Agreement on the Conservation of Albatrosses and Petrels

Thirteenth Meeting of the Seabird Bycatch Working Group

Swakopmund, Namibia, 27 - 29 May 2026

Information about “ring-shaped branchline (meka-ring)" in pelagic longline fisheries and research plan

Daisuke Ochi, Daisuke Shiode, Hirotaka Ijima, Mikihiko Kai, Yasuko Semba

Attachment: IOTC-2025-WPEB21(AS)-26

INFORMATION ABOUT “RING-SHAPED BRANCHLINE (MEKA-RING)" IN PELAGIC LONGLINE FISHERIES AND RESEARCH PLAN

Daisuke Ochi[1]*, Daisuke Shiode[2], Hirotaka Ijima[1], Mikihiko Kai[1], Yasuko Semba[1]

ABSTRACT

This document provides a preliminary overview of the use of "ring shaped branch lines (meka-ring)" in Japanese longline fisheries. The gear was originally developed by local fishers targeting large squid. Subsequently, it spread to tuna longline fisheries in Japan and other regions. The main capture would be swordfish, with minimal bycatch of tunas, billfishes, sharks, or sea turtles and no seabird captures. Current investigations involve collecting information from fishers, and summarizing observers and logbook data, with further detailed reporting planned as research continues in the relevant areas.

1. Introduction

In recent years, a new type of terminal gear known as the "ring-shaped branch line" (meka-ring) has been gradually utilized among pelagic longline fleets in Japan and other regions. While its detailed information about its characteristics and impacts are not yet fully accumulated, this document provides a summary of what is currently known about the gear, its usage, and its potential implications for fisheries and bycatch. The purpose is to consolidate existing knowledge and introduce plans for future information gathering and research.

2. Historical background

The meka-ring was originally developed by local vertical line fishermen targeting diamond squid *Thysanoteuthis rhombus* to facilitate additional catch of swordfish (*Xiphias gladius*; Usui et al. 2018). The timing when the technology spread to pelagic longline fishermen in Japan was unclear, but it may be around the mid-2000s. In the last year, ICCAT-SCRS documents that described utilization of this gear (as called “trap line”) among the Mediterranean pelagic longline fisheries had been presented (Garibaldi et al. 2024, Valastro et al. 2024), and throughout the discussion in the SCRS meetings, this gear has been gradually spread among several EU countries (STECF 2025).

3. Gear structure and fishing operation

The main part of the meka-ring consists of 1 to 5 rings with different diameters, each ring was made of wire or nylon mono, bundled and joined at the upper end. Bait and hook are not used, and blinking LED lights are often attached to

[1]Fisheries Resources Institute, Japan Fisheries Research and Education Agency
[2]Tokyo University of Marine Science and Technology
**Corresponding author: ochi_daisuke36@fra.go.jp*

attract fish instead (Figure 1). It is considered inefficient to replace all branch lines with this gear as baited hook has effects of fish aggregation and catch of many species. Typically, these branch lines constitute only a few percent of total branch lines, and dispersed among normal branch lines (Figure 2).

4. Catch and bycatch characteristics

Based on the currently available data, catches by this gear consist almost exclusively of swordfish, with only occasional and very limited catches of other species such as yellowfin tuna, bigeye tuna, striped marlin, and sharks (mainly blue shark). No seabird and marine mammal bycatch have been reported ever, and sea turtle bycatch is considered to be lower than with conventional branch lines with baited hooks.

5. Research progress and future plans

Since we had little information about this fishing gear, we had initiated information collection and research activities on its use and the interaction with associated species, through interviews for fishermen, collection and summarization of observer and logbook data, and by research cruise for the investigations of catches and bycatches. Although this report is preliminary due to the limited amount of data, we intend to report the results of statistical analyses on the use of this gear among the Japanese pelagic longliner as they become available.

References

Usui, K., Shiwa, T., Ohshiro, E. 2018. On the Freshness Characteristics of Itoman Formura Swordfish *Xiphias gladius* by the Itoman-type rings fishing method and its use. Bull. Kanagawa Pref. Fish. Res. Center, 9: 29–38.

Garibaldi, F., De Natale, A., Zava, B. 2024. A new challenge for assessing the swordfish fishery: the use of an innovative fishing gear. Collect. Vol. Sci. Pap. ICCAT, 81(7), SCRS/2024/064: 1-9

Scientific, Technical and Economic Committee for Fisheries (STECF) 2025. *78th Plenary report (STECF-PLEN-25-01),* Publications Office of the European Union, Luxembourg.

Valastro, V., De Natale, A., Garibaldi, F., Piccinetti, C., Suzuki, Z. 2024. The swordfish CPUE poses several questions and enigmas, a discussion paper. SCRS/2024/145.

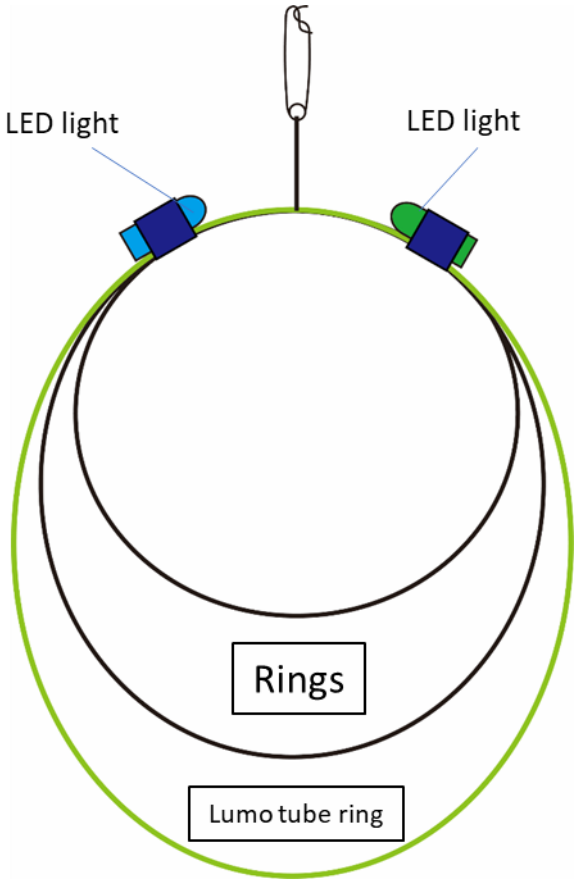

Figure 1. An illustration of the ring-shaped branch line ("Meka-ring") specifications used in a Japanese pelagic longline vessel.

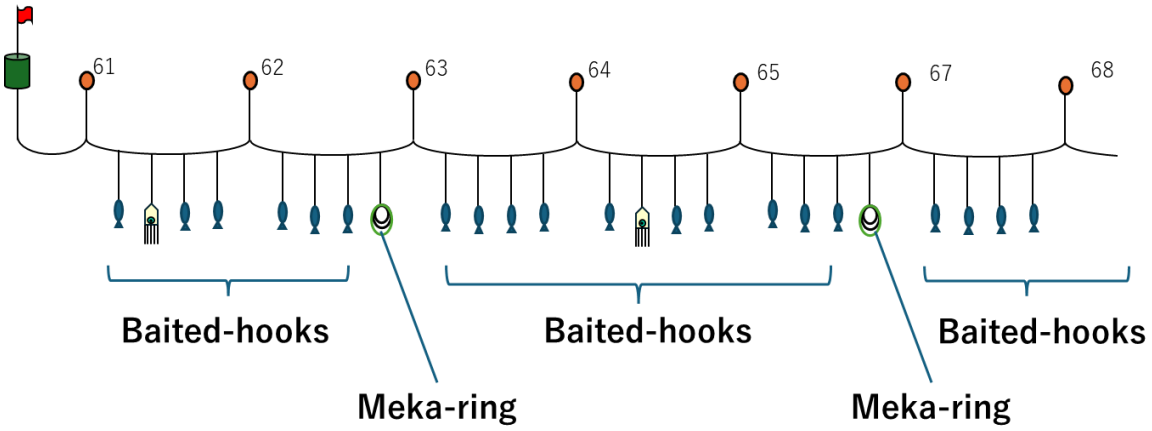

Figure 2 Schematic illustration of Meka-ring deployment on pelagic longline and conventional branch lines (baited hooks) deployed during the Japanese pelagic longline research cruise.