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Consideration for tori-line and tori-pole design suitable for Japanese small-scale tuna longline vessels in the North Pacific based on experimental results

Daisuke Ochi

Fisheries Resources Institute, Japan Fisheries Research and Education Agency

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ABSTRACT

We examined the bycatch mitigation performance of streamer-less tori-lines as a practical tori-line specification for small-sized longline vessels. In the experiment, the attack rate on baited hooks and bycatch rate during longline operations on a research vessel were compared between (1) a conventional light-streamer tori-line and a streamer-less tori-line with same length, (2) a streamer-less tori-line of heavier material and a streamer-less tori-line of lighter material, and (3)"aerial extent" of tori-lines by material and deployment specification. The results showed that for the same total length, streamer-less tori-lines were as effective as or more effective than conventional tori-lines in avoiding bycatch, and significantly reduced bycatch rates among streamer-less tori-lines. The use of lightweight materials allows for sufficient length and aerial coverage even with poor poles used on small vessels, indicating the possibility of effectiveness in waters where petrel species with high diving ability are not distributed, such as the North Pacific Ocean.