



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

Mathew O. Silas, Saleh A. Yahya, Ranwel N. Mbukwah, Christian A. Nzowa, Daniel P. Kawiche, Peter S. Peter, Juma O. Haji, Azizi D. Mhukula, and Emmanuel A. Sweke

Deep Sea Fishing Authority, Tanzania. P.O. Box: 56, Zanzibar, Tanzania

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

<p>By IOTC Resolution 15/02 (and other data-related CMMs as noted below), final scientific data for the previous year were 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 2023, final data for the 2022 calendar year must be provided to the Secretariat by 30 June 2023)</p>	<p>NO 15/07/2023</p>
<p>By 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 were 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 15/07/2023</p>
<p>If no, please indicate the reason(s) and intended actions: Tanzania has recently strengthened its sampling of artisanal fisheries and implemented, in 2022, a programme to monitor its industrial purse seine and longline fisheries. This caused some delays in the reporting of data to the IOTC. Preliminary data was reported on 15/07/2023, with a review and a final submission in November 2023. Tanzania plans to ensure that, in the future, data are reported as per the deadlines set by the IOTC.</p>	

Executive Summary

The United Republic of Tanzania is a coastal state striving to sustainably utilise and enhance management and conservation of the fisheries resources within its marine waters. Various industrial and artisanal fisheries operate in Tanzania.

The commonly employed industrial fishing gears within the Tanzanian Exclusive Economic Zone (EEZ), and beyond, are longline and purse seine. Currently, two longlines and one purse seine operate within the Tanzania EEZ and on the high seas. Catch data of tuna and tuna-like fish species are collected using log sheets. The three industrial fishing vessels reported a total of Yellowfin tuna 2908.2 tons (t); Bigeye tuna 1130.1t, Skipjack tuna 8343t; Swordfish 6.2t; Blue marlin 0.9t, Albacore 0.03t and Striped marlin 0.07t, that is 112.9t for longlines and 12,282t for purse seine. In addition, 29 foreign fishing vessels operated in the Tanzanian EEZ and reported a total catch of 3,047.7t of tuna and tuna-like species in 2022.

Catch assessment surveys in 2022 show that four main artisanal fishing gears, namely ring nets, gill nets, handlines, and small coastal longlines used to catch tuna and tuna-like species in Tanzania. Total fish catch by species recorded were Kanadi kingfish 2.03t, Bigeye 351.22t, Swordfish 150.82t, Kawakawa 39.91t, Dogtooth tuna 3.29t, Yellowfin tuna 559.62t, Narrow barred Spanish mackerels 86.02t, Frigate tuna 963.59t, Bullet tuna 235.69t, Longtail tuna 430.1t, Skipjack tuna 342.51, Sailfish 109.93t, Wahoo 72.9t, Kawakawa 31.91t, Dolphin fish 52.83 and others including sharks and rays 325t.

For a long time, Tanzania has been actively enhancing its data collection, analysis, and reporting capabilities in the fisheries sector. Key initiatives that have been and are still being undertaken include capacity-building missions, including that of the IOTC Secretariat, to train fisheries officers in data collection and reporting. Training sessions in 2022 and 2023 focused on improving the skills of personnel involved in fisheries data collection. In addition, a Fisheries Information System (FIS) has been upgraded to incorporate data from the EEZ and territorial waters, particularly in addressing challenges facing catches from artisanal fisheries. Capacity-building efforts were provided to enumerators, particularly on fish species identification and collection of biometric and morphometric characters. Furthermore, discussions are ongoing to streamline data collection, handling, and analysis systems among various competent fisheries authorities, given the complexity of fisheries management systems in the country.

Contents

Executive Summary.....	2
1. Background/General fishery information.....	4
2. Fleet structure.....	4
3. Catch and effort.....	5
4. Recreational fishery.....	9
5. Ecosystem and by-catch issues.....	9
5.1 Sharks.....	10
5.1.1 NPOA sharks.....	10
5.1.2 Sharks finning regulation.....	10
5.1.3 Blue shark.....	10
5.2 Seabirds.....	10
5.3 Marine Turtles.....	11
5.4 Other ecologically related species (e.g., cetaceans, mobulid rays, whale sharks).....	11
6. National data collection and processing systems.....	11
6.1 Log sheet data collection and verification.....	12
6.2 Vessel Monitoring System.....	12
6.3 Observer Scheme.....	12
6.4 Port sampling programme.....	13
6.5 Unloading/Transhipment of flag vessels.....	14
6.6 Actions taken to monitor catches & manage fisheries for Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish.....	14
6.7 Gillnet observer coverage and monitoring.....	14
6.8 Sampling plans for mobulid rays.....	14
7. National research programs.....	15
7.1 National research programs on blue shark.....	15
7.2 National research programs on Striped Marlin, Black Marlin, Blue Marlin and Indo-pacific Sailfish.....	15
7.3 National research programs on sharks.....	15
7.4 National research programs on oceanic white tip sharks.....	16
7.5 National research programs on marine turtles.....	16
7.6 National research programs on thresher sharks.....	16
8. Implementation of Scientific Committee Recommendations and Resolutions of the IOTC relevant to the SC.....	19
9. Literature cited.....	21

1. Background/General fishery information

Tanzania is endowed with a coastline of about 1,424 km long, extending from the North bordering Kenya to the South bordering Mozambique. It has a territorial sea of about 64,000 km² and an Exclusive Economic Zone (EEZ) of 223,000 km². The fisheries sector provides about 30% of animal protein to the population in the country. In 2021, it was estimated that about 200,000 people are directly employed in fisheries, and about 4 million others are indirectly employed, contributing about 1.7 and 5.8 of the GDP for Mainland Tanzania and Tanzania Zanzibar, respectively.

The fishing industry in the country is divided into artisanal and industrial. The artisanal fishing activities are primarily conducted in territorial waters of less than 200m deep or within eight nautical miles from the shoreline. Artisanal fishers typically operate with modest capital, utilising traditional fishing vessels and techniques. Commonly employed vessels include dugout canoes, dhows, planked canoes, wooden and fibreglass boats, and catamarans, either powered by motors or relying on paddles and sailcloth. These vessels deploy various fishing gears, including shark nets, gill nets, purse seines, long lines, hand lines, cast nets, lift nets, scoop nets, traps, baskets, and ring nets. The gears target a diverse range of fish species, including reef fishes, small to medium aquatic species, and occasionally, large pelagic species.

Industrial fishing activities are operated both in the EEZ and high seas. Tanzania enacted a new Deep Sea Fisheries Management and Development Act Cap 388 of 2020 which superseded the Deep Sea Fishing Authority Act of 1998 and its amendments of 2007. The new Act strengthened fisheries management and governance within the Tanzanian EEZ.

2. Fleet structure

The Marine Fisheries Frame Survey conducted in 2018 in Mainland Tanzania documented a total of 9,242 small scale fishing vessels. On the other hand, the 2020 Frame Survey in Tanzania Zanzibar recorded 7,919 vessels. The small-scale fishing vessels had an average length ranging from 4m to 11m. These vessels employ various fishing gears such as hand lines, longlines, troll lines, bottom set gill nets, drift gill nets, ring nets, and purse seine. The gears target various fish species, including reef fish, small pelagic species, sharks, tuna, billfish, rays, cephalopods, and crustaceans. In other words, the majority of small-scale fisheries target multispecies mostly associated with seagrass and coral reef habitats.

Tanzania has three industrial flagged vessels of which two are longliners with 24.5m LOA, and one purse seiner with 92.11m LOA (Table 1). While the two longliners were registered and started their operations in September 2022, the purse seine was registered in January 2022 and started operations in March 2022. In addition, a total of 29 foreign fishing vessels were licenced to operate in the EEZ during 2022.

Table 1: Number of vessels operating in the IOTC area of competence by gear type and size class

Year	Gear type and size					
	LL		PS		Others	
	<24	≥24	<24	≥24	< 24	≥24
2017	0	0	0	0	10863	0
2018	0	0	0	0	9571	0
2019	0	1	0	0	9571	0
2020	1	1	0	0	9571	0
2021	1	0	0	0	9571	0
2022	0	2	0	1	17161*	0

*This figure is a summation of fish crafts recorded in the Fisheries Frame Survey of Mainland Tanzania in 2018 and the Frame Survey in Tanzania Zanzibar in 2020 (refer section 2, fleet structure)

3. Catch and effort

a. Semi Industrial and Industrial Longline and Purse seine Fisheries

Yellowfin tuna was the dominant species landed from the industrial longline vessels that fished in the IOTC area, accounting for 85% of the total catch, followed by Bigeye tuna (7.1%) that operated from September to December 2022 (Table 2a).

Table 2a. Annual catches (ton) from industrial longline reported between 2018 and 2022

Year	BET	ALB	BLM	BUM	BSH	OCS	NEI	SFA	MLS	SWO	YFT	Total
2018	0	0	0	0	0	0	0	0	0	0	0	0
2019	1,412	0	167	0	0	308	0	0	1,045	685	1,043	4,660
2020	2,191	0	85	633	325	125	0	0	2,610	1,858	1,120	8,947
2021	845	3	8	19		0	22	8	5	84	599	1,593
2022	7.1	0.03	0.9	0.2				2	0.07	6.2	92.2	107.8

Table 2b. Annual catches (ton) from industrial purse seine reported between 2018 and 2022

Year	BET	ALB	BLM	BUM	BSH	OCS	NEI	SFA	MLS	SKJ	YFT	Total
2022	1123	0	0	0	0	0	0	0	0	8343	2816	12282

Artisanal Fishery

The catches of the coastal fisheries are described from the catch reported in 2019 to 2022. And are presented in Table 2c

Generally, the fish catches from artisanal fisheries vary between years, with Kawakawa, Yellowfin, Bigeye and Skipjack dominating. Between 2019 and 2021, Kawakawa dominated, followed closely by yellowfin tuna. Conversely, in 2022, the catches of Bigeye, Kawakawa, and Yellowfin declined.

Table 2c. Annual catch (ton) of primary species reported from coastal fisheries between 2019 and 2022

Fish group	2019	2020	2021	2022
Bigeye	2248	1180	1729	351.22
Billfish	2420	858	538.9	39.82
Kawakawa	970	3983	1931.5	39.91
Kanadi Kingfish	2053	2320	-	2.03
Skipjack	-	568	331.1	342.51
Sharks and rays	2155	-	-	331.17
Swordfish	680	3212	564.3	150.82
Yellowfin	2254	2321	2075.9	559.62
Longtail tuna	-	-	1116.1	430.1

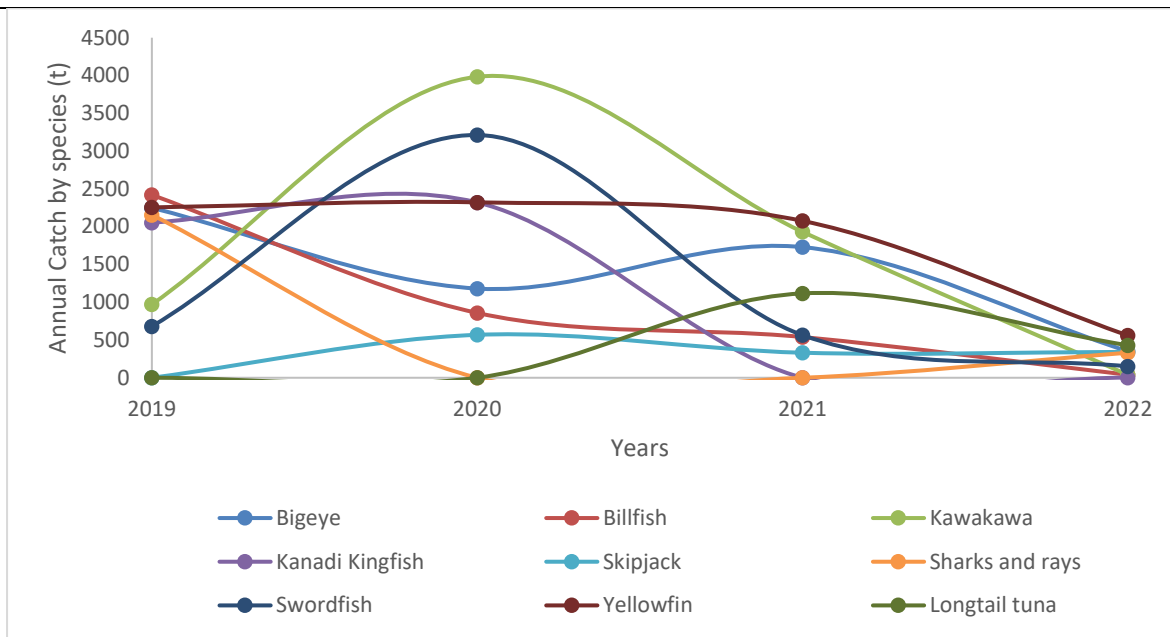


Figure 1. Historical annual catch for the artisanal fisheries by primary species, for the IOTC area of competence for the entire history of the fisheries (Ref Table 2c).



Figure 2a. Map of the distribution of fishing effort by the national fishery in the IOTC area of competence for 2022.

Figure 2b. Map of the distribution of fishing effort, by national fishery in the IOTC area of competence (average of the five previous years e.g., 2018–2022).

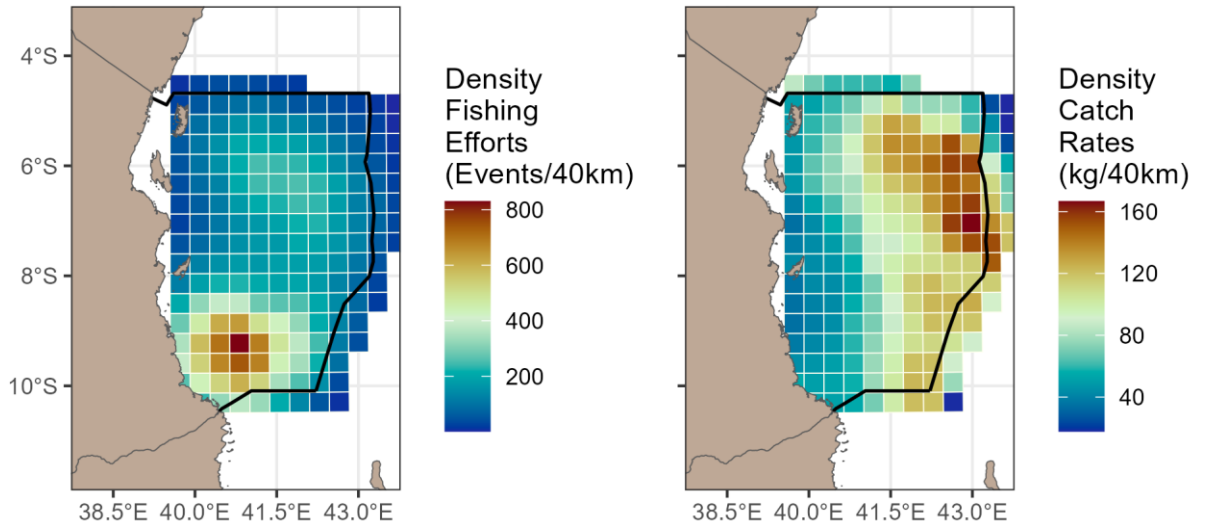


Figure 3a. Map of distribution of fishing effort and catches of Bigeye for the national fisheries in the IOTC area of competence for 2022.

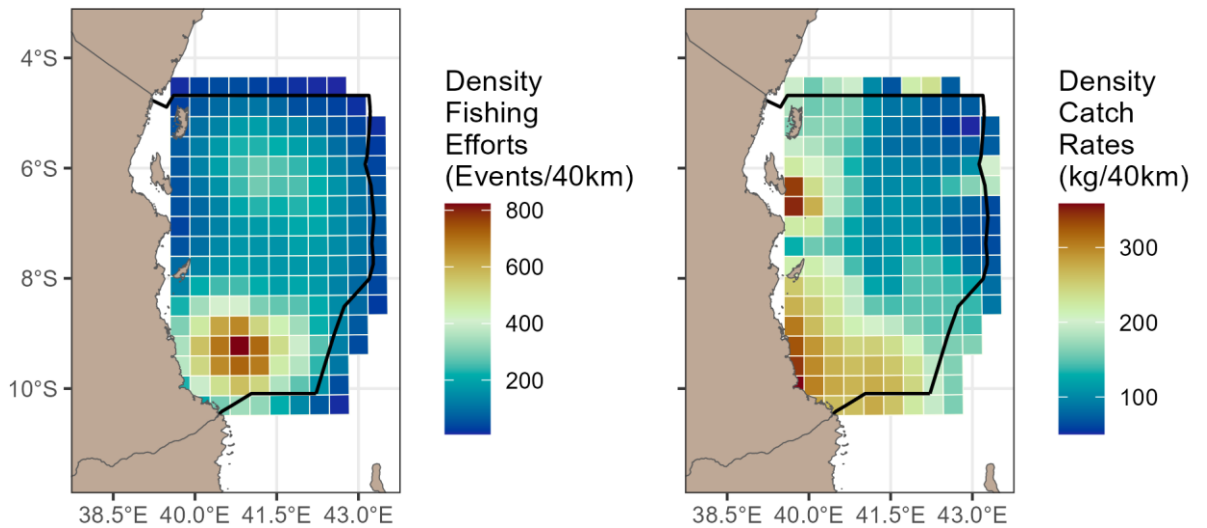


Figure 3a. Map of distribution of fishing effort and catch of Yellowfin for the national fisheries in the IOTC area of competence for 2022.

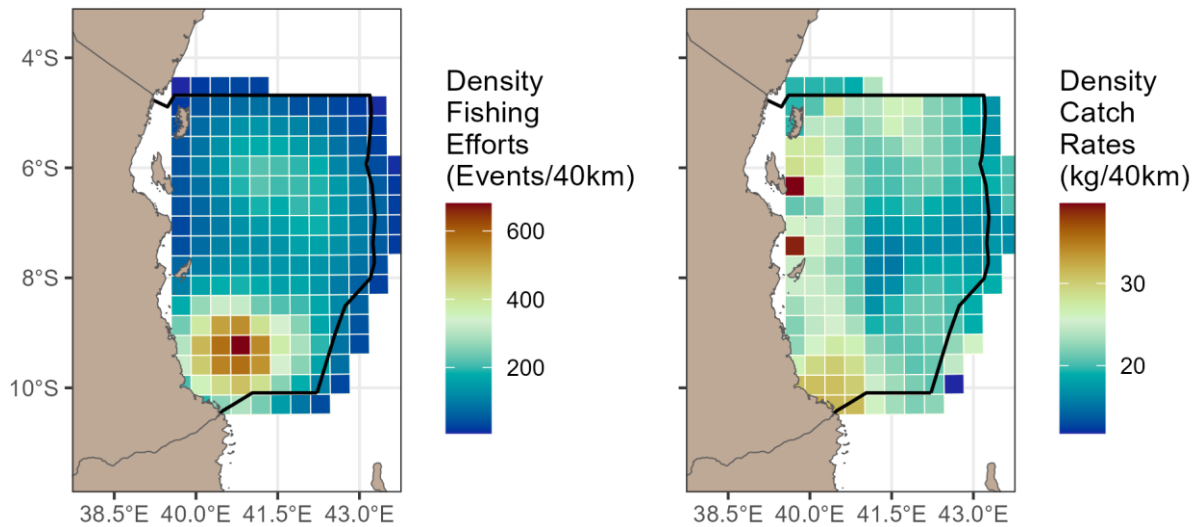


Figure 3a. Map of distribution of fishing effort and catches for Swordfish in the national fisheries in the IOTC area of competence for the year 2022.

4. Recreational fishery

Until now, specific data on sport fishing catches in Tanzania is unavailable. However, Tanzania is working to establish a robust system for collecting such data.

5. Ecosystem and by-catch issues

In the realm of national fisheries, Tanzania has incorporated the 40 Minimum Terms and Conditions (MTC) suggested by the SWIOFC, actively addressing environmental concerns. The country has enshrined the by-catch issue in its legal framework, including the Deep Sea Fisheries Management and Development Act, Cap 388, 2021, along with the Deep Sea Fisheries Management and Development of 2021, which closely monitors the by-catch handling during landing in ports.

However, Tanzania has developed comprehensive guidelines for effectively managing by-catch, demonstrating a proactive approach to ecological preservation. Tanzania has made it mandatory for all flagged vessels to carry necessary tools, such as line cutters and de-hookers, to facilitate the safe release of entangled seabirds, mammals, sharks, and sea turtles, aligning with the directives laid down by the Indian Ocean Tuna Commission (IOTC). This collective effort signifies Tanzania's commitment to sustainable fisheries and preserving its marine ecosystem).

5.1 Sharks

Enshrined within Section 21 of the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, are detailed measures that extensively oversee the conservation and management of shark populations within Tanzania's Exclusive Economic Zone (EEZ). These regulations hold significant implications for the domestic fisheries sector and extend to Tanzanian-flagged vessels operating beyond the nation's EEZ. The provisions outlined within this section serve as an important framework to ensure the sustainable and responsible utilisation of shark resources, contributing to the overall preservation and balance of marine ecosystems.

5.1.1 NPOA sharks

Tanzania is currently in the advanced stages of improving the draft National Plan of Action (NPOA) for sharks. The process entails ongoing collaboration with diverse stakeholders and the World Conservation Society to ensure comprehensive input. The anticipated completion of the plan is expected soon, marking a significant step forward in the conservation efforts for sharks. Furthermore, implementing a specialised data collection system for sharks and rays within the artisanal fishery sector has been successfully established, indicating a proactive approach towards sustainable management and protection of these vital marine species.

5.1.2 Sharks finning regulation

Tanzania Fisheries legislation strictly restricts shark finning. These legislations are overseen and enforced by the Departments of Fisheries in Mainland Tanzania and Tanzania Zanzibar, the Local Governments, and the Deep Sea Fishing Authority (DSFA). Notably, there were no reported cases of shark finning throughout 2022.

5.1.3 Blue shark

Tanzania recently updated its logbook for the fishing fleet, focusing on tuna and similar species within the IOTC (Indian Ocean Tuna Commission) area of competency. The revised logbook now encompasses specific provisions to document the catch data for blue sharks accurately. Moreover, it also includes a comprehensive mechanism to record any instances of interaction between this particular species, and the fishing equipment utilised. This initiative enhances the monitoring and management of blue shark populations, contributing to the broader conservation efforts in the region.

5.2 Seabirds

No fisheries seabirds interactions were encountered.

5.3 Marine Turtles

Marine turtles are safeguarded by law through the provisions outlined in the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, specifically in Section 21, focusing on implementing conservation and management measures. No reports on the mortality of marine turtles have been collected from the trips observed in the tuna fishery during 2022. Additionally, legal protection extends to sea turtles within the Tanzania prawn trawl fishery. In case of any encounter, they must be released immediately following the agreed standard protocol to ensure they are not damaged. Among the seven global species of sea turtles, Tanzania's coastal waters are frequented by five types: green, hawksbill, loggerhead, leatherback, and olive ridley turtles. However, only green and hawksbill turtles are known to nest in Tanzania.

Furthermore, infrastructure development and coastal erosion significantly imperil their nesting beaches. To combat these challenges, the Sea Sense organisation in Tanzania is actively raising awareness within coastal communities to protect and preserve these endangered species. Tanzania is formulating a comprehensive Marine Turtle National Action Plan, incorporating extensive contributions from various stakeholders involved in nationwide marine turtle conservation.

5.4 Other ecologically related species (e.g., cetaceans, mobulid rays, whale sharks)

Fisheries laws prohibit the utilisation of marine mammals and whale sharks. There have been no recorded by-catches involving marine mammals, whale sharks, or related species within the Tanzania jurisdiction area in the past six years (2018-2023).

6. National data collection and processing systems

For several years, Tanzania has made deliberate efforts to improve its data collection, analysis and reporting through various ways. First, by having capacity-building missions on data collection and reporting from the IOTC Secretariat. Several fisheries officers involved in data were trained in 2022 and 2023. Second, the fisheries information system (FIS) has been improved to accommodate data from the EEZ and territorial waters that cover artisanal fisheries. Third, capacity-building training on species identification and measurement of biometric and morphometric characteristics was conducted for enumerators. Fourth, discussions are underway to harmonise data collection, handling, and analysis systems from relevant fisheries' competent authorities, given the country's complexity of fisheries management systems.

Below is a detailed account of specific data collection processing and processing systems:

6.1 Log sheet data collection and verification

In the Tanzanian Exclusive Economic Zone (EEZ) and on the high seas, all licensed fishing vessels, whether flagged national or foreign, must report their daily catches to the Deep Sea Fishing Authority (DSFA). Captains of these vessels record the daily catches on log sheets, which are then emailed to the DSFA. These log sheets encompass all the information required by the resolutions of the Indian Ocean Tuna Commission (IOTC). They are subsequently integrated into the Fisheries Information System or Catch Assessment System for storage and analysis. Similarly, data on artisanal catches are gathered from specific landing sites in the 16 coastal districts by trained Beach Management Units (BMUs) members. The selection of landing sites is determined based on the number of fishing vessels and their accessibility, with a monthly sampling protocol in place to ensure unbiased data collection.

In mainland Tanzania, the sampling process entails ten designated days per month, while in Zanzibar, this number is increased to sixteen. Trained beach recorders collect data from 32 landing sites in mainland Tanzania and 30 sites in Zanzibar, all of which undergo thorough scrutiny by District Fisheries Officers before being incorporated into the fisheries databases. The stored data are meticulously cross-verified by fisheries officers and scientists before undergoing comprehensive analysis. These data are the foundation for generating annual fisheries statistical reports, guiding decision-making processes, facilitating scientific publications, and enhancing public awareness.

Since 2004, Tanzania continues to use logbooks to collect and authenticate various fisheries-related data, including information on catch, by-catch, transshipment, and the entry and exit of fishing vessels within its EEZ. These logbooks undergo regular reviews to accommodate evolving data requirements and ensure the accuracy and reliability of the information.

6.2 Vessel Monitoring System

Tanzania started to use an ARGOS Vessel Monitoring System (VMS) in 2009. The system underwent an upgrade to Themis Web VMS in 2016. This system is designed to be compatible with various VMS types utilised in the IOTC Area of competence. According to legislation, all fishing vessels in the Tanzania waters must install and maintain VMS and an Automatic Identification System (AIS).

6.3 Observer Scheme

Tanzania continued to implement regional observer scheme (ROS) using 22 trained fishery observers. Tanzania, through DSFA collaborated with IOTC to train 10 scientific fisheries observers. This training aims to strengthen the capacity of Tanzania. In 2022, three Observers were deployed for 30 days/trip in the Tanzanian-flagged vessels.

Table 3. Annual observer coverage by operation, e.g., longline hooks, purse seine sets (for the most recent five years at a minimum, e.g., 2018–2022 or to the extent available).

Year	Gear	Coverage %
2018	NA	NA
2019	LL	100
2020	LL	100
2021	LL	100
2022	PS	20

6.4 Port sampling programme

No port sampling was done in 2022. Trained landing site observers collect size data on seven coast landing sites.

Table 4. Number of vessel trips or vessels actively monitored, by species and fishery

Year	Gear			
	LL	PS	GN	Others (coastal fisheries)
Trip 2018	N/A	N/A	N/A	120 days/selected landing sites
Trip 2019	1	N/A	N/A	120 days/selected landing sites
Trip 2020	1	N/A	N/A	90 days/selected landing sites
Trip 2021	1	N/A	N/A	90 days/selected landing sites
Trip 2022	2	1	N/A	90 days/selected landing sites

Table 5. Number of fish measured, by species and fishery

Year	LL					PS					
	SKJ	YFT	BET	ALB	BLM	SKJ	YFT	BET	ALB	BLM	SWO
2018	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2019	01	44	54	8	17	N/A	N/A	N/A	N/A	N/A	N/A
2020	02	65	122	6	23	N/A	N/A	N/A	N/A	N/A	N/A
2021	03	74	133	8	37	N/A	N/A	N/A	N/A	N/A	N/A
2022	05	61	103	7	25	70	40	20	23	N/A	N/A

6.5 Unloading/Transshipment of flag vessels

No offloading or transshipment took place in Tanzanian designated ports in 2022, as the longline vessels started fishing operations in October 2022 and unloaded the catch in January 2023. In addition, all catches from the flagged purse seine were unloaded in a foreign port.

Table 6. Quantities by species and fishery landed in ports located in the IOTC area of competence

Year	BET	ALB	BLM	BUM	BSH	OCS	NEI	SFA	MLS	SKJ	YFT	Total
2022	1123	0	0	0	0	0	0	0	0	8343	2816	12282

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

The URT remains actively engaged in the vigilant oversight of catch monitoring and fisheries management, focusing on Striped Marlin, Black Marlin, Blue Marlin, and Indo-Pacific Sailfish. This commitment is realised through applying IOTC Conservation and Management Measures (CMMs) embedded within its legislative framework. The URT strategically enforces these measures by deploying comprehensive on-board monitoring systems, conducting thorough inspections, and seamlessly integrating the stipulated terms and conditions of fishing licences. This multifaceted approach ensures a robust and effective regulatory system to manage these key marine species sustainably.

6.7 Gillnet observer coverage and monitoring

There are only small gillnets in Tanzania waters which are used by artisanal vessels. The fishery is monitored along with the other components of the artisanal fishery. As a direct consequence, there is a notable absence of observers specifically assigned to monitor this non-existent fishery. Within the framework of the Indian Ocean Tuna Commission (IOTC), there exists a significant directive encouraging Contracting Parties (CPCs) to increase observer coverage or adopt alternative data collection methodologies for gillnet fishing vessels. However, it is noteworthy that, as of now, such vessels are not operative in Tanzanian waters.

6.8 Sampling plans for mobulid rays

No sampling plan was made in 2022

7. National research programs

For the past three years, Tanzania has implemented 12 research programmes in its marine waters (Table 8). Tanzania plans to initiate new research programs in 2024 through Tanzania Scaling up Sustainable Marine Fisheries and Aquaculture Management (TASFAM) Project.

7.1 National research programs on blue shark

The Deep Sea Fishing Authority (DSFA) has strategically planned to coordinate comprehensive research programs on blue sharks in Tanzania. This collaborative initiative is set to unfold in partnership with the Wildlife Conservation Society (WCS), reflecting a concerted effort to enhance our understanding of blue shark populations and ecosystems in the region.

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

The Deep Sea Fishing Authority (DSFA), in collaboration with research institutions in Tanzania is strategically planning to oversee scientific research focusing on critical biological, ecological, and behavioural characteristics. This encompasses aspects such as life history, migrations, post-release survival, and developing guidelines for safe release. The research aims to identify nursery grounds, enhance the selectivity of fishing practices, and improve fishing gear, specifically for Striped Marlin, Black Marlin, Blue Marlin, and Indo-Pacific Sailfish.

The outcomes of these comprehensive research endeavours will be disseminated to the Working Party on Billfishes and the Scientific Committee. This information will be shared through working documents and included in the national Annual Reports, contributing to a collaborative and informed approach to sustainable management of these key marine species.

7.3 National research programs on sharks

The collaborative efforts of the Deep Sea Fishing Authority (DSFA) and the World Conservation Society (WCS), in conjunction with the Tanzania Fisheries Research Institute (TAFIRI), encompass the systematic collection of shark catch data, size frequency records, and genetic information. This comprehensive program involves training data collectors, establishing a robust database, identifying species using DNA analysis, and meticulously examining the data to discern species abundances and distribution. Preliminary findings have unveiled that despite being data-poor, Tanzania is host to five Critically Endangered shark species, including the oceanic whitetip shark (*Carcharhinus longimanus*), ragged tooth shark (*Carcharias taurus*), shorttail nurse shark (*Pseudoginglymostoma brevicaudatum*), *Sphyrna lewini*, and great hammerhead shark (*S. mokarran*). However, critical knowledge gaps persist regarding the reproductive

importance of Tanzanian waters for these species, and the existence of specific habitats crucial for their survival remains uncertain. Artisanal fishery catches from Tanzania, particularly around the islands of Unguja and Pemba, indicate the presence of juvenile *C. longimanus* and pregnant *S. lewini*, hinting at potential nearby nursery and parturition areas.

Nevertheless, these areas have not been officially confirmed or located, necessitating further investigation. Additionally, the shorttail nurse shark (*P. brevicaudatum*), being the sole Critically Endangered shark species endemic to the Western Indian Ocean (WIO), emerges as a paramount focus for research and conservation efforts in Tanzania and other countries within its range. This is particularly crucial given the documentation of this species in artisanal fisher catches in Tanzania (WCS, unpublished data).

7.4 National research programs on oceanic white tip sharks

Currently, no national research programs are specifically dedicated to oceanic white tip sharks. However, through the EEZ research agenda of 2020-2030, plans will be put in place to implement this requirement.

7.5 National research programs on marine turtles

Presently, there are no national research programs specifically dedicated to marine turtles. However, it is worth noting that Sea Sense is actively involved in turtle monitoring and conservation efforts.

7.6 National research programs on thresher sharks

Currently, no national research programs are dedicated to thresher sharks. However, it is worth noting that Sea Sense is actively involved in turtle monitoring and conservation efforts.

Table 8. Summary table of national research programs, including dates.

Project title	Period	Countries Involved	Budget total in USD	Funding source	Objectives
Assessment of consumption patterns and factors associated to under consumption of tuna and tuna-like species in Tanzania	2020-2022	Tanzania	50,000	Government and World Bank	To gain a full understanding of the consumer's perceptions, attitudes and beliefs, the level of knowledge the community on nutritive and health benefits of commonly caught tuna and tuna-like species as well as to generate scientific evidence that will help to positively

					transform consumer's perceptions, attitudes and beliefs on the fish.
Application of genetics for sustainable exploitation of narrow-barred Spanish mackerel in Tanzanian waters.	2020-2022		20,000	Government and World Bank	To investigate the genetic structure, stock connectivity and reproductive aspects of COM in Tanzanian waters
Delineation of the genetic stock structure of the Queen mackerel to enhance fisheries management in Tanzania	2020-2022		20,000	Government and World Bank	To assess the migration patterns and the extent of genetic diversity for effective management
The influence of environmental variables on the life history of neritic tuna in coastal waters of Tanzania.	2020-2022		20,000	Government and World Bank	To investigate the influence of environmental variables on the spawning timing and areas of the dominant neritic tuna in the Tanzania coastal waters for better management of the stock.
Reduction of post-harvest loss of tuna and tuna-like species through value addition to improve food security in Tanzania	2020-2022		50,000	Government and World Bank	To promote value addition, PHL reduction and sustainable utilization of tuna and tuna-like species along the product VC for improved livelihoods.
Economic modelling with biological extension of sustainable tuna fishery policy in Tanzania	2020-2021		49,400	Government and World Bank	To develop a dynamic bio-economic model in order to provide a tool for policy analysis of tuna and tuna-like species fishery management and the economic development in Tanzania.
Investigating post-harvest loss of tuna and tuna related	2020-2022		50,000	Government and World Bank	To investigate post-harvest loss of tuna and tuna related species along its value chain so as to

species in Tanzanian marine waters					improve handling and processing techniques
Investigating the biology and ecology of the most dominant and commercially important tuna and tuna-like species (Bigeye tuna, Yellowfin tuna and Swordfish) in Tanzania's EEZ, Territorial, and internal water	2020-2022		119,859	Government and World Bank	To investigate the biology and ecology of the most dominant and commercially important tuna and tuna-like species namely Bigeye tuna, Yellowfin tuna and Swordfish in Tanzania's EEZ, Territorial, and internal waters.
Undertaking an analysis of stock structure and genetic connectivity of tuna and tuna like species in Tanzania EEZ, territorial and internal waters	2020-2022		199,000	Government and World Bank	To determine the stock structure and genetic connectivity of Big eye (BET), Yellow fin (YFT) and Skipjack (SJT) in Tanzania's EEZ, territorial seas and internal waters) for better understanding of the size, yield and connectivity of the stocks for management purposes
Tuna fisheries economic profile	2020-2021		57,000	Government and World Bank	To determine the economic profile of tuna and tuna-like fishery and investigate the challenge impeding its contribution to the economic growth of Tanzania.
Oceanographic factors influencing tuna and tuna-like species in the Tanzanian exclusive economic zone, territorial seas and internal waters.	2019-2021		136,000	Government and World Bank	To investigate physical and biological oceanographic conditions influencing the spatial-temporal distribution of available tuna and tuna like species, and their catches in the Tanzanian waters
Genetic diversity and influence of environmental variables on frigate tuna (<i>Auxis thazard</i>)	2020-2022		20,000	Government and World Bank	To determine the genetic structure and connectivity for the sustainable exploitation of Frigate tuna stocks in Tanzania's waters.

reproductive performance in Tanzania's waters for sustainable exploitation					
--	--	--	--	--	--

8. Implementation of Scientific Committee Recommendations and Resolutions of the IOTC relevant to the SC

Table 9. 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	Transposed under the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, under Section 21 with regards to Conservation and Management Measures, as well as under Section 25 about marking and protection of set fishing gears.
12/06	On reducing the incidental by-catch of seabirds in longline fisheries.	Paragraphs 3–7	Transposed under the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, Section 21 regarding Conservation and Management Measures, and Section 25 concerning marking and protection of set fishing gear. Flagged longline vessels practice night setting to reduce the incidence of seabird interaction
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Transposed under the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, under Section 21 with regards to conservation and management measures, as well as under Section 25 concerning marking and protection of set fishing gears.
13/04	On the conservation of cetaceans	Paragraphs 7–9	Transposed under the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, under Section 21 with regards to Conservation and Management Measures, as well as under Section 25 concerning the marking and protection of set fishing gears.
13/05	On the conservation of whale sharks (<i>Rhincodon typus</i>)	Paragraphs 7–9	Transposed under the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, under Section 21 with regards to Conservation and Management Measures, as well as under Section 25 concerning marking and protection of set fishing gears.
13/06	On a scientific and management framework for the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	The ongoing process of the establishment of the NPoA-Shark and the establishment of the National Observer Programme will play a more significant role in the conservation and management of sharks and rays in the United Republic of Tanzania. Sustainable monitoring of catch and provision of awareness to fishing vessel masters on ETPs



Res. No.	Resolution	Scientific requirement	CPC progress
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	Flag vessels must have log books for data collection (Tanzania has provided fishing logbooks to flagged fishing vessels) according to Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, Section 21 with regards to Conservation and Management Measures, as well as under section 25.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Catch, effort and size data for 2022 were submitted.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	It is prohibited by law to possess shark fins without carcasses. Ongoing process on establishing the NPOA-Sharks for the conservation and management of sharks and rays in the United Republic of Tanzania.
18/02	On management measures for the preservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	Transposed under the Deep Sea Fisheries Management and Development Act, Cap 388 of 2020, under Section 21 with regards to Conservation and Management Measures, as well as under Section 25 concerning marking and protection of set fishing gears.
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish.	Paragraphs 7 – 11	Tanzania continues to monitor the catch of billfish from both semi-industrial longline vessels and artisanal fisheries while ensuring that they do not exceed the 2014 and 2015 catches as per Resolution 18/05.
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	Tanzania strives to meet the reporting obligation of the IOTC. The compliance level has improved, and it is anticipated that support from IOTC will enhance reporting.
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 21/01 below</i>)	Paragraph 22	Tanzania implements the Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock.
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	On the Conservation of Mobulid Rays caught in Association with Fisheries in the IOTC Area of Competence, Paragraph 11 Catch data of mobulid rays has been collected.
21/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence (<i>If not provided under Res 19/01 above</i>)	Paragraph 23	As provided under resolution 19/01 above
22/04	On a regional observer scheme	Paragraph 12	Programme for training and placing observers on board commercial fishing vessels exist. In addition, sampling at landing sites and frame surveys are conducted.



9. Literature cited

- i. DSFA (2022) The biology and ecology of Bigeye, Yellowfin tunas and Swordfish in Tanzania
- ii. Marine Fisheries Frame Survey Report Mainland Tanzania 2018. Ministry of Livestock and Fisheries, Tanzania
- iii. Marine Turtle National Action Plan (2020-2025). Ministry of Livestock and Fishery. Tanzania (Draft).
- iv. Tanzania Annual Fisheries Statistical Report (2020). Dodoma, Tanzania.
- v. Zanzibar Fisheries report 2021. Zanzibar, Tanzania
- vi. Zanzibar Fisheries Frame Survey 2018. Department of Fisheries Development, Zanzibar, Tanzania,