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# Summary of utilization of mitigation techniques to reduce seabird bycatch in Japanese small-sized longline vessels

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ABSTRACT

To discuss effective and suitable seabird bycatch mitigation measures for small sized longline vessels (< 20 tonnage), information of utilization of seabird mitigation techniques voluntarily used in seventeen vessels were collected from a hearing survey. In all vessels fishermen used tori-line (bird-scaring line) and they deployed three types of tori-lines (with streamers, without streamers and direct connection of long streamers on poles). Many fishermen concerned entanglement tori-line materials with main line of longline in the rough sea hence attachment of streamers on tori-lines for small vessels should be carefully considered. In order to attain effective sink rate for branch line, seven vessels (41%) used weighed branch line and five vessels (29%) used fluorocarbon for branch line. In addition, this some vessels tried strategic offal discharge to put seabird assemblage away from line setting area. These information are useful to develop suitable mitigation techniques in small sized longline vessels. Some of measures introduced in that fishery are worth to examine for effectiveness.

## INTRODUCTION

Incidental catch (bycatch) of seabirds in tuna longline fisheries is one of major risks on conservation of seabird population. It is generally recognized that some of seabird bycatch mitigation techniques are very effective for reduction of seabird mortality and combination of these mitigation measures have been mandatorily used by tuna longline vessels in the WCPFC Conventional area (WCPFC CMM 2007-04). In recent years, these measures were scientifically reviewed in the WCPFC SC meetings and refined measures have been adopted (WCPFC CMM 2012-07). The measures were mainly targeted on longline vessels operating in areas south of 30 degrees south and large-scale longline vessels (24 meters or more in overall length) in areas north of 23 degrees north. Seabird mitigation requirements for longline vessels less than 24 meters (hereinafter referred to as "small longline vessels") in the Northern Pacific will be considered in the Commission.

To consider effective and fishermen-friendly measures in small longline vessels, it is needed to collect the information about actual deployment situation of seabird bycatch mitigation measures in those vessels. This document provide the results of an interview survey toward Japanese fishermen of small longline vessels in the Northern Pacific.

## METHOD

The survey was conducted for fishing masters of 17 small longline vessels at the Katsu-ura (Nachikatuura city) and the Choshi (Choshi city) port in mid-December 2013. The list of seven questionnaires about their deployment of seabird bycatch mitigation measures was shown in table 1. The responses were collected and summarized by tables and graphs.

## RESULT

All 17 fishing masters responded the interviews and response rate of all questionnaires was 67.2 % (80 of 119). All fishing masters responded that their vessels used tori-lines (bird-scaring line). Number of the tori-line deployed was different among vessels. Eight vessels (47%) were used single tori-line while only one vessel used double tori-lines (Fig. 1). Five vessels (29%) changed single tori-line to double tori-line in the area of abundance of seabird assemblage and their attacking intensity. Three vessels (18%) did not use standard tori-line but deployed some of extremely long streamers which fixed on poles directly. Ten vessels fixed streamers on tori-lines (Fig. 2). Total length of tori-line varied 50-100 m among these vessels.

Many fishing masters complained and concerned to use long streamers, double tori-line and towing devices because those which led tori-line entanglement with longline in rough sea.

In order to attain effective sink rate for branch line, seven vessels (59%) adopted weighted branch line (Fig. 3). Five vessels (29%) used fluorocarbon monofilament for branch line which makes branch line sinking faster (Fig. 4).

As another method, strategic offal discharge (fishery offal and by-caught escolars *Lepidocybium flavobrunneum* were chopped and discharged another side of line setting), was adopted by two

vessels.

## DISCUSSION AND TECHNICAL RECOMMENDATION

From the response to our questionnaires, it is found that tori-line is a very popular mitigation technique for Japanese small longline vessels in North Pacific. However, fishing master's concern about deployment style of tori-line related to gear entanglement also suggests that it should be cautious to decide appropriate designs of tori-line. Considering operational styles of small longline vessels, it may be preferable to use lighter materials of mainline with short streamers or without streamers for tori-lines. Those effectiveness should be examined by further researches.

Many vessels installed weighted branch lines for the purpose of not only improvement of fishing rate but also bycatch mitigation. To make higher sink rate, fluorocarbon monofilament whose relative density (1.78-1.80) is much higher than nylon monofilament (1.13-1.16) that was also adopted by some fishing masters. There are no studies about mitigation effectiveness to use fluorocarbon monofilament hence it is needed to evaluate it.

Strategic offal discharge alone is not enough to mitigate seabird interactions. This method is more effective if it is combined with other methods such as tori lines.

To develop novel mitigation techniques, fishermen's innovative idea is usually worth to considering (Melvin et al. 2011). Therefore, it is important to continue collecting information of mitigation techniques from fishermen.

## References

Melvin E, Troy, S., Sato, N. 2011 Preliminary report of 2010 weighted branch-line trials in the Tuna joint venture fishery in the South African EEZ. WCPFC-SC7-2011/EB-WP-11.

Table 1 Contents of Questionnaire

| Content |
| --- |
| Use/not use of tori-line |
| Number of tori-lines |
| Use/not use of streamers |
| Total length of tori-line |
| Use/not use of weighted branch line |
| Material of branch line |
| Other bycatch mitigation techniques and comments for current mitigation measures |

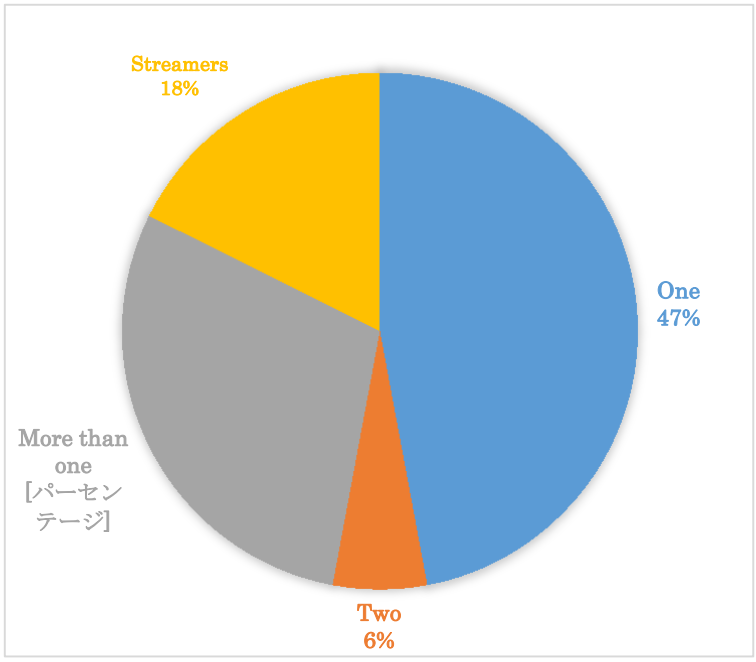


Figure 1 Number of tori-line and type of tori-line (N=17)

Figure 2 Use/not use of streamers (N=17)

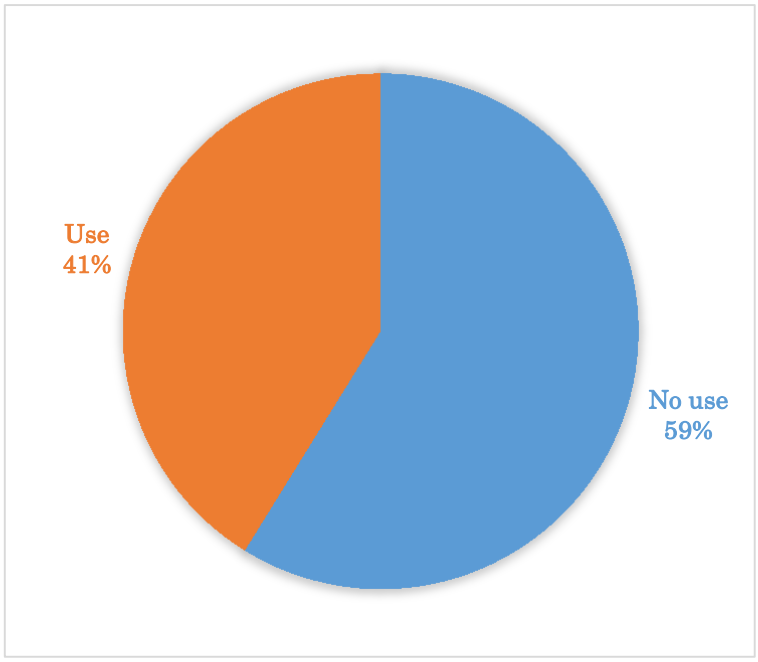

Figure 3 Use/not use of weighted branch line (N=17)

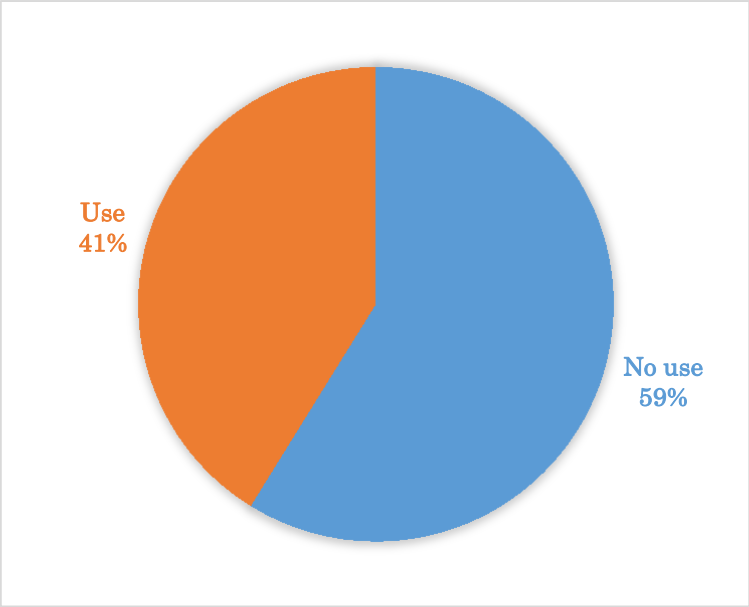


Figure 4 Material of branch line (N=17)