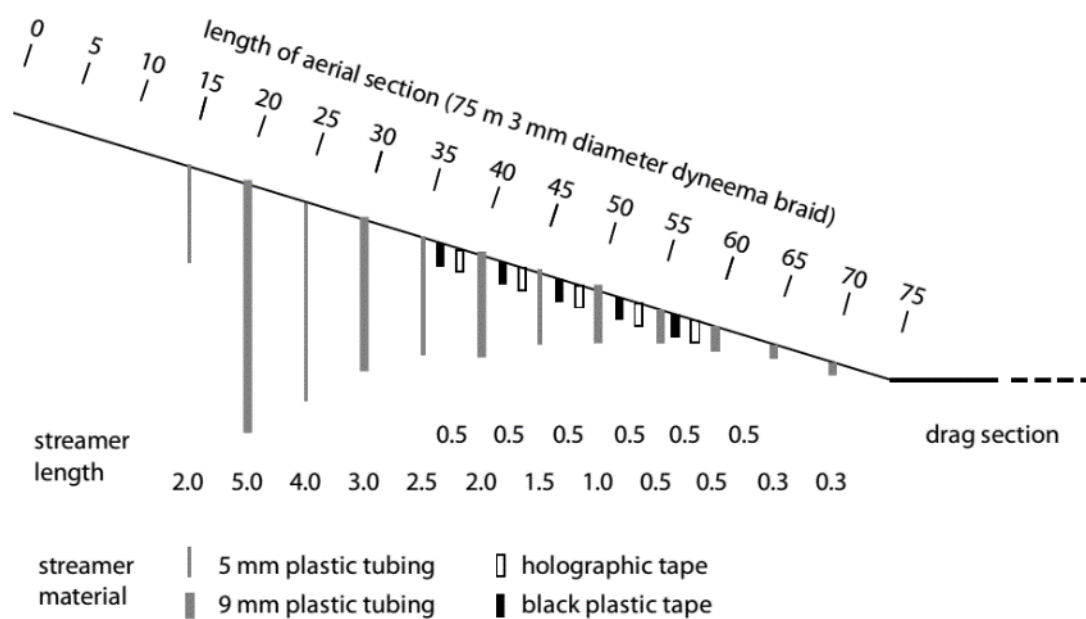


Figure 4: Diagram of the streamer attachments and aerial section of the bird-scaring line used in training

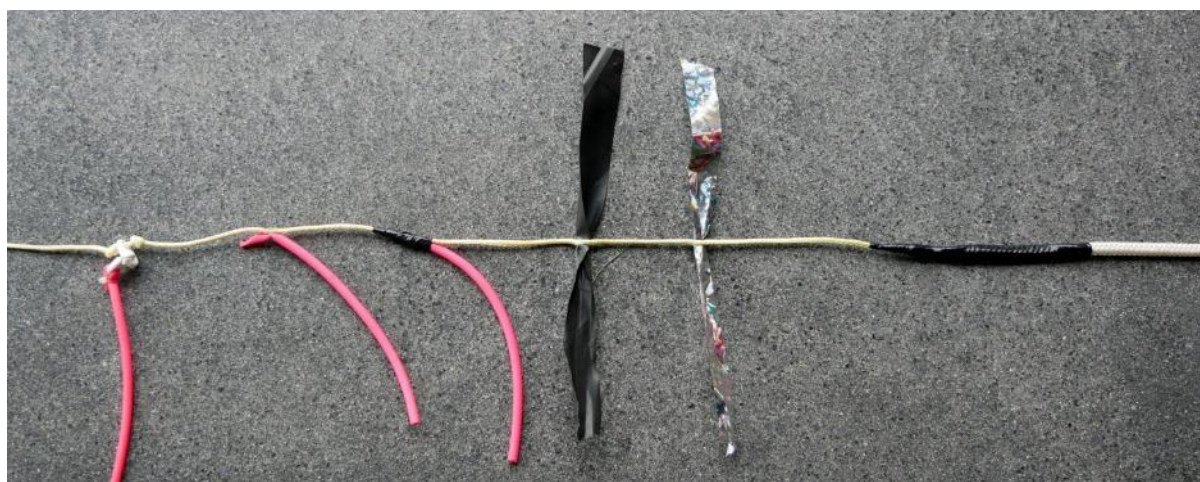


Figure 5: Bird-scaring line example showing streamer attachment and connection to the drag section in detail.

Attaching bird-scaring lines to vessels

It was not possible to trial a BSL from a vessel during the project, however, attachment and deployment methods similar to those presented in Goad and Debski (2017), (Figure 6), are likely to be transferrable to the Chinese vessels seen during the visit. As in New Zealand, vessel skippers may wish to use their own system, however, in all cases it is necessary to have some kind of weak link between the BSL and the vessel so that if the BSL tangles with the longline it is able to break away in a controlled and safe manner. Goad and Debski (2017) developed an adjustable tension release so that skippers could choose the level of tension under which tori lines detach from the pole. Generally, they were set up to remain attached to the vessel near the setting station so that they could then be recovered and re-deployed or clipped onto the longline for recovery during the haul. In some cases, a pole may be required to achieve a minimum attachment height of 6 m, preferably higher.

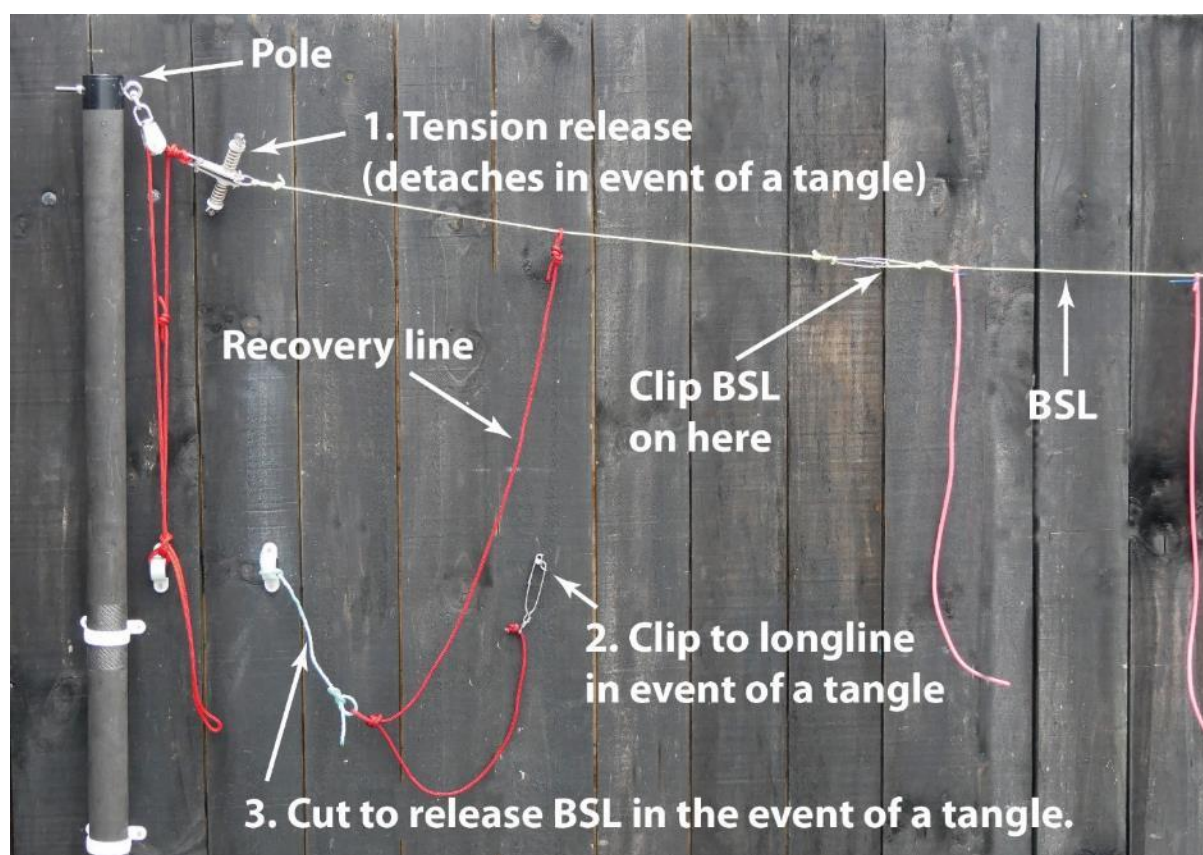


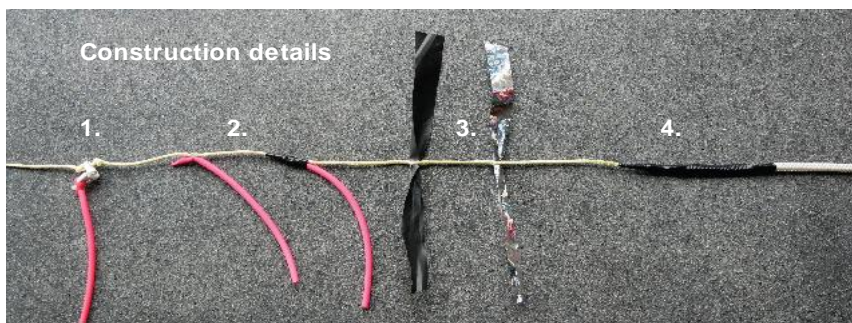
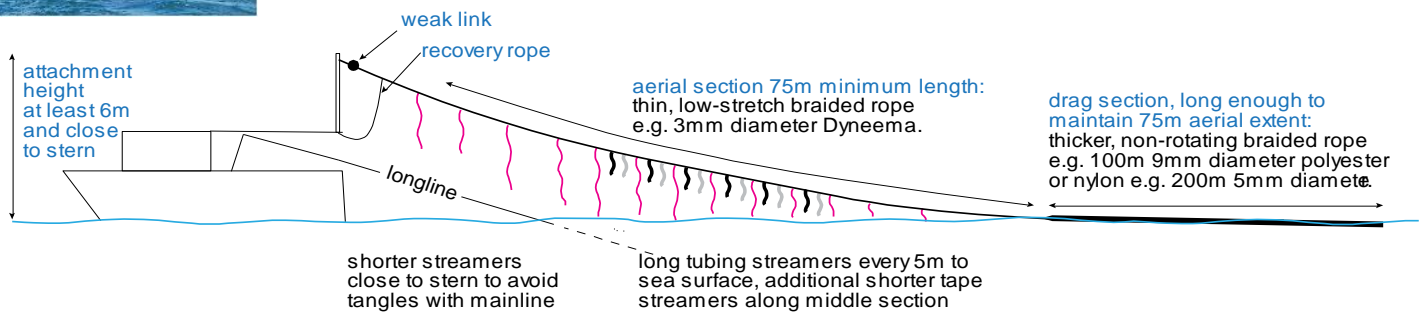
Figure 6: Bird-scaring line attachment diagram. Note tension release may be replaced with any kind of weak link.

A summary flyer providing information on BSL design components and installation to vessels was developed (Figure 7).



Tori line key design components

A high attachment point will maximise the aerial extent
 A weak link that will break away makes dealing with tangles with the longline easier and safer
 A thin and light aerial section will minimise wind resistance and maximise aerial extent
 Smooth streamer attachment and a smooth drag section will minimise the chance of tangles with the longline
 Enough drag section is needed to hold up the 75m of aerial section



1. Longer tubing streamers that are always out of the water attached with sister clips / swivels
2. Shorter tubing streamers will move in and out of the water and be prone to tangles with the mainline. These are tied on and the joint is tapered and covered to minimise catch points
3. Tape streamers threaded through the lay of the rope will pull through if tangled
4. A smooth tapered join between thin aerial section and thicker drag section will minimise tangles with floats / beacons

Figure 7: Flyer outlining BSL key components

Bird-scaring line components

Proposed sourcing of materials for constructing BSLs in Fiji is outlined in Table 1. Streamer tubing is likely to have to be sourced from New Zealand, and we propose initially sourcing braided rope for the drag section from New Zealand. However, De Myung chandlers may be able to provide a more cost-effective alternative in the longer term.

Table 1: BSL components including sourcing and cost details

Item	Quantity	cost (\$NZ)	Proposed source	Total (FJD)	TOTAL (FJD)
Pole		Variable	vessel to supply		
Tension release	1	72.00	optional ex NZ or vessel to arrange	102.89	102.89
Rigging	1	50.00	vessel to supply, materials not important	71.45	
Halyard (5mm polyester)	15		ex Dae Myung	17.12	
Shark clip plus swivel	1		ex Dae Myung	2.00	
Block	1		ex Dae Myung	25.00	
Lazy line	8		ex Dae Myung	8.80	
Recovery rope	8		ex Dae Myung	8.80	61.72
Aerial section					
Aerial section rope	75	56.25	3 strand branchline rope ex Dae Myung	85.60	
Streamers 9 mm diameter	16	51.20	use thinner streamer ex Beauline NZ	73.17	
Streamers 5 mm diameter	13	22.10	ex Beauline NZ	31.58	
Streamers irri tape	1	1.00	ex NZ	5.00	
Streamers black plastic.	1	1.00	black plastic cut into strips - to source in Fiji	3.00	
Sister clips	14	18.90	tie streamers on instead to reduce cost	27.30	
Electrical tape	1	2.00	hardware store, Fiji	2.00	
Twine		1.00	source in Fiji, if not available ex NZ	3.00	230.65
Drag section 9 mm braided polyester rope	100	70.00	Ex Nautilus braids in NZ initially, possibly use 16 mm braid ex De Myung	100.03	100.03
Labour				40.00	40.00
TOTAL					535.29

Impact on the PBO Project

From the vessel interactions/inspections carried out during port visits to date, it was noted that all vessels encountered do not have any seabird mitigation measures on board. Some fishing vessels showed interest in the BSLs but they are currently not available to them when they dock in Fiji. It is challenging to advocate the mandatory use of BSL to these Chinese longline fishing vessels when we are not able to supply ready-made devices or materials to allow them to construct their own.

The availability of ready-made BSL or materials to construct BSLs would mean that these vessels will no longer have any reason for not implementing BSLs as one of the three best practice seabird bycatch mitigation measures recommended under the project.

Recommendations and next steps

Dave's visit proved invaluable as it has provided important advice on how to develop BSLs and what steps are needed to get a BSL-building project off the ground. Below are some recommendations coming out of the activities and discussions that occurred during his visit:

- 1) Work on the proposal to produce BSL in Fiji and start distributing to vessels so that they can see our commitment to the project. Karen Baird (Forest and Bird, New Zealand) to supply braided lines while we wait for the local supply coming in from Korea to arrive at the Fiji chandler.
- 2) Braided lines (9 mm) and monofilament (5 mm) to construct BSLs to be bought from New Zealand, as they are cheaper compared to the chandlers in Fiji.
- 3) Attachment pole to be vessel specific, since different vessels have different structural designs especially at the stern end of the vessel. The onus should be on the owner of the vessel and the skipper to ensure that they are attached at the required height, durable and can withstand adverse weather conditions.
- 4) Women's group to be involved in the BSL construction as this is a good initiative, at the same time it would free the PBOO to do more vessel inspections/interactions.
- 5) Continued interactions between PBOs from Fiji and NZ regarding this BSL project, as well as on other issues such as seabird identification workshops and visits depending on the duration of the project.
- 6) Consider a short trip (2 -3 hours) on a vessel to demonstrate the use of BSLs.
- 7) Use this trip (mentioned in point 6) to take some photos and to prepare some guidelines on the deployment and use of BSLs in Chinese, and translate the material presented here, for distribution with BSLs.

Conclusion

The week of activities was a huge success and provided the project with a lot of support and guidance on the development of BSLs for Chinese vessels docking in Fiji. While the project is at an early stage, it would be wise to have BSLs readily available to these Chinese longline vessels or they should be given the opportunity to construct their own from readily available materials. Feedback from captains and crews would be valuable in ensuring the design of the BSL is best suited to their needs. This is important in measuring the success of the project, as skippers are unlikely to use a measure that does not fit efficiently into their daily fishing activities or a device they have provided little input into. Skippers also provide a valuable source of information and I believe that we will learn a great deal through continued engagement of skippers and crews as the project proceeds further. Bridging a good relationship with skippers and vessels owners will also help in the project during future interactions and implementations.

Acknowledgements

Dave Goad is thanked for providing his time and advice free of charge for this visit. Funding for the travel, meals and accommodation were funded by BirdLife International through the David and Lucile Packard Foundation.

References

- Agreement for the Conservation of Albatrosses and Petrels (ACAP) (2018). ACAP summary advice for reducing impact of pelagic longlines on seabirds. Retrieved from www.acap.aq.
- Bull, L.S. 2007. Reducing seabird bycatch in longline, trawl and gillnet fisheries. *Fish and Fisheries* 8: 31 – 56.
- Goad, D., and Debski, I. 2017. Tori line designs and specifications for small pelagic longline vessels Western Central Pacific Fisheries Commission Scientific Committee Thirteenth regular session. Rarotonga, Cook Islands, 9 – 17 August 2017.
- Løkkeborg, S. 2011. Best practices to mitigate seabird bycatch in longline, trawl and gillnet fisheries - efficiency and practical applicability. *Marine Ecology Progress Series* 435: 285–303.
- Melvin, E. F., Guy, T. J. and Reid, L. B. 2014. Best practice seabird bycatch mitigation for pelagic longline fisheries targeting tuna and related species. *Fisheries Research* 149: 5–18.
- Western Central Pacific Fisheries Commission 2017. Conservation and Management Measure 2017-061. Conservation and management measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds. Fourteenth regular session. Manila, Philippines, 3 – 7 December 2017.