



Indonesia National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2023



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Indonesia

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

| | |
|--|---------------------------------|
| <p>In accordance with IOTC Resolution 15/02 (and other data related CMMs as noted below), final scientific data for the previous year was provided to the IOTC Secretariat by 30 June of the current year, for all fleets other than longline (e.g., for a National Report submitted to the IOTC Secretariat in 2022, final data for the 2022 calendar year must be provided to the Secretariat by 30 June 2023)</p> | <p>YES 30/06/2023*</p> |
| <p>In accordance with IOTC Resolution 15/02, provisional longline data for the previous year was provided to the IOTC Secretariat by 30 June of the current year (e.g., for a National Report submitted to the IOTC Secretariat in 2023, preliminary data for the 2022 calendar year was provided to the IOTC Secretariat by 30 June 2023).</p> <p>REMINDER: Final longline data for the previous year are due to the IOTC Secretariat by 30 Dec of the current year (e.g., for a National Report submitted to the IOTC Secretariat in 2023, final data for the 2022 calendar year must be provided to the Secretariat by 30 December 2023).</p> | <p>YES 30/06/2023</p> |
| <p>If no, please indicate the reason(s) and intended actions:</p> | |

*) Provisional Numbers. The revision of annual catch data for the 2022 calendar year was provided to the IOTC Secretariat on 13 September 2023.



EXECUTIVE SUMMARY

For fisheries management purposes, Indonesian waters are divided into eleven Fisheries Management Areas (FMA). Three of them are located within the IOTC area of competence, namely FMA 572 (Western Sumatera and Sunda Strait), FMA 573 (South of Java to East Nusa Tenggara, Sawu Sea and western part of Timor Sea), and 571 (Malacca Strait and the Andaman Sea). Indonesian fishers operate various fishing gears such as longline, purse seine, handline, and gillnet to catch large pelagic fishes like tuna, skipjack, bilfishes, etc. Longline is the primary fishing gear type targeting tunas that operate in those FMAs. The total catch of the main species of tunas in 2022 was estimated at around 271,056 tons¹ which are composed of yellowfin tuna (66,765 tons), bigeye tuna (32,267 tons), skipjack tuna (159,376 tons), and albacore (12,648 tons). Landing ports, both artisanal and industrial, are still consistently monitored through port based monitoring programs and observer programs conducted by Directorate General of Capture Fisheries (DGCF).

¹ Preliminary figures



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1. BACKGROUND/GENERAL FISHERY INFORMATION

Indonesia is an archipelagic nation located between Asia and Australia, surrounded by two oceans, the Pacific Ocean in the northern part and the Indian Ocean in the southern region. It consists of approximately 17,508 islands and a coastline of 81,000 km. Indonesia has 5.8 million km² of marine waters comprised of 3.1 million km² of territorial waters (<12 miles) and 2.7 million km² of EEZ (12-200 miles). For fisheries management purposes, Indonesian waters are divided into eleven Fisheries Management Areas (FMA). Three of them are located within the IOTC area of competence, namely FMA 572 (Western Sumatra and Sunda Strait), FMA 573 (South of Java to East Nusa Tenggara, Sawu Sea and western part of Timor Sea), and 571 (Malacca Strait and the Andaman Sea) (Figure 1a).

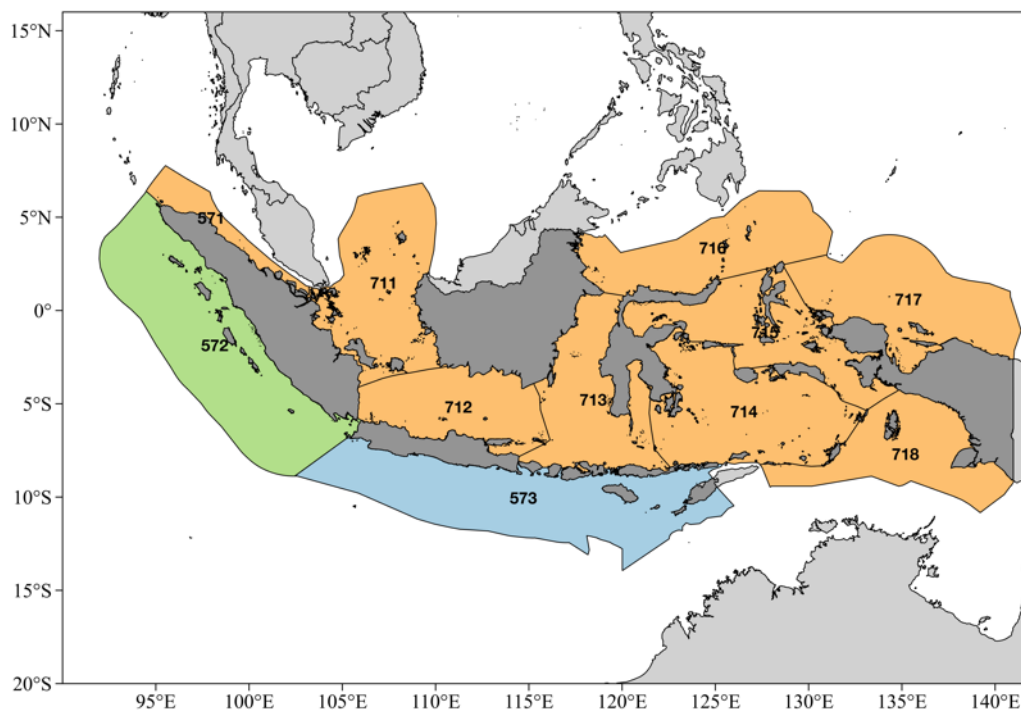


Figure 1a. The eleven Fisheries Management Area (FMA) in Indonesian waters

Main landing sites for tuna and tuna-like species are widespread across the west of Sumatra, south of Java, Bali, and Nusa Tenggara (Figure 1b). The area of western Sumatra is dominated by purse seine fleets (Lampulo and Sibolga) and handline fleets (Bungus). On the other hand, southern part of Java, Bali and Nusa Tenggara are dominated by handline/troll line fleets (Pacitan, Prigi and Labuhan Lombok) and longline fleets (Palabuhanratu, Cilacap and Benoa). Benoa Port is considered the main tuna landing port for Indonesia.

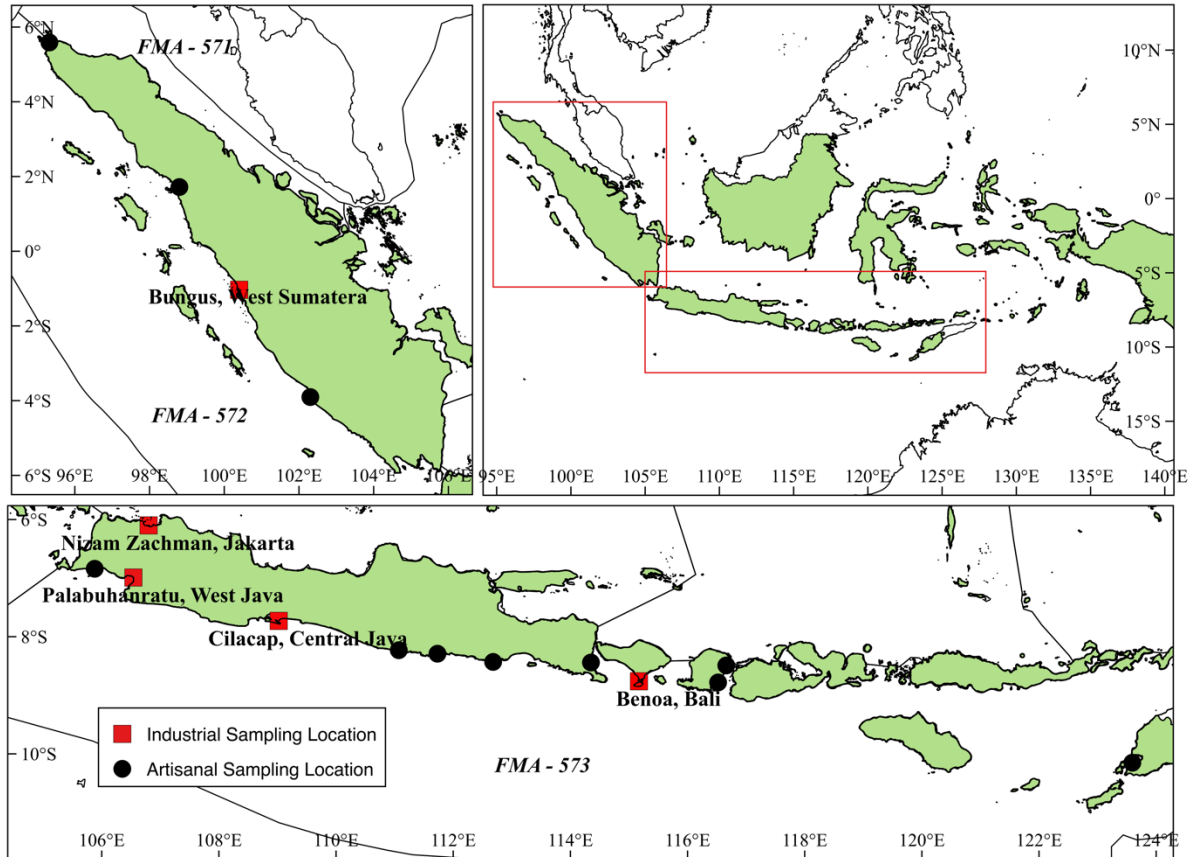


Figure 1b. Primary fishing port/landing sites, industrial (blue dot) and artisanal (red square).

2. FLEET STRUCTURE

Since 2022, the category of vessels size with a length of more than 24 m is determined for longline vessels with a minimum size of 85 GT and purse seine 115 GT. Other fishing vessels categorized the same as longlines. The total number of active fishing vessels operating in the FMAs 572, 573, and high seas area in the Indian Ocean reported to IOTC on 10th February 2023 were 462 fishing vessels. It consisted of longline (335), hand line (1), purse seine (126), and seventeen (17) registered carrier/cargo freezers (Table 1).

Table 1. Summary of active fishing vessels by size (GT) reported to IOTC on 10th February 2023 (Source: DGCF).

| Size | Longliner | Hand line | Size | Purse Seiner |
|----------------|------------|-----------|----------------|--------------|
| 10 ≤ GT < 20 | 2 | 0 | 10 ≤ GT < 20 | 0 |
| 20 ≤ GT < 30 | 32 | 0 | 20 ≤ GT < 30 | 0 |
| 30 ≤ GT < 50 | 42 | 0 | 30 ≤ GT < 50 | 0 |
| 50 ≤ GT < 85 | 97 | 0 | 50 ≤ GT < 78 | 0 |
| 85 ≤ GT < 200 | 161 | 1 | 78 ≤ GT < 200 | 123 |
| 200 ≤ GT < 300 | 0 | 0 | 200 ≤ GT < 300 | 3 |
| Total | 335 | 1 | Total | 126 |

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

Prior to 2021, the fishery categorization still used the terminology for vessels >30 GT as industrial and <30 GT as artisanal. While in 2021, purse seine vessels with size >78 GT as industrial, and <78 GT as artisanal. Longline and other fishing vessels >85 GT as industrial and <85 GT as artisanal (Table 2a). Since 2022, the category of vessels size with a length of more than 24 m is determined for longline vessels with a minimum size of 85 GT and purse seine 115 GT. Other fishing vessels categorized the same as longlines (Table 2b).

The total catch for four main tuna species, namely albacore, bigeye tuna, skipjack, and yellowfin tuna, in 2022 was estimated 271,056 tons, it is 28% higher compared to previous year's and recorded as the highest catch in the last six years. Skipjack tuna remained the main contributor, 159,376 tons, followed by yellowfin, bigeye, and albacore tuna, around 66,765 tons, 32,267 tons, and 12,648 tons, respectively (Table 2b).

Table 2a. Annual catch by gear and primary tuna species (ALB, BET, SKJ, and YFT) derived from the Indian Ocean from 2018-2021 (on metric tons).

| Gear Type | Species | Year | | | | | Average MT |
|----------------|------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | 2017 | 2018 | 2019 | 2020 | 2021 | |
| Small longline | Albacore | 4,978 | 3,900 | 875 | 1,624 | 3,109 | 2,897 |
| | Bigeye | 2,155 | 1,942 | 2,375 | 3,457 | 3,828 | 2,751 |
| | Skipjack | 5,553 | 2,319 | 645 | 4,250 | 2,567 | 3,067 |
| | Yellowfin | 5,768 | 7,042 | 1,735 | 2,008 | 7,153 | 4,741 |
| | Sub-total | 18,454 | 15,202 | 5,630 | 11,339 | 16,656 | 13,456 |
| Tuna longline | Albacore | 1,421 | 789 | 878 | 2,381 | 2,231 | 1,540 |
| | Bigeye | 6,147 | 3,532 | 2,259 | 1,933 | 804 | 2,935 |
| | Skipjack | 1,003 | 2,249 | 1,457 | 1,843 | 1,019 | 1,514 |
| | Yellowfin | 4,759 | 2,568 | 2,525 | 3,648 | 3,402 | 3,380 |
| | Sub-total | 13,330 | 9,138 | 7,120 | 9,804 | 7,456 | 9,370 |
| Danish seine | Albacore | 0 | 0 | 2 | 0 | 0 | 0 |
| | Bigeye | 0 | 176 | 258 | 59 | 30 | 105 |
| | Skipjack | 0 | 3,786 | 3,820 | 3,773 | 1,791 | 2,634 |
| | Yellowfin | 0 | 888 | 1,288 | 376 | 0 | 510 |
| | Sub-total | 0 | 4,850 | 5,368 | 4,208 | 1,821 | 3,249 |
| Gillnet | Albacore | 0 | 97 | 80 | 0 | 6 | 36 |
| | Bigeye | 1,119 | 1,139 | 1,340 | 1,498 | 771 | 1,173 |
| | Skipjack | 6,023 | 6,738 | 10,079 | 6,954 | 12,925 | 8,544 |
| | Yellowfin | 1,160 | 1,603 | 3,726 | 3,248 | 5,594 | 3,066 |
| | Sub-total | 8,302 | 9,577 | 15,225 | 11,700 | 19,296 | 12,820 |
| Handline | Albacore | 488 | 578 | 915 | 891 | 2,804 | 1,135 |
| | Bigeye | 2,934 | 1,778 | 1,747 | 5,832 | 5,465 | 3,551 |
| | Skipjack | 10,168 | 12,589 | 26,210 | 25,127 | 21,482 | 19,115 |
| | Yellowfin | 7,663 | 5,254 | 6,756 | 8,846 | 12,702 | 8,244 |
| | Sub-total | 21,253 | 20,199 | 35,628 | 40,696 | 42,453 | 32,046 |
| Others | Albacore | 0 | 96 | 79 | 9 | 0 | 37 |



| Gear Type | Species | Year | | | | | Average MT |
|----------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | 2017 | 2018 | 2019 | 2020 | 2021 | |
| | Bigeye | 137 | 1,107 | 459 | 2,675 | 0 | 876 |
| | Skipjack | 16,039 | 2,695 | 4,385 | 9,247 | 0 | 6,473 |
| | Yellowfin | 5,222 | 1,879 | 2,067 | 3,464 | 0 | 2,527 |
| | Sub-total | 21,398 | 5,778 | 6,990 | 15,396 | 0 | 9,913 |
| Pole and line | Albacore | 0 | 34 | 0 | 0 | 31 | 13 |
| | Bigeye | 4 | 1,344 | 0 | 57 | 381 | 357 |
| | Skipjack | 12,684 | 1,578 | 2,131 | 2,463 | 3,452 | 4,462 |
| | Yellowfin | 1,371 | 699 | 142 | 697 | 288 | 639 |
| | Sub-total | 14,059 | 3,655 | 2,273 | 3,217 | 4,153 | 5,471 |
| Tuna purse seine | Albacore | 30 | 13 | 0 | 0 | 131 | 35 |
| | Bigeye | 9,448 | 5,116 | 897 | 4 | 1,096 | 3,312 |
| | Skipjack | 43,613 | 14,203 | 53,612 | 6,181 | 44,888 | 32,499 |
| | Yellowfin | 11,595 | 5,430 | 14,719 | 733 | 14,349 | 9,365 |
| | Sub-total | 64,686 | 24,762 | 69,228 | 6,918 | 60,465 | 45,212 |
| Small purse seine | Albacore | 0 | 12 | 0 | 0 | 81 | 19 |
| | Bigeye | 0 | 803 | 507 | 4,550 | 880 | 1,348 |
| | Skipjack | 0 | 21,682 | 9,422 | 59,606 | 29,820 | 24,106 |
| | Yellowfin | 0 | 6,912 | 1,669 | 15,133 | 7,554 | 6,254 |
| | Sub-total | 0 | 29,408 | 11,598 | 79,289 | 38,336 | 31,726 |
| Trolling | Albacore | 78 | 85 | 95 | 193 | 1,177 | 326 |
| | Bigeye | 0 | 1,342 | 3,983 | 536 | 738 | 1,320 |
| | Skipjack | 1,741 | 11,138 | 10,090 | 10,566 | 8,059 | 8,319 |
| | Yellowfin | 0 | 2,975 | 4,397 | 5,275 | 5,721 | 3,674 |
| | Sub-total | 1,819 | 15,540 | 18,566 | 16,571 | 15,696 | 13,638 |
| Liftnet | Albacore | 0 | 0 | 0 | 0 | 0 | 0 |
| | Bigeye | 3 | 2,125 | 156 | 954 | 189 | 685 |
| | Skipjack | 46 | 6,301 | 6,258 | 4,445 | 3,751 | 4,160 |
| | Yellowfin | 2,372 | 5,056 | 2,459 | 1,043 | 342 | 2,254 |
| | Sub-total | 2,421 | 13,483 | 8,872 | 6,442 | 4,283 | 7,100 |
| Grand Total | Albacore | 6,995 | 5,604 | 2,925 | 5,099 | 9,570 | 6,039 |
| | Bigeye | 21,947 | 20,404 | 13,980 | 21,556 | 14,183 | 18,414 |
| | Skipjack | 96,870 | 85,277 | 128,110 | 134,455 | 129,754 | 114,893 |
| | Yellowfin | 39,910 | 40,306 | 41,483 | 44,471 | 57,106 | 44,655 |
| | Total | 165,722 | 151,592 | 186,499 | 205,582 | 210,613 | 184,001 |

Table 2b. Annual catch by gear and primary tuna species (ALB, BET, SKJ, and YFT) derived from the Indian Ocean in 2022 (on metric tons).

| Gear type | Species | | | | Grand Total (MT) |
|--------------------------------------|---------------|---------------|----------------|---------------|------------------|
| | ALB | BET | SKJ | YFT | |
| Small longline | 685 | 942 | 4,552 | 1,599 | 7,778 |
| Drifting longline (up to 1800 hooks) | 5,038 | 4,050 | 1,513 | 10,648 | 21,248 |
| Drifting longline (over 1800 hooks) | 498 | 206 | 17 | 593 | 1,313 |
| Danish seine | 289 | 263 | 3,417 | 518 | 4,487 |
| Gillnet | 223 | 2,685 | 11,043 | 2,201 | 16,153 |
| Offshore gillnet | - | - | - | 52 | 52 |
| Handline | 1,968 | 5,214 | 22,040 | 13,017 | 42,239 |
| Offshore handline | 596 | 814 | 1,466 | 950 | 3,826 |
| Pole and line | 5 | 131 | 1,300 | 154 | 1,590 |
| Tuna purse seine | 286 | 9,819 | 51,425 | 13,760 | 75,290 |
| Small purse seine | 278 | 7,197 | 48,815 | 14,513 | 70,802 |
| Trolling | 2,782 | 812 | 11,001 | 8,652 | 23,247 |
| Liftnet | - | 134 | 2,787 | 109 | 3,029 |
| Total | 12,648 | 32,267 | 159,376 | 66,765 | 271,056 |

Data collection validation from the e-logbook program showed significant improvement since its implementation in 2018. The distribution of effort (hooks) from longline fleets in 2022 derived from logbook data was concentrated on western Sumatra and south of Java, focused mainly between 0°-35°S and 80°-115°E (Figure 2). The range of effort used was between 500-2500 hooks/set with an average of 1300 hooks/set. The total reported catch from the logbook was 5.39% of the total estimated catch submitted, it was increased compared to the previous year.

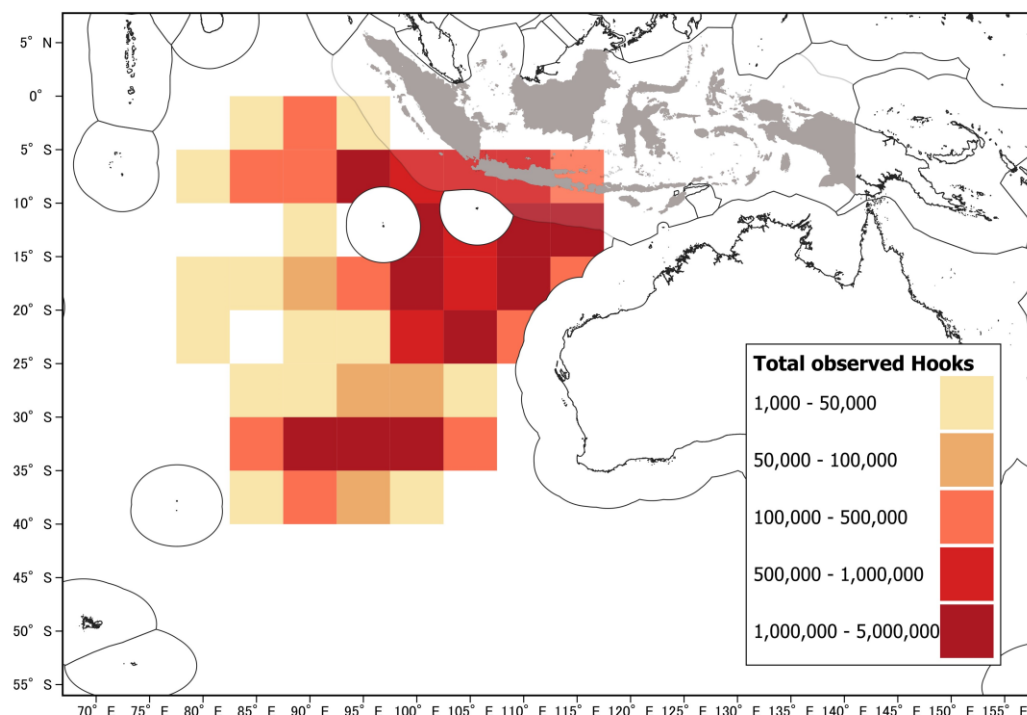


Figure 2. Map of the distribution of Indonesian tuna longline efforts year 2022 (source: Logbook data).

Reported of longline catch distribution for three main species of tuna (ALB, BET, and YFT) in 2022 are derived from the logbook data. Sum of catch declared in kilogram (KG). The catch mainly concentrated above 20°S, except for yellowfin tuna, which high catches also occurred between 30°S-35°S. (Figure 3).

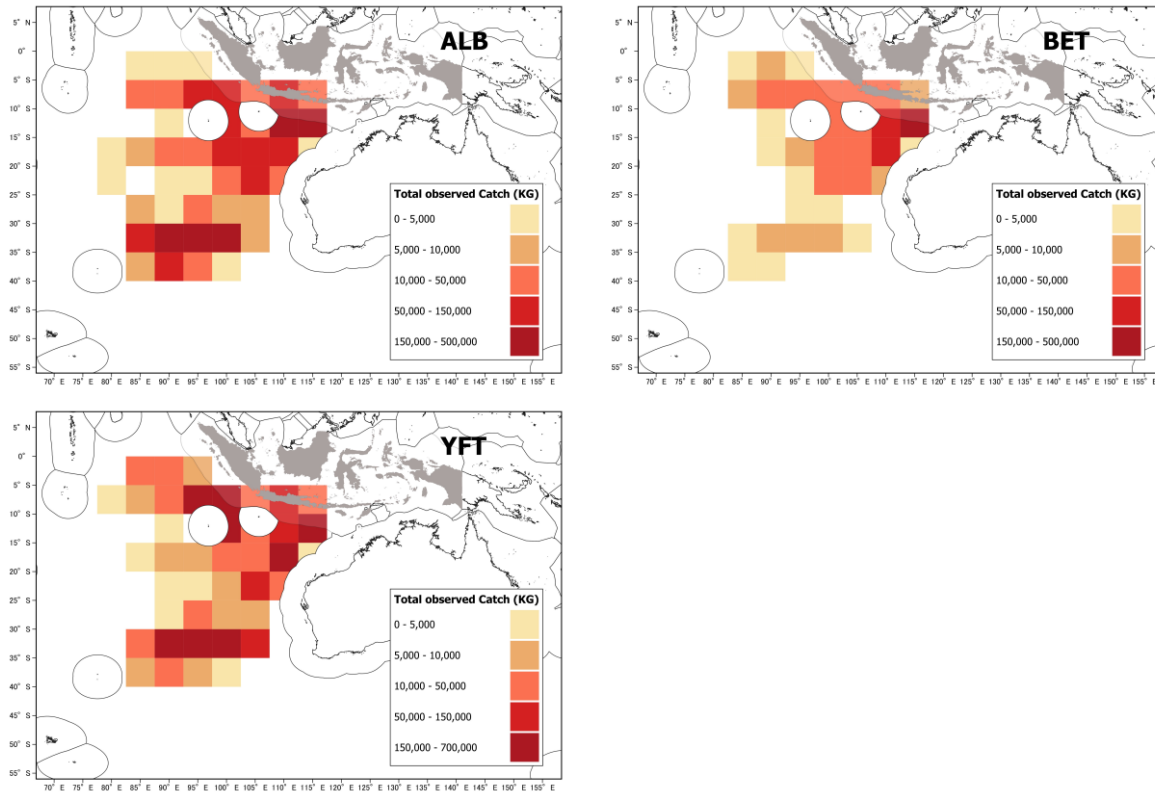


Figure 3. Map of reported of longline catch distribution in 2022, aggregated by species and by 5x5 degree blocks (source: Logbook data).

4. RECREATIONAL FISHERIES

There is no official reported catch from Indonesia recreational fishing. An organization dealing with sport fishing has been established since 1997, namely "FORMASI" (*Indonesia Fishing Sports Federation*), where this organization is a member of the International game fish Association (IGFA), Currently no update of FORMASI activities. The Indonesian government focuses on assessing and managing commercial fishing and would include recreational fishing shortly.

5. ECOSYSTEM AND BYCATCH ISSUES

5.1. Sharks

Sharks and rays fisheries management is regulated through Minister of Marine Affairs and Fisheries Regulation No. 58/PERMEN-KP/2020 concerning the capture fisheries business superseded by Minister of Marine Affairs and Fisheries Regulation No. 10/2021 concerning the standards of business activities and products in the implementation of risk-based business licenses in the marine and fisheries sector, listed explicitly in the section 7 no. 5. It specifies the management measure and conservation of bycatch and ecologically related species in high seas and Indonesian jurisdiction waters. Several activities to raise the

fishers' awareness of the importance of shark resource sustainability are workshops, seminars, and producing and distributing posters that prohibit several key species of sharks to catch. In the framework of fisheries management of sharks and rays in Indonesia, several regulations have been issued, such as ministerial decree No. 18/KEPMEN-KP/2013 and 04/KEPMEN-KP/2014 related to the determination of full protection on whale sharks (*Rhincodon typus*) and manta rays (*Manta spp.*). Additionally, for the hammerhead sharks (*Sphyrna spp.*), the annual catch is based upon quota listed on the Decree of Director General of Natural Resources Conservation and Ecosystem number SK.1/KSDAE/KKH/KSA.2/1/2020. Meanwhile, there is also the regulation of the Minister of Marine Affairs and Fisheries No. 05/PERMEN-KP/2018 concerning the export prohibition of the whitetip shark.

5.1.1. NPOA sharks

In response to the mandate for the establishment of an international plan of action in terms of conservation and management of sharks and rays by the member of United Nations through Fisheries and Agricultural Organization (FAO), as well as increasing global concern towards sharks and rays sustainability, Indonesia issued the first National Plan of Action (NPOA) for sharks and rays for 2010-2014. The document outlines strategy and action plan for the sustainability of the entire sharks and rays species. The 2nd NPOA for the period 2016-2020 then also has been issued and implemented as the continuation action plan of the 1st NPOA.

It is managed within those regulations that every fishing vessel that accidentally caught thresher shark, silky shark, oceanic whitetip shark, Mobula ray, and whale shark within the RFMOs Convention Area needs to release and report them to the Head of Fishing Port based on the license. The report is in the form of a fishing logbook. The recording of sharks' data is covered by the fishing logbook and monitored by the port inspection and observer program as regulated in the Ministerial Regulation No. 33 of 2021 on the Fishing Logbook, Observer, Inspection, Marking of Fishing Vessels, and the Fishing Crew Governance. It is explained within the regulations that every fishing vessel that violates the regulation will be given an administrative sanction based on the level of violation. Currently, Indonesia is developing the latest Shark NPOA.

5.1.2. Sharks finning regulation

Indonesia prohibits shark finning, targeting juvenile or pregnant sharks and rays, as declared in Ministerial Regulation No. 10/PERMEN-KP/2021. Furthermore, all carcasses of sharks and rays incidentally caught during operation must be landed intact (all fins attached to its body). In case thresher sharks (*Alopias spp.*) is incidentally caught either dead or alive it must be discarded at sea but must still be recorded in the logbook.

In general, sharks' carcasses and fins are traded for both domestic and export markets. Domestic trading and export of any parts of sharks and rays which are not protected by law and not included in the Appendix of CITES are regulated through ministerial regulation No. 33/PERMEN-KP/2017. Such trading activities must be supplemented with a letter of recommendation from the Directorate General of Marine Spatial Management as mentioned in regulation No. 13/PER-DJPRL/2018. Meanwhile for threatened species and other species included in the CITES Appendix, all kind of utilisations are regulated under Minister of Marine Affairs and Fisheries Regulation No 61/2018. Catch quota is determined upon annual basis and for this year of 2022, we based the quota on Minister of Marine Affairs and Fisheries Decree No 12/2022.

As recorded by the Marine and Coastal Resources Management Office (BPSPL), Denpasar during the 2019-2022 period, most of the sharks and rays' carcasses and fins were intended for the domestic market,

with nearly 3,000 tons in 2021, but has dropped to half in 2022 (Table 3a). The number of fins designed for the overseas market in 2022 also decreased to only less than 5% from the total volume of previous year. On the other hand, it increased around 5.5% in the domestic market (Table 3a). In terms of value, in 2022, exported fins decreased to only 1.2% of the total value of last year trades (Table 3b).

Table 3a. Summary of trade traffic volume (kg) for carcasses and fins of sharks and rays from Denpasar, Bali for the period 2019-2022 (Source: BPSPL Denpasar).

| Destination | Products | Volume (kg) | | | |
|-------------|-----------|-------------|-----------|-----------|-----------|
| | | 2019 | 2020 | 2021 | 2022 |
| Export | Carcasses | 183,327 | 544,125 | 560,648 | 137,877 |
| | Fins | 71,756 | 171,272 | 247,467 | 11,947 |
| Domestic | Carcasses | 2,142,094 | 2,384,508 | 2,751,298 | 1,245,305 |
| | Fins | 96,392 | 122,932 | 49,279 | 51,964 |

Table 3b. Summary of trade traffic value (millions) for carcasses and fins of sharks and rays from Denpasar, Bali for 2019-2022 (Source: BPSPL Denpasar).

| Destination | Products | Value (millions) - IDR | | | |
|-------------|-----------|------------------------|--------|--------|--------|
| | | 2019 | 2020 | 2021 | 2022 |
| Export | Carcasses | 6,429 | 19,304 | 13,118 | 4,454 |
| | Fins | 24,432 | 24,828 | 55,784 | 692 |
| Domestic | Carcasses | 30,697 | 30,843 | 30,766 | 13,300 |
| | Fins | 6,451 | 10,250 | 6,134 | 12,442 |

5.1.3. Blue shark

The blue shark is the most common bycatch in tuna longline fisheries. Its catch and effort are closely monitored through a scientific observer program, while scientific port sampling and logbook programs are utilized with the sole purpose of monitoring its catches.

According to scientific observer data, blue shark (*Prionace glauca*, BSH) and crocodile shark (*Pseudocarcharias kamoharaj*, PSK) dominated the incidental catch for sharks during 2016-2022. While most blue sharks were retained, crocodile sharks were usually discarded dead (Table 4). A nominal CPUE data series of blue sharks and the silky shark is presented in Annex 2.

Table 4. The total observed number of sharks, by species, released/discarded by the Indonesian tuna longline fleet in the IOTC area of competence (2016–2022).

| Code | 2016 | | | | 2017 | | | | 2018 | | | | 2019 | | | | 2020 | | | | 2021 | | | | 2022 | | | |
|------|------|----------|--------------------|-------------------|------|----------|--------------------|-------------------|------|----------|--------------------|-------------------|------|----------|--------------------|-------------------|------|----------|--------------------|-------------------|------|----------|--------------------|-------------------|------|----------|--------------------|-------------------|
| | N | Retained | Discarded Alive | Discarded Dead | N | Retained | Discarded Alive | Discarded Dead | N | Retained | Discarded Alive | Discarded Dead | N | Retained | Discarded Alive | Discarded Dead | N | Retained | Discarded Alive | Discarded Dead | N | Retained | Discarded Alive | Discarded Dead | N | Retained | Discarded Alive | Discarded Dead |
| PTH | nil | nil | nil | nil | 2 | 2 | nil | nil | 2 | nil | 1 | 1 | 3 | 2 | nil | 1 | nil | nil | nil | nil | 1 | nil | nil | 1 | nil | nil | nil | nil |
| BTH | 4 | 4 | nil | nil | 3 | 3 | nil | nil | 15 | 13 | nil | 2 | 4 | 3 | nil | 1 | 12 | 1 | nil | 11 | 13 | 13 | nil | nil | 15 | 15 | nil | nil |
| CCB | 3 | 3 | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| FAL | nil | nil | nil | nil | 2 | 1 | 1 | nil | 12 | 12 | nil | nil | 10 | 10 | nil | nil | nil | nil | nil | nil | 5 | 2 | nil | 3 | 65 | 65 | nil | nil |
| OCS | 4 | 4 | nil | nil | 4 | 4 | nil | nil | nil | nil | nil | nil | 6 | 4 | nil | 2 | 2 | nil | nil | 2 | 9 | 7 | nil | 2 | 13 | 6 | 2 | 5 |
| CCL | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | 3 | 3 | nil | nil | 2 | nil | nil | 2 | nil | nil | nil | nil | 1 | nil | nil | 1 |
| SMA | 5 | 5 | nil | nil | 39 | 8 | 30 | 1 | 13 | 9 | nil | 4 | 6 | 6 | nil | nil | 2 | nil | nil | 2 | 4 | 4 | nil | nil | 9 | 9 | nil | nil |
| LMA | nil | nil | nil | nil | nil | nil | nil | nil | 5 | nil | nil | 5 | 3 | 2 | nil | 1 | nil | nil | nil | 1 | nil | nil | 1 | 1 | 1 | 1 | nil | nil |
| BSH | 105 | 105 | nil | nil | 184 | 160 | 24 | nil | 300 | 194 | 6 | 100 | 202 | 98 | nil | 104 | 119 | 26 | nil | 93 | 143 | 116 | 1 | 26 | 334 | 287 | nil | 47 |
| PSK | 174 | nil | nil | 174 | 84 | 17 | 67 | nil | 148 | 2 | nil | 146 | 119 | 4 | nil | 115 | 25 | nil | 11 | 14 | 66 | 2 | 1 | 63 | 134 | 2 | 84 | 48 |
| SPL | nil | nil | nil | nil | nil | nil | nil | nil | 1 | nil | nil | 1 | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| TIG | nil | nil | nil | nil | nil | nil | nil | nil | 3 | 2 | nil | 1 | 4 | nil | nil | 4 | nil | nil | nil | nil | 4 | 4 | nil | nil | 2 | 2 | nil | nil |
| ISB | nil | nil | nil | nil | 39 | 1 | 35 | 3 | 9 | 2 | nil | 7 | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| TSK | nil | nil | nil | nil | 6 | 6 | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| SPY | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | 1 | nil | nil | 1 | nil | nil | nil | nil | 1 | nil | 1 | nil |
| THR | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| SHK | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil | nil |

5.2. Seabirds

Seabirds' data collection on longline fleets has been continuously monitored through ROS since mid-2005. However, only the last eight years' data are presented. In total, there were 38 incidental interactions with seabirds reported by the observers during observation (2014 – 2022). Data presented limited only for interaction in the area south of 25°S, under IOTC Resolution No. 12/06. Just three categories simplified the identification of seabirds prior to 2017 (B1=Seagull, B2=White Albatross, and B3=Black Albatross). Afterward, the improvement in seabird identification was expected courtesy of a workshop on seabird mitigation measures.

Since 2022, DGCF has been conducting the scientific observer pilot project, as RITF is no longer responsible for carrying out scientific observer activities. There was no interaction reported in the area above 25°S during longline operation in 2022 (Table 5). Mitigation measure on seabirds is regulated through Ministerial Decree 58/PERMEN-KP/2020 and 10/PERMEN-KP/2021 related to mitigation for ecologically related species, including seabirds in which the tori line is obligatory for every vessel operated beyond 25°S (high seas). The identification card for Seabird from IOTC had been translated into Bahasa. In addition, Indonesia already developed NPOA for Seabird back in 2016, and has been reviewed by Birdlife South Africa, with full compliance remarks and obtained green status.

Table 5. The number of observed incidental interactions of seabirds in tuna longline fishery from 2016-2022 (Source: RITF* and DGCF scientific observer data)

| Code | Species | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|-------------------------|------|------|------|------|------|------|------|------|------|
| DCU | Shy albatross | nil | nil | nil | 1 | nil | nil | nil | 1 | nil |
| PDM | Great-winged petrel | nil | nil | nil | 18 | 1 | nil | nil | nil | nil |
| PTZ | Petrels nei | nil | nil | nil | nil | nil | 5 | nil | nil | nil |
| PHU | Sooty albatross | nil | nil | nil | 1 | nil | nil | nil | nil | nil |
| PFC | Flesh-footed Shearwater | nil | nil | nil | nil | nil | nil | 2 | 1 | nil |
| USB | Other seabirds | 1 | 7 | nil | nil | nil | nil | nil | nil | nil |

*RITF observer data 2014-2021

5.3. Marine Turtles

Six out of 7 world's marine turtles are known to inhabit Indonesian waters. Since 1999, they have been nationally protected species following the latest regulation from the Ministry of Environment and Forestry Decree No. P.106/2018. Any catch and direct use are prohibited. In 2022, there was no marine turtles catch from the tuna longline fleet (Table 6). Olive ridley turtle, loggerhead, and leatherback turtles are classified as vulnerable. At the same time, green turtles are endangered, and even hawksbill in a state is highly endangered.

Indonesia, through the Minister of Marine Affairs and Fisheries has established the Minister Decree No. 65/2022 concerning the Marine Turtles National Action Plan 2022-2024. Indonesia also developed a cooperation with the Coral Triangle countries like Malaysia, the Philippines, the Solomon Islands, Papua New Guinea, and Timor Leste through the Coral Triangle Initiatives on Coral Reefs, Fish, and Food Security (CTI CFF) platform to protect threatened migratory species, including marine turtles. Bilateral Cooperation

between Indonesia and the US is also being devised to protect hawksbill turtles migrating from Papua to California.

Table 6. The number of observed incidental interactions with marine turtles in tuna longline fishery from 2014-2022 (Source: RITF* and DGCF scientific observer data)

| Code | Species | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|---------------------|------|------|------|------|------|------|------|------|------|
| DKK | Leatherback turtle | nil | nil | nil | nil | nil | nil | nil | 1 | nil |
| LKV | Olive-ridley turtle | 12 | 1 | 15 | 5 | 12 | 2 | nil | nil | nil |
| TTH | Hawksbill turtle | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| TUG | Green turtle | nil | nil | nil | nil | nil | 1 | nil | 2 | nil |
| TTX | Marine turtles nei | nil | nil | nil | nil | nil | nil | nil | nil | nil |

*RITF observer data 2014-2021

5.4. Other ecologically related species (e.g., marine mammals, whale sharks)

Whale Sharks have been fully protected according to our law (Ministerial Decree No 4/2014 and No 18/2013), Indonesia have developed particular national action plan documents. For a better implementation of NPOA, the Minister of Marine Affairs and Fisheries have issued Minister Decree No 16/2021 concerning Whale Sharks National Action Plan 2021-2025.

Pomfret, sickle pomfret, escolar, and lancetfish were the most common species caught as a by-product of tuna longline operations in 2014-2022. Neither marine mammals nor whale sharks were reported to be incidentally caught during that period (Table 7).

Table 7. The number of the observed catches of other ecologically related species in longline fisheries from 2014-2022 (Source: RITF* and DGCF scientific observer data).

| Code | Species | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|-------------------------|------|------|------|------|------|------|------|------|------|
| BAR | Baracuda | 4 | 5 | 6 | nil | 2 | 15 | nil | 11 | 9 |
| DOL | Common dolphinfish | 15 | 7 | 13 | 32 | 11 | 29 | 4 | 15 | 22 |
| DCO | Dolphin | nil | nil | nil | 1 | 2 | nil | nil | nil | nil |
| EIL | Brilliant pomfret | nil | nil | nil | 1 | 1 | nil | nil | nil | nil |
| HAR | Longnose chimaeras | 3 | 14 | 46 | nil | 1 | nil | nil | nil | nil |
| LEC | Escolar | 666 | 490 | 353 | 240 | 613 | 550 | 253 | 781 | 621 |
| LAG | Moonfish | 29 | 30 | 60 | 13 | 57 | 38 | 57 | 73 | 177 |
| MOX | Ocean Sunfish | 3 | 2 | 1 | nil | 3 | 2 | 1 | nil | nil |
| ALX | Long snouted lancetfish | 921 | 739 | 693 | 796 | 1760 | 613 | 690 | 1112 | 527 |
| OHR | Other hairtail fish | nil | nil | nil | nil | nil | nil | nil | nil | nil |
| OIL | Oilfish | 58 | 16 | 8 | 24 | 19 | 20 | 5 | 16 | 1367 |
| TCR | Pomfret | 90 | 45 | 62 | 42 | nil | 11 | 5 | 14 | 7 |
| TRF | Tappertail ribbon fish | 1 | nil | nil | nil | nil | nil | nil | nil | nil |
| TST | Sickle pomfret | 110 | 29 | 117 | 105 | 131 | 25 | 18 | 38 | 23 |
| WAH | Wahoo | 96 | 63 | 61 | 30 | 74 | 61 | 23 | 85 | 115 |

*RITF observer data 2014-2021

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

6.1. Logsheet data collection and verification

Fisheries logbook submission is mandatory for all fleets. Fleets above 5 GT were using a simplified fishing logbook, according to Ministerial Regulation No. 28/2023 issued on 1 September 2023. There was 12.73% increase of logbook submitted compared to last year's submission, including e-logbook format

(Table 8). Although data entry, validation, and verification before analysis are still the remaining issues, the data quality is incrementally improving every year. Hence, for effective implementation of this program, it is necessary to keep introducing and strengthening its capacity to fishers and port officers.

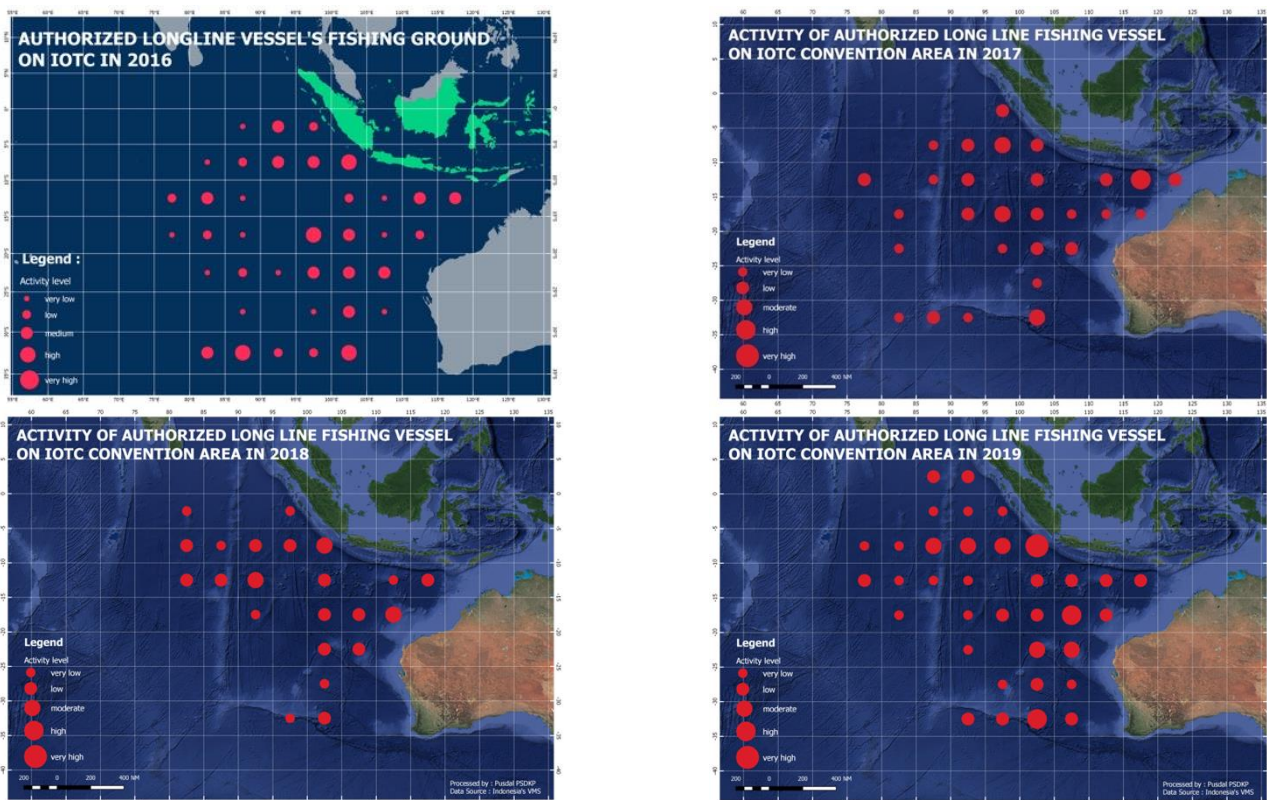
Table 8. The number of vessels submitted logbook for 2014 – 2022 (source: DGCF).

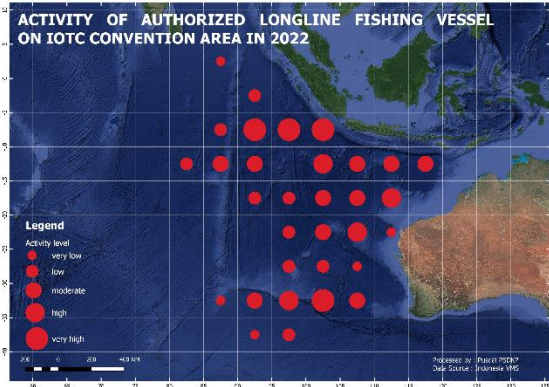
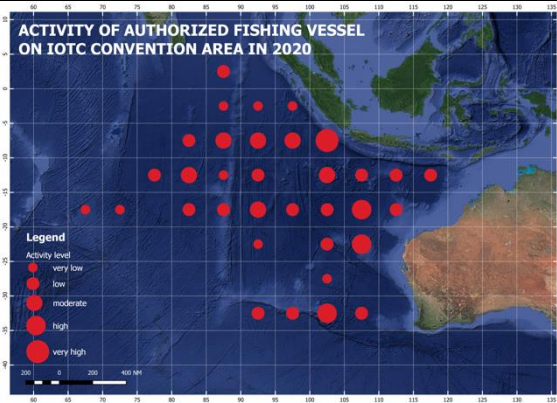
| No | FMA | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|----|-----|-------|-------|-------|------|------|------|-------|------|------|
| 1 | 571 | 53 | 58 | 24 | 1 | 5 | 115 | 313 | 348 | 323 |
| 2 | 572 | 720 | 1,202 | 1,182 | 639 | 575 | 921 | 903 | 682 | 848 |
| 3 | 573 | 1,210 | 1,031 | 941 | 796 | 713 | 821 | 1,144 | 1343 | 1504 |

6.2. Vessel Monitoring System

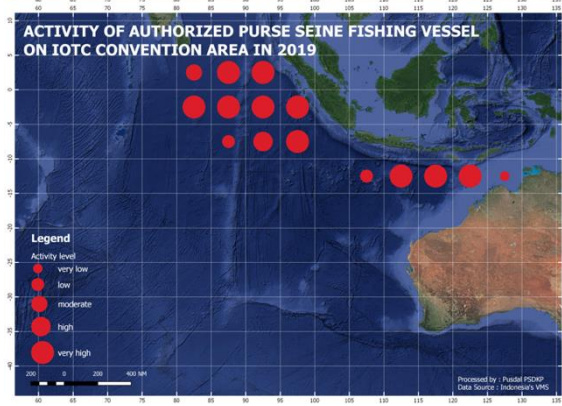
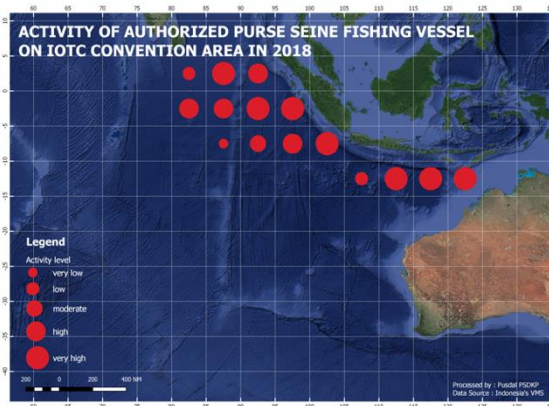
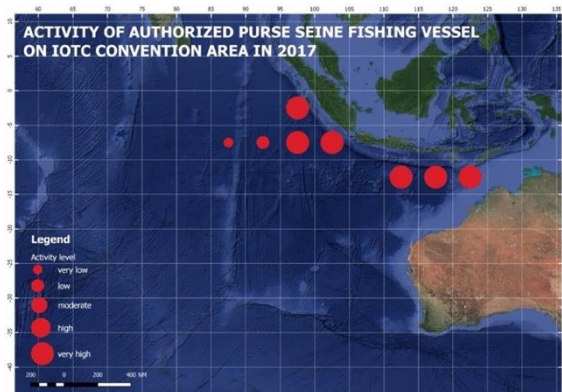
The Vessel Monitoring System (VMS) was started to be implemented in Indonesia in 2003. Through Ministerial Regulation No. 42/2015 about fisheries vessel monitoring system, all fishing vessels above 30 GT or operating in high seas are mandatory to be equipped with a VMS transmitter. It is mandatory to The Fisheries Inspector must make sure that VMS installed and monitored in the Fisheries Monitoring Centre. Otherwise, the fishing vessel will not get permission to leave the fishing port for their fishing operations. The fishing monitoring centre (FMC) for Indonesia's VMS is based in Jakarta. Since 28 September 2022, The Minister has launched the new application Integrated Maritime Surveillance System (IMIP). This application uses artificial intelligence to automatically analyze all fishing activity related. This application will automatically send an alert and analyse if the fishing vessel conducts the infringement. IMIP is expected to increase compliance of Indonesian fishing vessels. The spatial distribution of longline and purse seine vessels based on VMS information from 2016 to 2022 is presented in Figure 4.

A)





B)



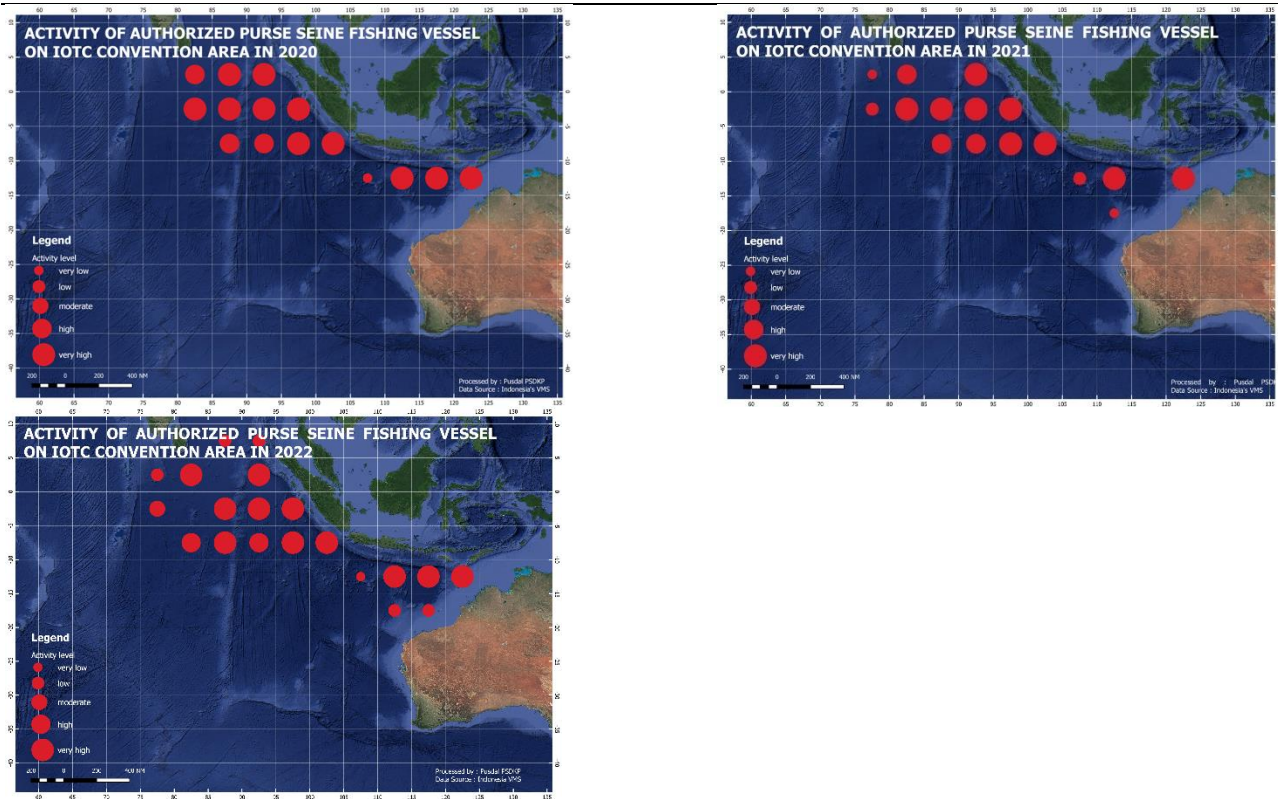


Figure 4. Map of the spatial distribution of longline (A) and purse seine (B) from 2016 to 2022 based on VMS data (Source: PSDKP).

6.3. Observer Scheme

The Commission established a programme to monitor transshipment at sea, which applies to large-scale tuna longline fishing vessels (LSTLVs) and carrier vessels authorized to receive transshipment at sea. Indonesia’s longline fleet was dominated by wooden fishing vessels, including wooden carrier vessels. The exemption for implementing transshipment at sea for Indonesian wooden carrier vessels is still acknowledged as a pilot project. It shall be reviewed every two years by the IOTC Compliance Committee.

The Government of Indonesia has shown its persistent commitment to support the implementation of Resolution 21/02 on Establishing a Programme for Transshipment by Large-Scale Fishing Vessels, amended by Resolution 22/02 through the stipulation of relevant national regulations. The resolution is accommodated in the Ministerial Regulation No. 10/2021 on Standards for Business Activities and Products in the Implementation of Risk-Based Business Licensing for the Marine and Fisheries Sector and the Ministerial Regulation No. 33/2021 on the fishing logbook, observer onboard, inspection, testing and marking of fishing vessels, and governance of fishing vessel manning. Technical supports are through relevant monitoring instruments and technical aspects regarding the operation of the carrier vessels.

During the two-year pilot project (2019-2020), paragraphs 20 and 21 of Resolution 19/06 have already been implemented. In 2019, one of the Indonesian wooden carrier vessels listed in Annex V of Resolution 19/06 was authorized to conduct transshipment at sea. In 2020, two vessels listed in Annex V operated on the high seas. The national observers deployed on those vessels had complied with the tuna-RFMO regional observer programme standards and thus had fulfilled the requirements to conduct transshipment at sea.

During the period 2021, from twelve vessels in Annex V of Resolution 21/02, nine vessels were conducting transshipment at sea. In December 2021, Indonesia proposed a replacement of three vessels due to the condition that previous vessels were no longer suitable for transporting tuna products.

In early April 2022, a significant increase in fuel price caused additional added to the operating cost of Indonesian vessels. A sufficient amount of carrier vessels is needed to reduce fuel costs to maintain the quality of fish products especially fresh tuna. Therefore, Indonesia proposed to add five wooden carrier vessels into the annex of the pilot project. During the period 2022, from seventeen vessels in Annex VI of the Resolution 22/02, eleven vessels were conducting transshipment at sea.

Indonesia also established a scientific observer program according to IOTC resolution 11/04 related to the Regional Observer Scheme (ROS). The number of scientific observers recorded until 2022 was 67 observers. New recruitment is imminent for the continuation of the program. Since 2014 the deployment of observers has been extended to other gears, such as small-scale purse seine, coastal drifting gillnet, and troll line/hand line (Table 9a-d). Ministerial Regulation No. 33/PERMEN-KP/2021 formally regulates national observers for fishing and carrier vessels, positive progress to secure the government budget for the observer program in the future.

Table 9a. Activity summary of Indonesian ROS from 2014-2022 (gear= longline).

| Year | No. Of Obs | No. Of Trips | No. Of Company | Total Day at Sea | Days/Trip | Avg (d/trip) |
|------|------------|--------------|----------------|------------------|-----------|--------------|
| 2014 | 20 | 28 | 13 | 875 | 29-135 | 62 |
| 2015 | 4 | 5 | 5 | 241 | 31-61 | 48 |
| 2016 | 6 | 6 | 6 | 289 | 18-86 | 57 |
| 2017 | 12 | 15 | 13 | 524 | 15-108 | 58 |
| 2018 | 10 | 10 | 10 | 322 | 9-71 | 33 |
| 2019 | 6 | 10 | 5 | 348 | 14-104 | 36 |
| 2020 | 6 | 6 | 6 | 257 | 22-104 | 48 |
| 2021 | 16 | 16 | 13 | 796 | 18-77 | 44 |
| 2022 | 9 | 10 | 9 | 493 | 24-97 | 49 |

Table 9b. Activity summary of Indonesian ROS from 2014-2022 (gear= purse seine).

| Year | No. Of Obs | No. Of Trips | No. Of Company | Total Day at Sea | Days/Trip | Avg (d/trip) |
|------|------------|--------------|----------------|------------------|-----------|--------------|
| 2014 | 3 | 2 | 2 | 11 | 1-9 | 2 |
| 2015 | 2 | 1 | 1 | 10 | 8-15 | 11 |
| 2016 | 23 | 18 | 9 | 1088 | 2-240 | 25 |
| 2017 | na | na | na | na | na | na |
| 2018 | 4 | 20 | 15 | 126 | 8-13 | 9 |
| 2019 | 10 | 17 | 17 | 345 | 4-56 | 20 |
| 2020 | 5 | 5 | 5 | 446 | 57-116 | 89 |
| 2021 | 4 | 4 | 3 | 52 | 6-22 | 13 |
| 2022 | 21 | 136 | 44 | 943 | 1-32 | 7 |

Table 9c. Activity summary of Indonesian ROS from 2014-2022 (gear= handline).

| Year | No. Of Obs | No. Of Trips | No. Of Company | Total Day at Sea | Days/Trip | Avg (d/trip) |
|------|------------|--------------|----------------|------------------|-----------|--------------|
| 2014 | 10 | 70 | 10 | 70 | 1 | 1 |
| 2015 | na | na | na | na | na | na |
| 2016 | 9 | 9 | 4 | 150 | 8-15 | 10 |
| 2017 | 24 | 37 | 2 | 734 | 10-173 | 11 |
| 2018 | 21 | 48 | 38 | 903 | 28-78 | 41 |
| 2019 | 8 | 9 | 6 | 101 | 8-15 | 11 |
| 2020 | 2 | 2 | 2 | 51 | 10-41 | 26 |
| 2021 | 6 | 6 | 6 | 75 | 9-20 | 13 |
| 2022 | 1 | 264 | 264 | 274 | 1-2 | 1 |

Table 9d. Activity summary of Indonesian ROS from 2014-2022 (gear= gillnet).

| Year | No. Of Obs | No. Of Trips | No. Of Company | Total Day at Sea | Days/Trip | Avg (d/trip) |
|------|------------|--------------|----------------|------------------|-----------|--------------|
| 2014 | na | na | na | na | na | na |
| 2015 | 6 | 3 | 3 | 41 | 12-15 | 13 |
| 2016 | na | na | na | na | na | na |
| 2017 | 3 | 3 | 1 | 46 | 14-18 | 14 |
| 2018 | 3 | 15 | 7 | 31 | 1-19 | 1 |
| 2019 | 1 | 1 | 1 | 8 | 8 | 8 |
| 2020 | na | na | na | na | na | na |
| 2021 | na | na | na | na | na | na |
| 2022 | na | na | na | na | na | na |

6.4. Port sampling program

The Port sampling program was conducted regularly at Bena port to represent Indonesia's main industrial fishing ports. The minimum sampling activity requirement is at least 30% of all landings at each processing plant (IOTC, 2002). In 2019 to 2020 coverage was below 50% due to changing personnel and restrictions related to the Covid-19 pandemic. The latter reason also substantially affected the number of fish sampled, with around 30% loss on average across all species in those years. However, it improved to more than 50% in 2021 onwards (Table 10), followed by an increase in the number of fish sampled (Table 11). Since June 2022 RITF is no longer responsible for this program, and only 6 months (January – June) of port sampling data were collected from Bena port during this year.

Table 10. Coverage percentage of daily tuna and tuna-like species monitoring program based in Bena port 2014-2022.

| Year | No. Landed Vessel | No. Sampled Vessel | Sampling Coverage |
|------|-------------------|--------------------|-------------------|
| 2014 | 858 | 521 | 60.72% |
| 2015 | 699 | 477 | 68.24% |
| 2016 | 720 | 434 | 60.28% |
| 2017 | 483 | 374 | 77.43% |
| 2018 | 434 | 233 | 53.69% |
| 2019 | 410 | 183 | 44.63% |

| | | | |
|-------|------|-----|--------|
| 2020 | 411 | 150 | 37.67% |
| 2021 | 405 | 206 | 50.86% |
| 2022* | 1444 | 84 | 58.33% |

*January-June 2022

Table 11. Some weighted samples by species and gear from daily tuna and tuna-like species monitoring based in Benoa Port 2014-2022.

| Code | Species | No. fish sampled | | | | | | | | |
|------|------------------------|------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022* |
| ALB | Albacore | 27,740 | 21,648 | 22,643 | 21,452 | 7,641 | 13,812 | 9,255 | 23,738 | 16,333 |
| BET | Bigeye tuna | 40,431 | 45,039 | 34,415 | 25,695 | 16,247 | 16,210 | 11,729 | 12,997 | 5,022 |
| YFT | Yellowfin tuna | 41,720 | 17,909 | 29,229 | 20,610 | 22,998 | 13,147 | 5,654 | 9,083 | 5,273 |
| BUM | Blue marlin | 716 | 780 | 219 | 216 | 82 | 60 | 138 | 330 | 96 |
| BLM | Black marlin | 342 | 120 | 111 | 48 | 20 | 20 | 96 | 264 | 32 |
| MLS | Striped marlin | 108 | 115 | 201 | 60 | 36 | 54 | 178 | 374 | 66 |
| SSP | Short bill spearfish | 68 | 192 | 337 | 209 | 125 | 1,020 | 121 | 323 | 132 |
| SFA | Indo-Pacific sailfish | 383 | 546 | 440 | 391 | 325 | 108 | 209 | 158 | 48 |
| SWO | Swordfish | 4,177 | 4,336 | 2,966 | 2,318 | 1,198 | 2 | 3,387 | 8,762 | 2,066 |
| LEC | Escolar | 13,705 | 9,567 | 5,201 | 15,006 | 1,603 | 8 | 3,812 | 43,060 | 14,064 |
| OIL | Oilfish | 1,120 | 1,842 | 1,394 | 849 | 349 | 349 | 652 | 1,638 | 914 |
| WAH | Wahoo | 1,776 | 1,102 | 913 | 325 | 47 | 229 | 388 | 1,375 | 407 |
| DOL | Common dolphinfish | 221 | 359 | 445 | 921 | 42 | 459 | 112 | 190 | 133 |
| BSH | Blue shark | 2,058 | 4,732 | 9,148 | 8,404 | 10,055 | 10,483 | 12,542 | 19,219 | 11,615 |
| MAK | Mako sharks nei | 83 | 124 | 166 | 168 | 227 | 154 | 331 | 386 | 223 |
| OCS | Oceanic whitetip shark | 99 | 153 | 66 | 20 | 14 | 1 | 2 | 29 | 2 |
| THR | Thresher sharks nei | 2 | 32 | nil | 2 | nil | 2 | 97 | 345 | 97 |
| LAG | Moonfish | 6,795 | 9,709 | 5,690 | 4,820 | 2,970 | 4,653 | 3,827 | 3,726 | 2,291 |
| BAR | Barracuda | 19 | 15 | nil | 5 | nil | nil | nil | nil | nil |

*January-June 2022

6.5. Unloading/Transshipment of flag vessels

In connection with the Covid-19 pandemic, which disrupts fishery logistics and distribution, the Ministry of Marine Affairs and Fisheries has issued circular letter No. B-239/MEN-KP/IV/2020 on 21st of April, 2020 to relax fishery industries. One of which was the ease in terms of transshipment as follows:

- The possession of VMS (Vessel Monitoring System) and CCTV (Closed Circuit Television) are mandatory and must be installed onboard
- Join a partnership with an officially licensed vessel
- Must unload the catch at Indonesian territory ports
- Report the transshipment activities enclosed with CCTV recording to port authorities

The relaxation initially commenced on the 18th of August 2020; however, it was extended until the 31st of January 2021 by issuing circular letter No. B-483/MEN-KP/IX/2020.

6.6. Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin, and Indo-pacific Sailfish

The catch of striped marlin, black marlin, blue marlin, and Indo-Pacific sailfish are closely monitored through logbooks, port sampling at main landing sites, and deployment of observers.

6.7. Gillnet observer coverage and monitoring

Scientific observers have been put on gillnet fleets since 2015 (Table 9-d). Despite low coverage, continuity is still the main priority. In addition, scientific port sampling on the gillnet fishery has been conducted since as early as 2012, with Cilacap as the leading monitoring site. Unfortunately, no observation was completed in 2021 due to the Covid-19 outbreak. Nowadays, gillnet targeting tuna is no longer considered an economical option for fishers. Most of them decided to convert to handline, utilize FADs, and upgrade the storage with a refrigerated-type chiller for better quality products (Novianto et al., 2019).

6.8. Sampling plans for mobulid rays

Continuous monitoring on sharks and rays, especially mobulid from small-scale fisheries, will be conducted by collaboration with the associated Non-Government Organizations (NGOs).

7. NATIONAL RESEARCH PROGRAMS

Research on tuna-like species, billfishes, sharks, and rays in the Indian Ocean has been a national research priority mandated in Indonesia NPOA Tuna. Since 2022, the national research programs were no longer conducted by the Research Institute for Tuna Fisheries, Ministry of Marine Affairs and Fisheries. Currently there are no national research programmes being implemented which are relevant to these species.

7.1. National research programs on blue shark

Currently there are no national research programmes being implemented which are relevant to blue sharks.

7.2. National research programs on Striped Marlin, Black Marlin, Blue Marlin, and Indo-pacific Sailfish

Currently there are no national research programmes being implemented which are relevant to billfishes.

7.3. National research programs on sharks

Currently there are no national research programmes being implemented which are relevant to sharks.

7.4. National research programs on oceanic whitetip sharks

Currently there are no national research programmes being implemented which are relevant to oceanic whitetip sharks.

7.5. National research programs on marine turtles

Currently there are no national research programmes being implemented which are relevant to marine turtles.

7.6. National research programs on thresher sharks

Currently there are no national research programmes being implemented which are relevant to thresher sharks.

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

Indonesia participates in several IOTC SC working parties. Scientific observer and port sampling program continues to monitor catch and effort of tuna and other ecologically related species to implement scientific Committee Recommendation.

Table 12. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2022

| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|---|------------------------|--|
| 12/04 | On the conservation of marine turtles | Paragraphs 3, 4, 6–10 | <p>Conservation and protection of ecologically related species, mainly marine turtles, is governed through Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021.</p> <p>Indonesia have developed particular national action plan documents. For a better implementation of NPOA, Minister of Marine Affairs and Fisheries have issued Minister Decree No. 65/2022 concerning Marine Turtles National Action Plan 2022-2024.</p> |
| 12/06 | On reducing the incidental bycatch of seabirds in longline fisheries. | Paragraphs 3–7 | <p>Conservation and protection of ecologically related species, significantly reducing incidental bycatch of seabirds, is governed through Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021.</p> <p>Indonesia had NPOA for Seabird Mitigation Measures since late 2016 and implemented in early 2017.</p> |
| 12/09 | On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence | Paragraphs 4–8 | <p>Conservation and protection of ecologically related species, significantly reducing incidental bycatch of seabirds, is governed through Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by</p> |



| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|--|------------------------|--|
| | | | <p>Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021.</p> <p>Report of ERS interaction monitored through ROS reported through a national report to SC-IOTC annually.</p> |
| 13/04 | On the conservation of cetaceans | Paragraphs 7–9 | <p>Conservation and protection of ecologically related species, mainly cetaceans, are governed through Government Regulation No. 7/1999 and Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021.</p> <p>Report of cetacean interaction monitored through ROS reported into a national report to SC-IOTC annually. However, no incident occurred related to cetacean interaction with tuna fishery.</p> |
| 13/05 | On the conservation of whale sharks (<i>Rhincodon typus</i>) | Paragraphs 7–9 | <p>Conservation and protection of Whale sharks (<i>Rhincodon typus</i>) are governed through Government Regulation No. 7/1999 and Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021 as well as Ministerial Decree No. 18/KEPMEN-KP/2013.</p> <p>Indonesia have developed particular national action plan documents. For a better implementation of NPOA, Minister of Marine Affairs and Fisheries have issued Minister Decree No 16/2021 concerning Whale Sharks National Action Plan 2021-2025.</p> <p>Report of whale sharks interaction monitored through ROS reported into a</p> |

| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|---|------------------------|--|
| | | | national report to SC-IOTC annually. However, there are no incidents that occurred related to whales sharks interaction with tuna fishery. |
| 13/06 | On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries | Paragraph 5–6 | <p>Aside from Ministerial Regulation No. 12/PERMEN-KP/2012, which governed the conservation and protection of ecologically related species, Indonesia also issued the first National Plan of Action (NPOA) for sharks and rays for 2010-2014. The 2nd NPOA for the period 2016-2020 then also has been issued and implemented as the continuation action plan of the 1st NPOA. The 2nd NPOA, however, is still being implemented because in the past years action plan implementation was quite limited due to global covid 19 pandemic that affecting many aspect of action plan implementation including travel restriction, budget cut etc.</p> <p>Report of sharks' interaction monitored through ROS, Port Sampling Program and logbook Fishing vessel and reported through a national report to SC-IOTC annually.</p> |
| 15/01 | On the recording of catch and effort by fishing vessels in the IOTC area of competence | Paragraphs 1–10 | <p>Catch and effort are mandatory for vessels above 5 GT, based on Ministerial Regulation No. 33/PERMEN-KP/2021 regarding logbook program and observer scheme, which records commercial fisheries operation onboard.</p> <p>All mandatory data reporting has been submitted annually.</p> |
| 15/02 | Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs) | Paragraphs 1–7 | All mandatory statistical reporting forms (1RC, 1DI, 1DR, 3CE, 3AR, 4SF) have been submitted accordingly. |
| 17/05 | On the conservation of sharks caught in association with fisheries managed by IOTC | Paragraphs 6, 9, 11 | Aside from Ministerial Regulation No. 10/PERMEN-KP/2021, which governed the conservation and protection of |



| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|---|------------------------|---|
| | | | <p>ecologically related species, Indonesia also issued the first National Plan of Action (NPOA) for sharks and rays for 2010-2014. The 2nd NPOA for the period 2016-2020 then also has been issued and implemented as the continuation action plan of the 1st NPOA. The 2nd NPOA, however, is still being implemented because in the past years action plan implementation was quite limited due to global covid 19 pandemic that affecting many aspect of action plan implementation including travel restriction, budget cut etc.</p> <p>Data submission related to sharks' data 2022 had been submitted to IOTC on 30th June 2023.</p> |
| 18/02 | On management measures for the conservation of blue shark caught in association with IOTC fisheries | Paragraphs 2-5 | <p>No specific management measure for blue sharks is issued at present. However, in general, conservation and protection of ecologically related species, including sharks and rays, are governed through Government Regulation No. 7/1999 and Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021.</p> <p>Data submission related to blue sharks 2022 has been submitted to IOTC on 30th June 2023 and reported through a national report to SC-IOTC.</p> |
| 18/05 | On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin, and Indo-Pacific sailfish | Paragraphs 7 – 11 | <p>No management measure is specific for billfishes: striped marlin, black marlin, blue marlin, and Indo-Pacific sailfish. However, the catches are closely monitored through logbooks and the scientific observer program and port sampling program at main landing sites.</p> |
| 18/07 | On measures applicable in case of non-fulfilment of reporting obligations in the IOTC | Paragraphs 1, 4 | <p>All mandatory statistical reporting forms (1RC, 1DI, 1DR, 3CE, 3AR, 4SF) have been submitted annually.</p> |



| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|--|------------------------|---|
| | | | <p>Improvement of data quality conducted by national validation data workshop twice a year and refreshment program for data field officers conducted annually.</p> |
| 19/01 | <p>On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence</p> | Paragraph 22 | <p>To implement IOTC Resolution 19/01, Indonesia shall reduce its yellowfin tuna catch in year 2017 until 2019 as much as 4,346 ton per year. The baseline year for yellowfin tuna catch limit is 2014. The detail methods was attached to the implementation report 2020 which was submitted to the IOTC Secretariat on 7 April 2021 in the attachment 17.</p> <p>Report on corrective actions taken to adhere to prescribed catch levels was submitted to the IOTC Secretariat on 11 January 2021 through the letter no. Ref: B. 630/DJPT/PI.110.D1/I/2021 subject the Objection Regarding IOTC Circular 2020-55 on the Implementation of Resolution 19/01 Yellowfin Tuna Allocated Catch Limit for 2021.</p> <p>The latest revision of Indonesian YFT catch limit was accommodated in the IOTC Circular 2023-47 regarding IOTC YFT allocated catch limits for 2023.</p> <p>Observer for gillnet fisheries conducted despite some gillnet fisheries being very limited and operated in the EEZ.</p> |
| 19/03 | <p>On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence</p> | Paragraph 11 | <p>In general, conservation and protection of ecologically related species, including sharks and rays, are governed through Government Regulation No. 7/1999 and Ministerial Regulation No. 12/PERMEN-KP/2012 superseded by Ministerial Regulation No.58/PERMEN-KP/2020 superseded by Ministerial Regulation No. 10/PERMEN-KP/2021.</p> <p>In addition, Manta rays (<i>Manta spp.</i>) are fully protected under Ministerial Decree</p> |



| Res. No. | Resolution | Scientific requirement | CPC progress |
|----------|--|------------------------|---|
| | | | No. 4/KEPMEN-KP/2014. Report of mobulid interaction monitored through ROS reported into a national report to SC-IOTC annually. However, no incident occurred related to mobulid interaction with tuna fishery. |
| 21/01 | On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (If not provided under Res 19/01 above) | Paragraph 23 | Not applicable |
| 22/04 | On a regional observer scheme | Paragraph 12 | Indonesia has established a scientific observer program according to IOTC resolution 11/04 related to the Regional Observer Scheme (ROS). The number of scientific observers recorded until 2022 was 67 observers. New recruitment is imminent for the continuation of the program. Since 2014 the deployment of observers has been extended to other gears, such as small-scale purse seine, coastal drifting gillnet, and troll line/hand line. Ministerial Regulation No. 33/PERMEN-KP/2021 formally regulates national observers for fishing and carrier vessels, positive progress to secure the government budget for the observer program in the future. |

9. LITERATURE CITED

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Annex 1. Summary of nominal CPUE of billfish (N/1000 hooks) derived from observer data.

| Year | Coverage (No. boat covered) | BLM | BUM | MLS | SFA | SSP | SWO | Fishing Ground |
|------|-----------------------------------|------|------|------|------|------|------|----------------------|
| 2006 | 1.6% | 0.15 | 0.09 | 0.05 | 0.03 | 0.13 | 0.37 | Eastern Indian Ocean |
| 2007 | 1.3% | 0.05 | 0.03 | 0.08 | 0.01 | 0.12 | 0.31 | Eastern Indian Ocean |
| 2008 | 1.4% | 0.06 | 0.05 | 0.03 | 0.03 | 0.17 | 0.22 | Eastern Indian Ocean |
| 2009 | 1.3% | 0.22 | 0.07 | 0.04 | 0.10 | 0.02 | 0.57 | Eastern Indian Ocean |
| 2010 | 0.8% | 0.08 | 0.10 | 0.01 | 0.04 | 0.10 | 0.35 | Eastern Indian Ocean |
| 2011 | 0.5% | 0.23 | 0.23 | nil | 0.04 | 0.03 | 0.14 | Eastern Indian Ocean |
| 2012 | 0.6% | 0.07 | 0.13 | 0.02 | 0.02 | 0.02 | 0.49 | Eastern Indian Ocean |
| 2013 | 0.2% | 0.18 | 0.20 | 0.01 | 0.06 | 0.03 | 0.34 | Eastern Indian Ocean |
| 2014 | 0.5% | 0.08 | 0.08 | 0.00 | 0.05 | 0.01 | 0.48 | Eastern Indian Ocean |
| 2015 | 0.4% | 0.13 | 0.09 | 0.01 | 0.02 | 0.02 | 0.37 | Eastern Indian Ocean |
| 2016 | 3.4% | 0.20 | 0.05 | 0.02 | 0.05 | 0.01 | 0.48 | Eastern Indian Ocean |
| 2017 | 6.9% | 0.05 | 0.02 | 0.03 | 0.04 | 0.11 | 0.24 | Eastern Indian Ocean |
| 2018 | 1.9% | 0.04 | 0.10 | 0.04 | 0.03 | 0.05 | 0.33 | Eastern Indian Ocean |
| 2019 | 6.2% | 0.14 | 0.09 | 0.02 | 0.15 | 0.04 | 0.61 | Eastern Indian Ocean |
| 2020 | 0.7% | 0.22 | 0.07 | 0.09 | 0.01 | 0.04 | 0.33 | Eastern Indian Ocean |
| 2021 | 1.7% | 0.07 | 0.09 | 0.05 | 0.09 | 0.04 | 0.31 | Eastern Indian Ocean |
| 2022 | 2.3% | 0.04 | 0.02 | 0.01 | 0.03 | nil | 0.17 | Eastern Indian Ocean |

Annex 2. Summary of nominal CPUE of some sharks (N/1000 hooks) derived from observer data.

| Year | Coverage (No. boat covered) | BSH | FAL | Fishing Ground |
|------|-----------------------------------|------|------|----------------------|
| 2006 | 1.6% | 1.62 | 0.06 | Eastern Indian Ocean |
| 2007 | 1.3% | 1.21 | 0.02 | Eastern Indian Ocean |
| 2008 | 1.4% | 0.94 | 0.00 | Eastern Indian Ocean |
| 2009 | 1.3% | 0.75 | 0.03 | Eastern Indian Ocean |
| 2010 | 0.8% | 0.77 | 0.07 | Eastern Indian Ocean |
| 2011 | 0.5% | 0.76 | 0.00 | Eastern Indian Ocean |
| 2012 | 0.6% | 2.05 | 0.00 | Eastern Indian Ocean |
| 2013 | 0.2% | 1.10 | 0.00 | Eastern Indian Ocean |
| 2014 | 0.5% | 1.10 | 0.00 | Eastern Indian Ocean |
| 2015 | 0.4% | 1.26 | 0.15 | Eastern Indian Ocean |
| 2016 | 3.4% | 0.01 | 0.00 | Eastern Indian Ocean |
| 2017 | 6.9% | 0.10 | 0.01 | Eastern Indian Ocean |
| 2018 | 1.9% | 1.68 | 0.05 | Eastern Indian Ocean |
| 2019 | 6.2% | 0.98 | 0.05 | Eastern Indian Ocean |
| 2020 | 0.7% | 1.22 | 0.00 | Eastern Indian Ocean |
| 2021 | 1.7% | 0.69 | 0.03 | Eastern Indian Ocean |
| 2022 | 2.3% | 0.20 | 0.03 | Eastern Indian Ocean |