Preliminary observations of Albacore tuna (*Thunnus alalunga*) catches in Sri Lanka

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Abstract

This study presents preliminary observations on catch trends of Albacore tuna (*Thunnus alalunga*) in Sri Lanka's tuna fishery to identify emerging patterns and highlight critical data gaps. Although Albacore is not a target species in Sri Lanka, it has contributed significantly to total tuna landings, particularly from multiday fishing vessels operating in coastal and offshore waters. In 2023, total landings of Albacore tuna increased to 886 tons. This upward trend may reflect shifts in oceanographic conditions, potentially influenced by climate change, as well as evolving fishing practices and improved species identification.

Between 2015 and 2023, gillnet, longline, and ring net gear types accounted for 24%, 42%, and 34% of Albacore landings, respectively. Regionally, 63% of the catch originated from the Eastern Indian Ocean, and 37%, 34%, and 28% of landings were from vessels based in the southern, western, and eastern harbors of Sri Lanka, respectively.

Despite the insights gained, the study highlights significant limitations in the current data reporting framework. The logbook remains the sole source of information, and species-specific data for Albacore tuna are notably absent from Sri Lanka's port sampling programme. Furthermore, no biological data are currently collected for this species.

To enable effective monitoring and management, it is essential to strengthen data collection systems by incorporating Albacore-specific reporting fields and enhancing species identification accuracy at landing sites. The findings of this study provide a valuable baseline to inform future research and support regional initiatives aimed at understanding the ecological role and fisheries importance of Albacore tuna in the Indian Ocean.

Key words: Albacore tuna, Indian Ocean, Sri Lanka, logbook data

Introduction

Sri Lanka's tuna fishery is a dynamic, multi-species, and multi-gear operation conducted year-round in the Indian Ocean. Historically, this fishery has been dominated by tropical tuna species such as Yellowfin tuna (*Thunnus albacares*), Bigeye tuna (*Thunnus obesus*), and particularly Skipjack tuna (*Katsuwonus pelamis*), which remains a key target species in the gillnet sector. Primary fishing gears include gillnets, longlines, and ringnets (mini purse seiners), with seasonal use of other methods such as handlines, pole-and-line, and trawl lines. While gillnets have traditionally been the dominant gear in the tuna fishery, a gradual transition is evident, with increased adoption of longlines and ringnets, reflecting changes in both target species and fishing strategies (Haputhantri et al., 2019). Gear combinations such as gillnet-longline and gillnet-ringnet are commonly employed to optimize catch efficiency across a range of tuna and tuna-like species.

Within this tropical tuna-centric framework, the recent appearance of Albacore tuna (*Thunnus alalunga*) in Sri Lanka's catch data represents a noteworthy development. Albacore is a temperate tuna species managed under the Indian Ocean Tuna Commission (IOTC) and plays a significant role in global tuna markets, particularly in the canned tuna industry. Traditionally uncommon in Sri Lankan waters, the growing frequency of Albacore catches raises questions about shifting species distributions, evolving fishing practices, and improvements in species identification at landing sites.

This study presents preliminary observations on Albacore tuna catches in Sri Lanka, aiming to highlight emerging trends and identify data gaps in the national tuna fishery. Understanding the spatial and temporal patterns of Albacore occurrence, as well as the gear types associated with its capture, is essential for future resource assessments and effective fisheries management, especially in the context of climate change, ecosystem shifts, and regional stock dynamics.

Materials and methods

The analysis presented in this study is based on multiple sources of data from Sri Lanka's tuna fishery, with a focus on the emergence of Albacore tuna in national catch records. Three primary data sources were utilized: national logbook records, port sampling data, and publicly available datasets from the Indian Ocean Tuna Commission (IOTC).

i. Logbook data

Logbook data collected by vessel operators provides detailed operational information on individual fishing trips. These records included key variables such as date and duration of trips, fishing area, gear type used (e.g., longline, gillnet, ring net), number of hooks or nets deployed, target species, and catch composition by species. Logbooks served as a critical source for identifying the occurrence of Albacore in regular fishing operations and assessing its relative contribution to the total tuna catch.

ii. Port sampling data

Port sampling is carried out at harbors and landing sites where tuna catches are regularly landed. Trained enumerators collect catch and effort data, operational and temporal information, as well as biological parameters directly from fishing vessels.

iii. IOTC database

Complementary data were obtained from the IOTC's regional database, which includes annual statistics on tuna and tuna-like species reported by member countries, including Sri Lanka. These data provide a broader regional context for interpreting Albacore catches and can be used to compare national trends with those observed across the wider Indian Ocean. Additionally, the IOTC data are useful for identifying historical catch trends of Albacore tuna.

Data analysis

Data from the above sources were used for this study. Temporal and spatial analyses were carried out to assess patterns in Albacore occurrence. Descriptive statistics were employed to identify trends in catch, gear usage, and seasonal patterns. where possible, the relationship between Albacore catches and operational parameters (e.g., fishing area, season, gear type) was explored.

Results

Annual landings

Although an insignificant quantity of Albacore tuna landings (0.84 t) was reported in 2007, regular landings have been reported in Sri Lanka's tuna fishery since 2015 (IOTC, 2025). Until 2022, a steady catch of Albacore tuna was observed; however, the catch significantly increased in 2023 to 886 tons (Figure 1).

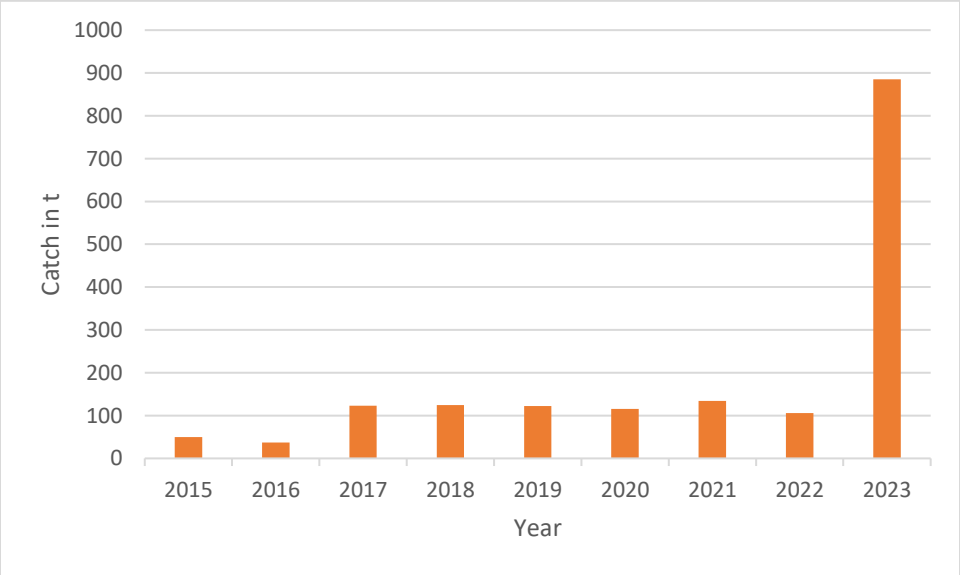

Figure 1. Albacore tuna landings in the tuna fishery of Sri Lanka: 2015 – 2023 (Source: IOTC , 2025)

Landings by gear types

The three key gears used in Sri Lanka's tuna fishery, gillnet, longline, and ring net, have caught Albacore tuna as bycatch, and there is no fishery operating specifically targeting Albacore tuna. Gillnet, longline, and ring net contributed 24%, 42% and 34% respectively of the total landed

Albacore tuna catch by Sri Lankan fishing vessels engaged in the tuna fishery during the period 2015 - 2023 (Figure 2).

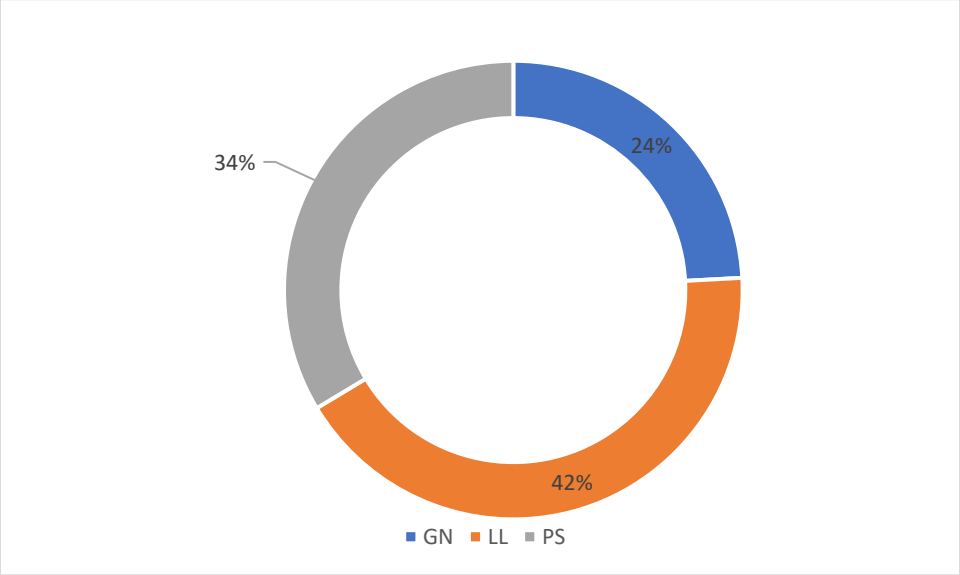

Figure 2. Gear-wise contribution to Albacore Tuna (*T. alalunga*) landings by Sri Lankan tuna fishing vessels (2015–2023): GN- Gillnet; LL- Longline; RN- Ring net (Source: IOTC, 2025)

From 2017 to 2022, the annual albacore tuna catch remained relatively stable, with longline gear consistently recording the highest catches compared to gillnet and ring net (Figure 3). In 2023, a notable increase in total catch was observed, reaching nearly 900 tons, with gillnet and ring net contributions exceeding longline catches for the first time during the period.

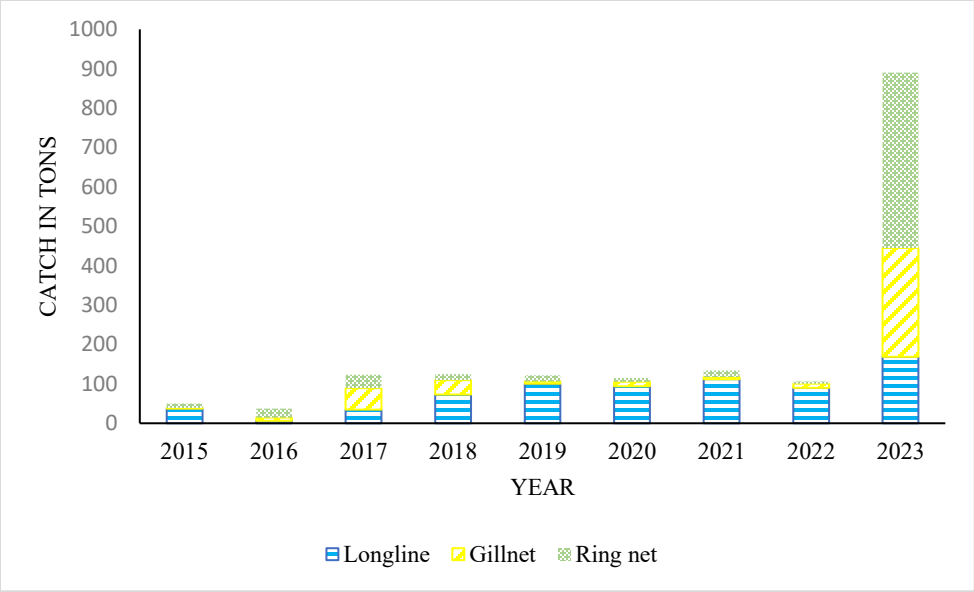

Figure 3. Annual Albacore tuna landings in Sri Lanka by gear types: 2015–2023 (Source: IOTC, 2025)

Spatial variation of the landings

37%, 34% and 28% of the landed catch have been taken by the multiday boats departing respectively from South, West, and East harbors of Sri Lanka (Figure 4).

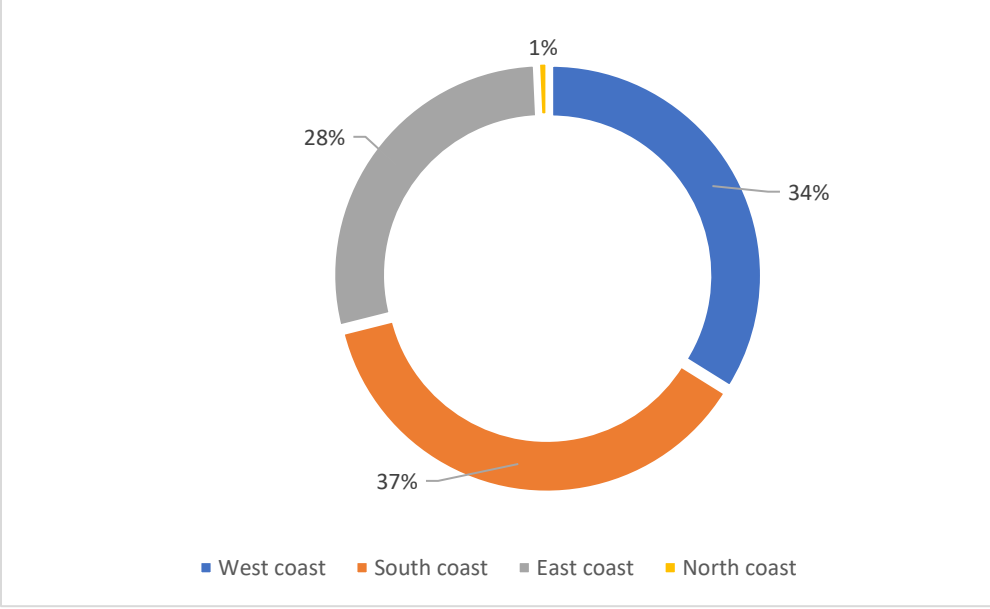

Figure 4. Harbor-wise contribution to Albacore Tuna (*T. alalunga*) landings by Sri Lankan multiday fishing vessels (2015–2020) (Source: DFAR, 2021)

Although Sri Lankan tuna fishing vessels operate in both the western and eastern areas of the Indian Ocean, 63% of the total Albacore tuna landings were reported from vessels operating in the Eastern Indian Ocean (Figure 5).

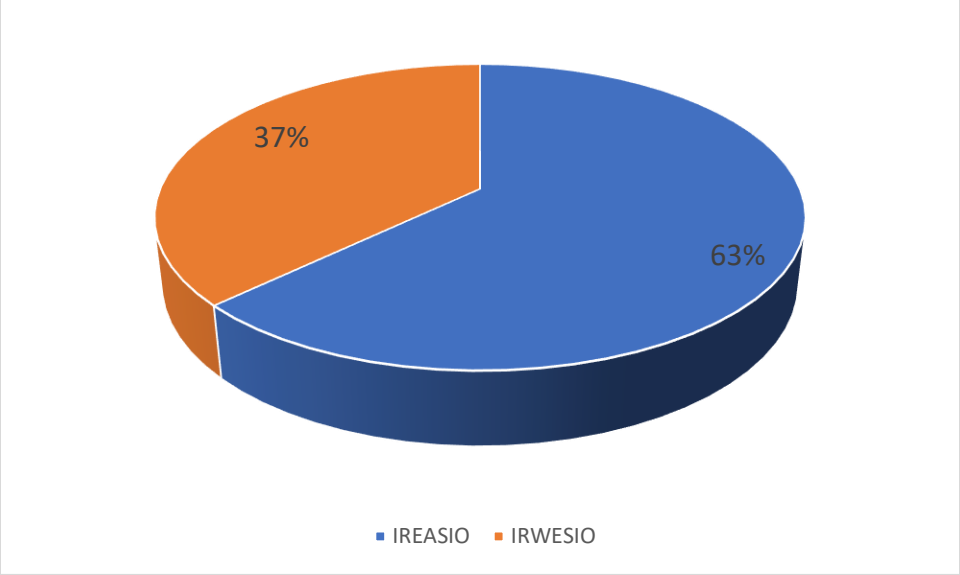

Figure 5. Regional comparison of Albacore Tuna (*T. alalunga*) catches by Sri Lanka's tuna fishing vessels operating in the Indian Ocean: IREASIO – Eastern Indian Ocean; IRWESIO – Western Indian Ocean (Source: IOTC, 2025)

Seasonal variation of the landings

The highest landings of Albacore tuna by Sri Lankan vessels occurred in the third quarter of the year, while the lowest landings were recorded in the first quarter (Figure 6).

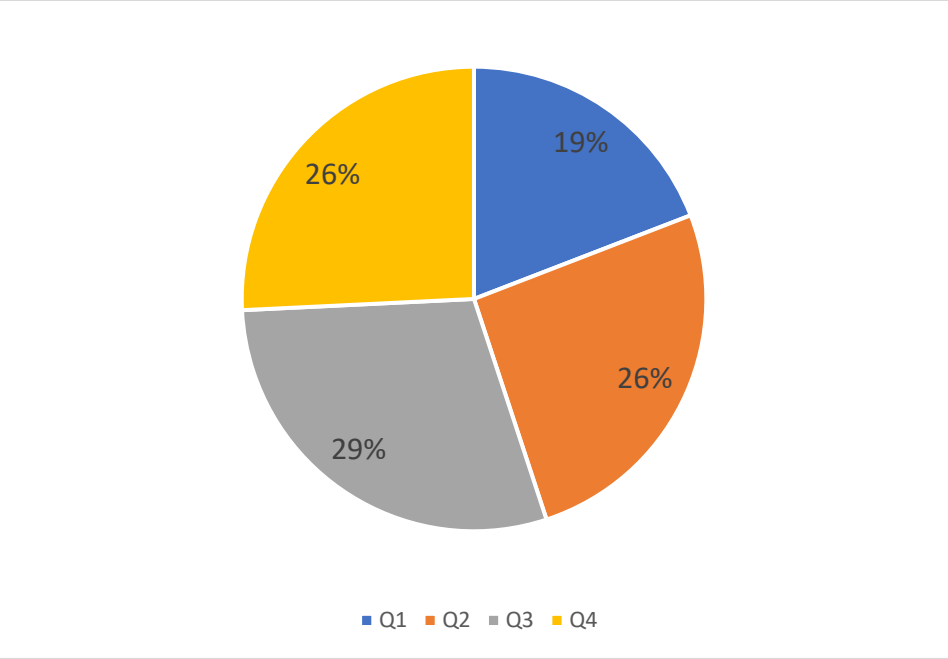

Figure 6. Seasonal variation of Albacore Tuna (*T. alalunga*) landings by Sri Lanka's tuna fishing vessels operating in the Indian Ocean (2015–2020): Q1- 1st quarter; Q2- 2nd quarter; Q3- 3rd quarter; Q4 – 4th quarter (Source: DFAR, 2021)

Data gaps in Albacore tuna reporting in Sri Lanka

The sole data source for Albacore tuna (*Thunnus alalunga*) landings in Sri Lanka is the fisheries logbooks maintained by the Department of Fisheries and Aquatic Resources. These logbooks provide spatial and temporal information on landings, along with operational parameters related to fishing activities. However, Albacore tuna is not specifically reported under the port sampling programme (PELAGOS, 2024). Instead, its landings have historically been grouped under "other tunas," and as such, the *PELAGOS* database, used to archive port sampling data, does not include records specific to Albacore tuna. This omission likely explains the lack of historical Albacore tuna data in Sri Lanka.

It is important to note that systematic logbook data collection for the tuna fishery commenced only in 2015. The minor quantity of Albacore tuna catch reported to the IOTC in 2007 may have been the result of a reporting error. Furthermore, unlike tropical tuna species, no biological data are currently collected or reported for Albacore tuna in Sri Lanka.

Conclusion

Since 2015, Albacore tuna has increasingly appeared as a bycatch in Sri Lanka's tuna fishery, with notable increases observed in recent years. However, data collection remains limited, relying solely on logbook records, with no species-specific entries in the port sampling programme and no biological data collected to date. Addressing these critical data gaps is essential for enhancing monitoring efforts, supporting robust stock assessments, and informing future management strategies for Albacore tuna in the Indian Ocean.

Recommendations

- Strengthen the data collection system by including Albacore-specific fields in port sampling forms and the PELAGOS database.
- Train field staff to improve species identification accuracy at landing sites.
- Initiate the collection of biological data (e.g., length frequency) for Albacore tuna.
- Promote research on environmental factors influencing the species' distribution and seasonal availability in the Indian Ocean.

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