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Updated North Pacific albacore catch by Japanese fisheries

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Abstract

This document updates North Pacific albacore (Thunnus alalonga) catch data by Japanese fisheries through 2023 for the upcoming 2026 stock assessment. Total annual catch fluctuated between 16,273 mt and 32,616 mt in 2021-2023, primarily taken by longline (LL) and pole-and-line (PL) fisheries. Catch data is compiled from logbooks and landing reports, with estimation procedures adjusted for small-scale coastal fleets. The longline catch, dominated by the coastal fleet, shows a long-term stabilization, but spatial analysis highlights a significant 50% contraction of fishing grounds since the 1990s, linked to distant water vessels shifts and economic factors. The pole-and-line catch trend remains volatile, with effort shifting from distant water to offshore vessels since 2005. Spatially, the main effort concentration moved from Area 3 to Area 2 in the second quarter, largely due to distant water fleets targeting skipjack tuna and economic factors. Miscellaneous catches, primarily from Purse Seine, showed a notable increase in 2023 (4,409 mt). These updated data and observed trends are crucial for the next stock assessment model.

Introduction

North pacific albacore catch by the Japanese fisheries are mainly caught by the longline and pole-and-line fisheries. The Japanese longline fisheries target medium and larger size of fish (> 70cm in fork length) mainly in winter around 30N in the western north Pacific Ocean. These fisheries also target more larger size that are believed to be spawning fish in the area between 10N and 25N. On the other hands, Japanese pole-and-line fisheries target younger age class from spring to fall in the western north Pacific Ocean, where is characterized as the Kuroshio extension and Kuroshio-Oyashio transition areas. Other fisheries targeting albacore is drifting gill net, purse seine and troll fisheries. In this document, Japanese North Pacific albacore catch data were updated for upcoming 2026 stock assessment.

Data sources and Methods

The albacore catch by the Japanese fisheries is compiled using logbooks and landing reports. The aggregated catch is reported to the ISC as Official Catch Statistics (SID) in the ISC Catch-Table. The Official Catch Statistics, categorized by year and gear type, have been available since 1966. For small-scale coastal longline fisheries, coastal pole-and-line fisheries, and other miscellaneous fisheries, the submission of logbooks is not mandatory, so their respective catch amounts are obtained from landing reports. It should be noted that the complete 2024 dataset is expected to become available in late February next year.

Data set (Year-Quarter-Area (Fleet) catch) for the upcoming assessment are basically same procedure as the previously reported (Table 1, Matsumoto and Uosaki, 2011, Sato et al., 2013, Ijima et al., 2016, Kiyofuji et al., 2019, Tsuda et al., 2022), we re-described and modified for recording purpose.

Longline fishery

Japanese longline fishery was categorized distant water, offshore, coastal before and after 1994 and small-scale coastal longline which operated in the Japanese EEZ. In the previous stock assessments, catch from this fishery was calculated into year-quarter-area (fleet) basis using landing report and logbook.

Distant water, offshore, and coastal longline fisheries after 1994: Logbooks were available. The catch was aggregated by year, quarter and area and summarized both number and weight.
Coastal longline before 1994: Logbooks were not available. The catch weight for this fishing type was calculated using following procedures:

1. Average quarter-area allocation rate was calculated by the data from logbook after 1994.
2. Average quarter-area allocation rate was multiplied the annual catch in the landing report for the coastal longline.

Small-scale coastal longline: Logbooks were not available. This fleet operates in the Japanese EEZ (25-45N, 120-145E). The catch weight for this fishing type was calculated using following procedures:

1. Average quarter-area allocation rate in the Japanese EEZ was calculated by the data from logbook after 1994.
2. Average quarter-area allocation rate was multiplied the annual catch in the landing report for the coastal longline.

Pole-and-line fishery

Japanese pole-and-line fishery was categorized distant water, offshore and coastal. In the 2023 stock assessments, catch from this fishery was calculated into year-quarter-area (fleet) basis using landing report and logbook. Logbooks were available for distant water and offshore pole-and-line, but the coastal pole-and-line was not available. Since the landing report recorded catch for all types of pole-and-line fishery, coastal pole-and-line catch were allocated into quarter and area using the following procedure:

1. Average quarter-area allocation rate was calculated by the data from logbook.
2. Average quarter-area allocation rate was multiplied the annual total pole-and-line catch in the landing report.

Purse seine and other miscellaneous fisheries

Catch for the Japanese purse seine were compiled from landing reports, since quarter-area based catch data was not required for previous assessment. As logbooks have been available since 1995, compilation on a quarter-area basis is possible, similar to that for the longline and pole-and-line fisheries.

Catch for other miscellaneous fisheries, including Drift Gill Net, Troll, and Set Net, are sourced exclusively from landing reports. These fisheries are compiled using landing report data

due to the lack of mandatory logbook submission requirements.

Albacore Catch by Japanese fisheries

Historical annual total catch of North Pacific albacore by Japanese fisheries is shown in Figure 1. Total catches of albacore in the North Pacific Ocean by Japanese fisheries between 2021 and 2023 were 30,228 mt, 16,273 mt, and 32,616 mt, respectively.

Catch by Longline fishery

Annual total catch data for North Pacific albacore by the Japanese longline fishery are shown in Figure 2. Catch rates from the Japanese longline fishery exhibited an increase from the early 1990s, achieving a peak catch of 39,000 mt in 1997, followed by a subsequent decline to 17,000 mt by 2004. Catches subsequently stabilized near 20,000 mt post-2005, though a reduction to approximately 15,000 mt was observed after 2016, with 18,000 mt recorded in 2021. The reported catches for the three-year period from 2021 to 2023 were 18,327 mt, 11,033 mt, and 14,201 mt, respectively.

The primary operational area has been Area 1 (waters adjacent to Japan), with the catch primally caught by coastal longline vessels of 20 GTR or smaller (Fig. 3). The operational area was reduced by approximately 50% by the 2010–2019 period compared to its extent in the 1990s (the 1994–1999 period), with operations in Area 5 becoming exceptionally infrequent. This geographical shift and reduction in effort are linked to the distant water longline fleet reorienting its target to bigeye tuna, coupled with a decline in the number of distant water vessels resulting from economic factors such as elevated fuel costs.

Catch by Pole and Line fishery

Annual total catch data for North Pacific albacore by the Japanese pole-and-line fishery are shown in Figure 4. The catch from this fishery peaked in 2007, registering the highest capture in the preceding two decades at 38,000 mt. Catches subsequently fluctuated between 20,000 mt and 30,000 mt post-2003, decreased significantly to 9,000 mt in 2019, but then rebounded substantially to 36,000 mt in 2020. The reported catches for 2021 to 2023 were 11,136 mt, 4,090 mt, and 14,006 mt, respectively.

Historically, the Distant water segment was the largest contributor, peaking in the mid-1970s and again in the early 2000s. Since 2005, the catch contribution from distant water pole-and-line vessels has decreased significantly, and the majority of the current catch is derived from Offshore pole-and-line vessels.

Pole-and-line fishing primarily occurred in Area 3, situated off the eastern coast of Japan, during the second and third quarters (Fig. 5). Since 2005, the catch contribution from distant water pole-and-line vessels has decreased, and consequently, the majority of the current catch is derived from offshore pole-and-line vessels operating in Area 2 during the second quarter. The significantly reduced catch from the distant water vessels during the first and second quarters is

attributable to a strategic operational shift, as these vessels now shift to targeting skipjack tuna in the southern waters.

Catch by Miscellaneous fishery

Annual total catch data for North Pacific albacore by the Japanese miscellaneous fishery are shown in Figure 6. Catch by the drift gillnet fishery exceeded 10,000 mt during the 1980s. However, following the cessation of high seas operations mandated by a UN resolution, catches have generally stabilized at low levels, ranging from tens to hundreds of metric tons, since 1993. In the recent ten years (2014–2023), the dominant components have been Purse Seine (annual average catch: approximately 2,200 mt) and Troll (annual average catch: around 370 mt). The total catch derived from the miscellaneous fishery for 2021 to 2023 was 766 mt, 1,150 mt, and 4,409 mt, respectively.

References

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Table 1. Data summary of Japanese albacore catch. Note that abbreviations of DW and OS are distant water and offshore, respectively.

Fisheries	Data source	Period	Unit	Resolution
All fisheries	Yearbook	1966 – 2021	kg	Annually
Longline (DW and OS)	Logbook	1966 – 2021	number	Year, Month, Day and 5°×5°
Longline (DW and OS)	Logbook	1970 – 2021	mt	Year, Month, Day and 5°×5°
Longline (Coastal)	Logbook	1994 – 2021	number	Year, Month, Day and 5°×5°
Longline (Coastal)	Logbook	1994 – 2021	mt	Year, Month, Day and 5°×5°
Pole-and-line (DW and OS)	Logbook	1972 – 2021	mt	Year, Month, Day and 5°×5°
Purse sein	Logbook	1995 – 2021	100kg	Year, Month, Day and 5°×5°
Miscellaneous fishery (Drift net, Troll, Set net and others)	Yearbook	1966-2021	Kg	Annually

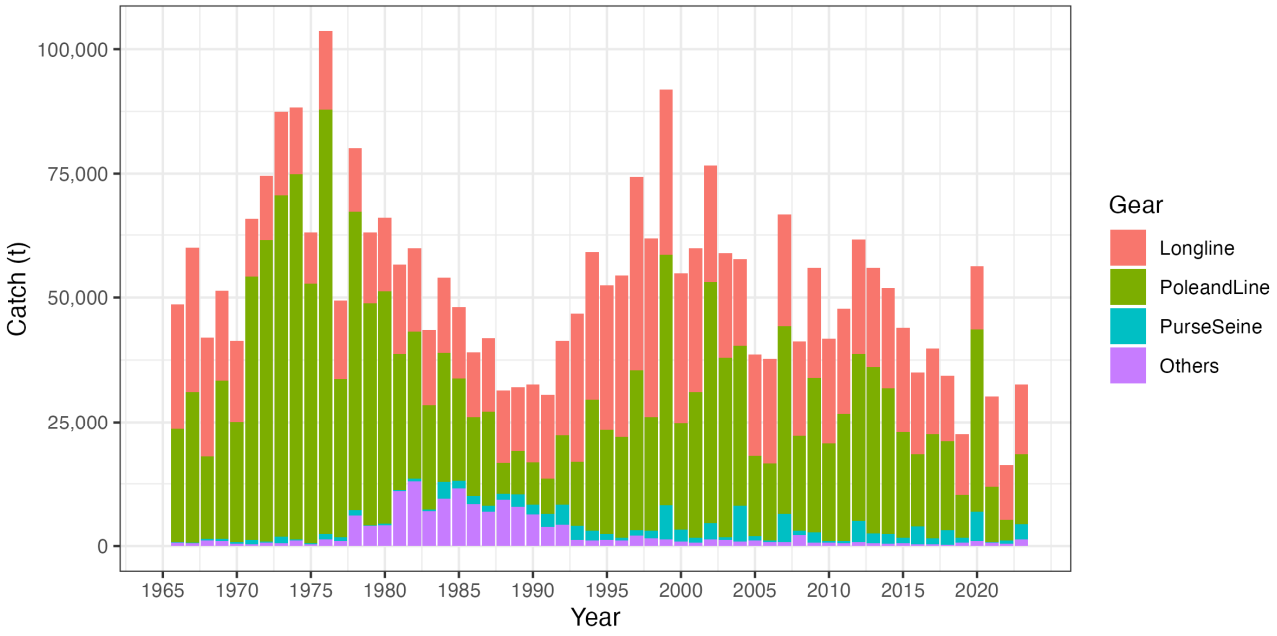

Figure 1. Annual total catch of North Pacific albacore by major fishing gears, 1996-2023. The Others included Drift net, Troll, Set net, and Other miscellaneous fisheries.
(See ISC Catch Table; https://isc.fra.go.jp/pdf/ISC25/ISC25_Plenary_Report_FINAL.pdf)

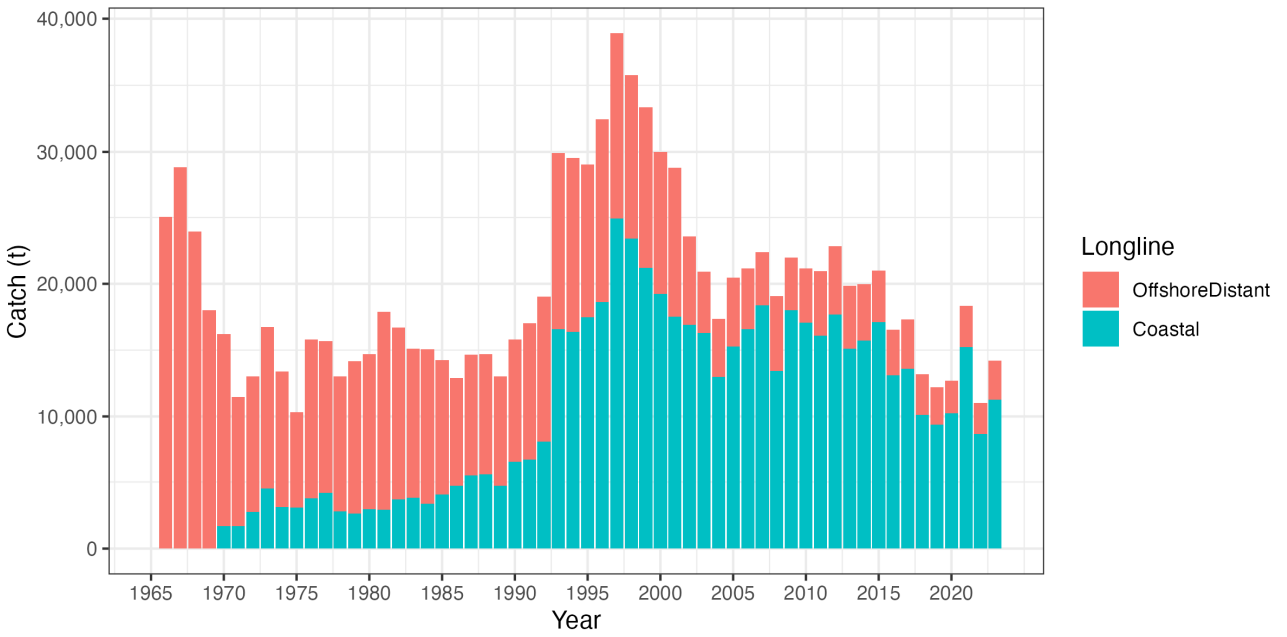

Figure 2. Annual total catch of North Pacific albacore by the Japanese longline fishery, categorized by coastal and offshore and distant water.

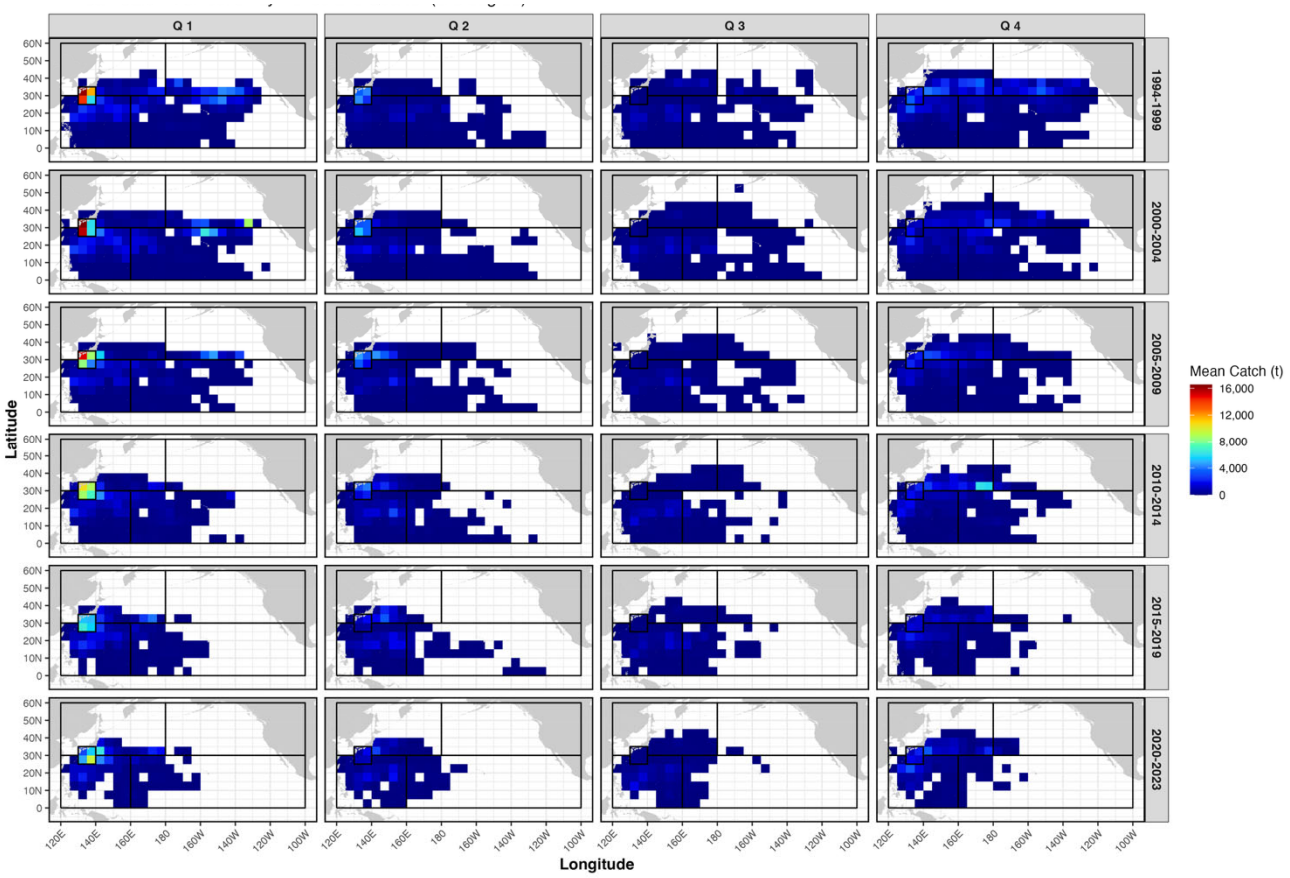

Figure 3. Mean quarterly catch distribution (t) of North Pacific albacore for the Japanese longline (LL) fishery by 5x5 degree grid. The plots are faceted by year-period (1994-2003)

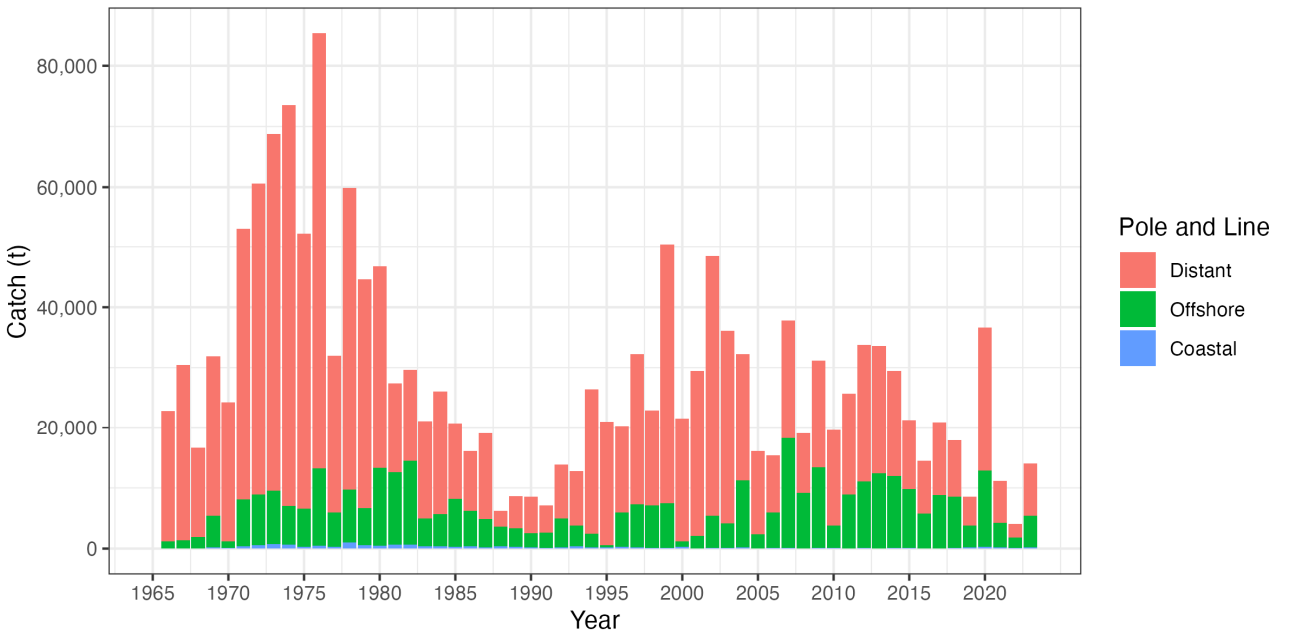

Figure 4. Annual total catch of North Pacific albacore by the Japanese pole-and-line fishery, categorized by coastal, offshore and distant water.

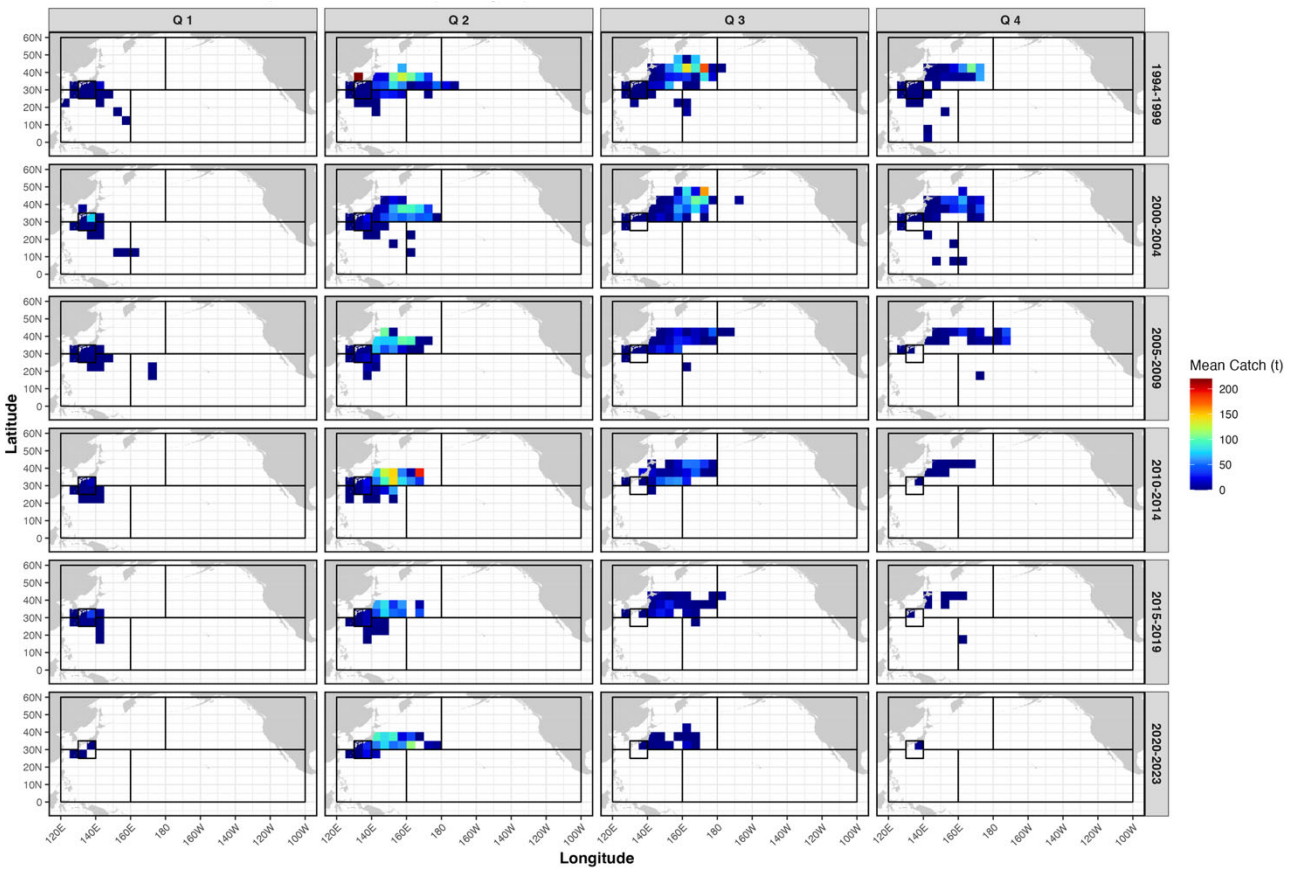

Figure 5. Mean quarterly catch distribution (t) of North Pacific albacore for the Japanese pole-and-line (PL) fishery by 5x5 degree grid. The plots are faceted by year-period (1994-2003)

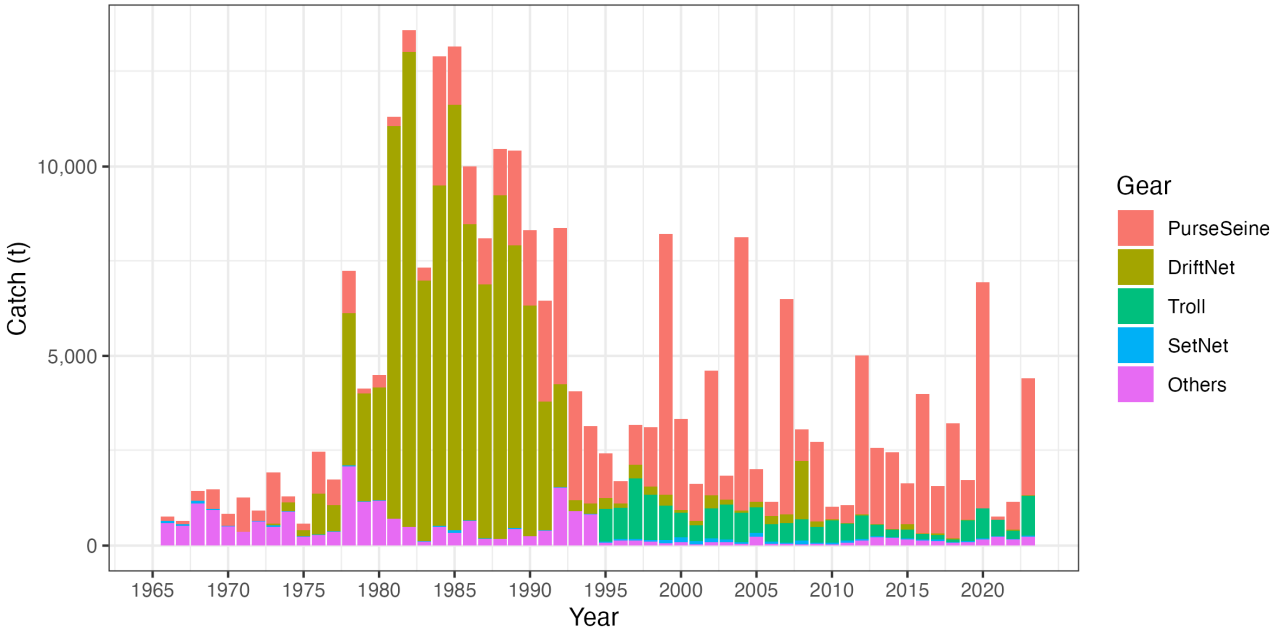

Figure 6. Annual total catch of North Pacific albacore by other miscellaneous gears, 1966-2023.