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National Report on the Status of Fisheries and Aquaculture in TRINIDAD AND TOBAGO

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OVERVIEW

Trinidad and Tobago (TTO) is located northeast of Venezuela between 10° and 11° N and 60° 30' and 62° W. The country is separated from Venezuela by the 7 to 20 mile wide Gulf of Paria. The overall land area is 5,128km^2 with 704 km of coastline and an Exclusive Economic Zone area of 77,502km^2, making the ocean space some fifteen times the land space. According to the World Bank, agriculture, forestry and fishing contributed 0.96% of Gross Domestic Product (GDP) in 2021, representing a decline from 1.17% the previous year. The fisheries sector contributes about 14% of agricultural GDP and 0.1% of the national GDP, the contribution to GDP being dominated by the oil and gas sector. Nevertheless, fisheries is an important contributor to food security, employment, and domestic and foreign trade, and it supports and enhances the social, economic and cultural stability of its numerous fishing communities. Annual landings in the marine capture fisheries are estimated at about 13,084 metric tonnes, with the ex-vessel value of the commercial landings from Trinidad (70% total landings) being in the vicinity of TT$242.8 million. TTO is a net importer of fish and fish products (chilled, frozen, processed or live); in 2022 the value of exports was estimated at TT$90.7 million and the corresponding value of imports was estimated at TT$366.6 million.[1] There are at least 25 companies in Trinidad engaged in the import and export of fish and fish products. Overall, the fishing subsector comprises about 2,892 fishing vessels and about 6,001 fishers. In 2012, through surveys at fish landing sites, over 800 land-based workers were identified as being directly involved in the fishing sector in Trinidad, performing a range of roles: vendors, wholesale truckers, hustlers at fish landing sites, fishing boat and net builders/repairers, electricians, mechanics, welders and others involved in refrigeration. While in general most fishers and vessel owners are male (based on a 2015 vessel census it was estimated that 90% of the artisanal vessel owners in Trinidad were male), there is an undetermined number of females assuming both roles. Females tend to dominate in the respective processing activities. Annual aquaculture production of food fish is approximately 17 tonnes (valued at approximately TT$255,000).

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[1] Source: Central Statistical Office, Ministry of Planning and Development

Also, an unknown quantity and value of numerous species and varieties of ornamental fish is produced. There are approximately 100 aquaculture establishments (subsistence, small and commercial) in Trinidad and Tobago. The estimated number of persons employed in aquaculture is 200 (subsistence, small and commercial) with approximately 30 % being females. This report provides details mainly for Trinidad on production; industry operations; management measures; the institutional and legal framework; research, education and training; key developments over the last twenty years and projections for future advancement of the fisheries and aquaculture sub-sectors as we transition towards a blue economy. Similar details are provided for Tobago as available. Further information may be obtained from TTO's national reports submitted to the meetings of the Caribbean Fisheries Forum in 2017, 2019, 2022 and 2023.

1. FISHERIES SUB-SECTORS

The sub-sectors specific to fisheries in Trinidad are diverse, ranging from inland fisheries (mainly subsistence, low level commercial) for food (on the local market) and for aquarium/ornamental purposes (for the export market) to commercial marine capture fisheries targeting fish species as food for both the local and export markets, non-vessel fishing and recreational fishing. Inland fisheries utilize cast nets, dip nets, fish pots, hook and line, and bait stations (as in the case of the Black River Conch – *Pomacea* spp.) targeting food fish species such as Cascadura (*Hoplosternum spp)*, Catfish (*Rhamdia spp)*, Guabine (*Hoplias spp)*, Coscorob (*Cichlasoma spp)*and Black River Conch (*Pomacea spp)*. Fish species caught for the aquarium/ornamental fish trade include Pike Cichlids (*Crenicichla spp)*, Blue Acara (*Aequidens spp)*, Bronze Catfish (*Corydoras spp)*, Guppies (*Poecilia spp)*, and Leaf Fish (*Polycentrus spp)*. In the marine capture fisheries, pelagic, demersal and reef species are targeted using mainly artisanal fishing vessels (multi-gear and trawl) and non-artisanal trawlers in waters under TTO's jurisdiction. In addition, highly migratory pelagic species are targeted by non-artisanal longline vessels in areas beyond national jurisdiction. There is also non-vessel fishing involving hand collection of species such as crabs and oysters in estuarine areas (mangrove swamps). The recreational fishery comprises a range of vessels, from artisanal vessels (pirogues) to cabin cruisers and sport fishing vessels. Activities are of various scales from family type activities on weekends and public holidays either using handlines off a pier or jetty or rocks or artisanal vessels using a range of gear, to lucrative commercial charter boat enterprises offering the recreational fishing experience to tourists, to sportfishing or game fishing tournaments attracting vessels from neighbouring countries. This fishery targets a range of species from reef species using spearguns to pelagic species using rod and reel. The inland and recreational fisheries are not well documented, though there exists some historical information on recreational fisheries (Mike, 1993 and 1996; Shoy, 2010 and Mohammed, 2012).

The major aquaculture food species are Tilapia (*Oreochromis spp*) and Cascadura (*Hoplosternum spp*) which are reared mostly in intensive recirculating tank based systems. Ornamental aquaculture involves a diverse range of non-native species both for the local and export markets. There are 21 commercial aquaculture establishments for the rearing of food of which 18 focus on grow out of fingerlings and 3 function as hatcheries, two of the grow out farmers also started hatcheries. There are also numerous small farms and hobbyists producing aquarium/ornamental fish.

The post-harvest sector comprises a range of processors and traders (importers and exporters). In Trinidad there are 12 fish processing plants (for food fish) and about 25 companies engaged in the import and export of food fish. In Tobago there are three operational processing plants for food fish. As currently there are no dedicated processors of local aquaculture produce for food, farmers will undertake the processing themselves, upon the request of customers, at an additional cost. Two major businesses are engaged in the export of ornamental fish (they often purchase from small operators and hobbyists), with a total value of TT$810,592 from 120 consignments between October 2021 and September 2022. There are also approximately 17 persons and businesses importing ornamental fish at varying frequencies, valued at approximately TT$326,577 from 46 consignments between October 2021 and September 2022.

2. PRODUCTION

Inland Fisheries and Aquaculture

Annual aquaculture production of food fish is approximately 17 tonnes (valued at approximately TT$255,000). Also, an unknown quantity and value of numerous species and varieties of ornamental fish is produced. There are approximately 100 aquaculture establishments (subsistence, small and commercial) in Trinidad and Tobago. The estimated number of people employed in aquaculture is 200 (subsistence, small and commercial) with approximately 30 % being female.

Marine Capture Fisheries

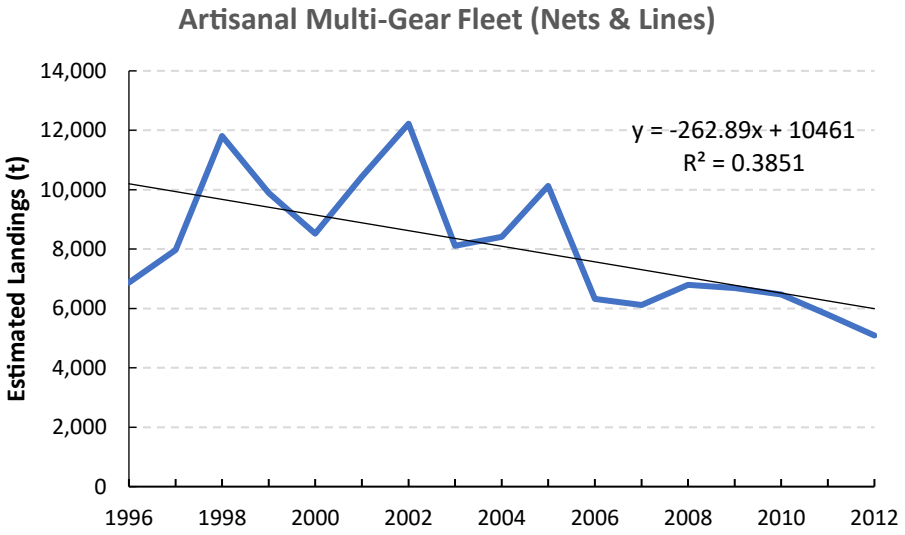
The fish landings from the marine capture fisheries of TTO, which are multi-fleet, multi-gear and multi-species, are estimated at some 13,084 metric tonnes for 2021 (preliminary estimate). About 70% of the total estimated landings is from the commercial fisheries of Trinidad with an estimated ex-vessel value of about TT$ 242.8 million. Of this value, TT$ 83.7 million were generated by the non-artisanal longline fleet of 25 vessels which landed 1,187 metric tonnes (tunas and other highly migratory pelagic species including swordfish and sharks), with TT$ 80.9 million (US$ 11.9 million) generated from exports (average US$ 11.64/kg), and TT$ 2.2 million from domestic sales (average TT$ 13.55/kg). Current data for the other fishing fleets are not available, but the annual landings of the Trinidad inshore artisanal (small-scale) fleet are usually about 5,540 tonnes with an ex-vessel value of about TT$ 114 million. The annual landings of the Trinidad non-artisanal trawl and fish pot/line fleets is approximately 2,260 metric tonnes, with an estimated ex-vessel value of about TT$ 45 million and an average fish price of TT$ 20/kg.

Considering a combination of both landed weight and value, the most dominant species in the artisanal gillnet and line fisheries of Trinidad are the mackerels (Serra Spanish Mackerel and King Mackerel), Whitemouth Croaker, as well as several species of sharks and weakfish. The Lane Snapper and other snappers are particularly dominant in the artisanal line and pot fisheries, with the Caribbean Spiny Lobster also dominant in the pot fisheries. In the trawl fisheries, Penaeid shrimp are targeted due to their high value, with the Southern Brown Shrimp and Southern Pink Shrimp being the most dominant, followed by the Southern White Shrimp, the Atlantic Seabob, and the Pink Spotted Shrimp. Also dominant and of commercial value in

the trawl catches are the Whitemouth Croaker, Lane Snapper, several species of weakfish, and the Common Snook.

In Tobago, the artisanal fiberglass pirogues use pots, nets, spears, and lines in various fishing methods (including *a-la-vive* or live bait fishing, palangue or bottom-set longline fishing, banking, towing, and trolling) for ad hoc fishing as opposed to targeting specific species of fish. The fish landed is sold retail (by vendors or fishers) at landing sites or by mobile vendors, or sold wholesale to hoteliers, restaurateurs or processors (large or small)[2].

The non-artisanal pelagic longline fleet targets yellowfin and bigeye tuna as well as swordfish, with albacore tuna, smaller tunas, marlins, shark, and mackerels being retained as bycatch. Production by this fleet (target and bycatch) ranged between 1058 t to 1512 t over the past 8 years. The most abundant species of the fleet's landings is yellowfin tuna; on average accounting for 85% over the last 8 years. Eighty percent (80 %) of the fleet's landings are exported on average. The major market is the United States of America (USA). Over the past 8 years the ex-vessel value of the exports to the USA ranged conservatively between TTD 44m (USD 6.5m) and TTD 81m (USD 12m).



[2] Source: Department of Marine Resources and Fisheries, Division of Food Security, Natural Resources, the Environment and Sustainable Development, Tobago House of Assembly

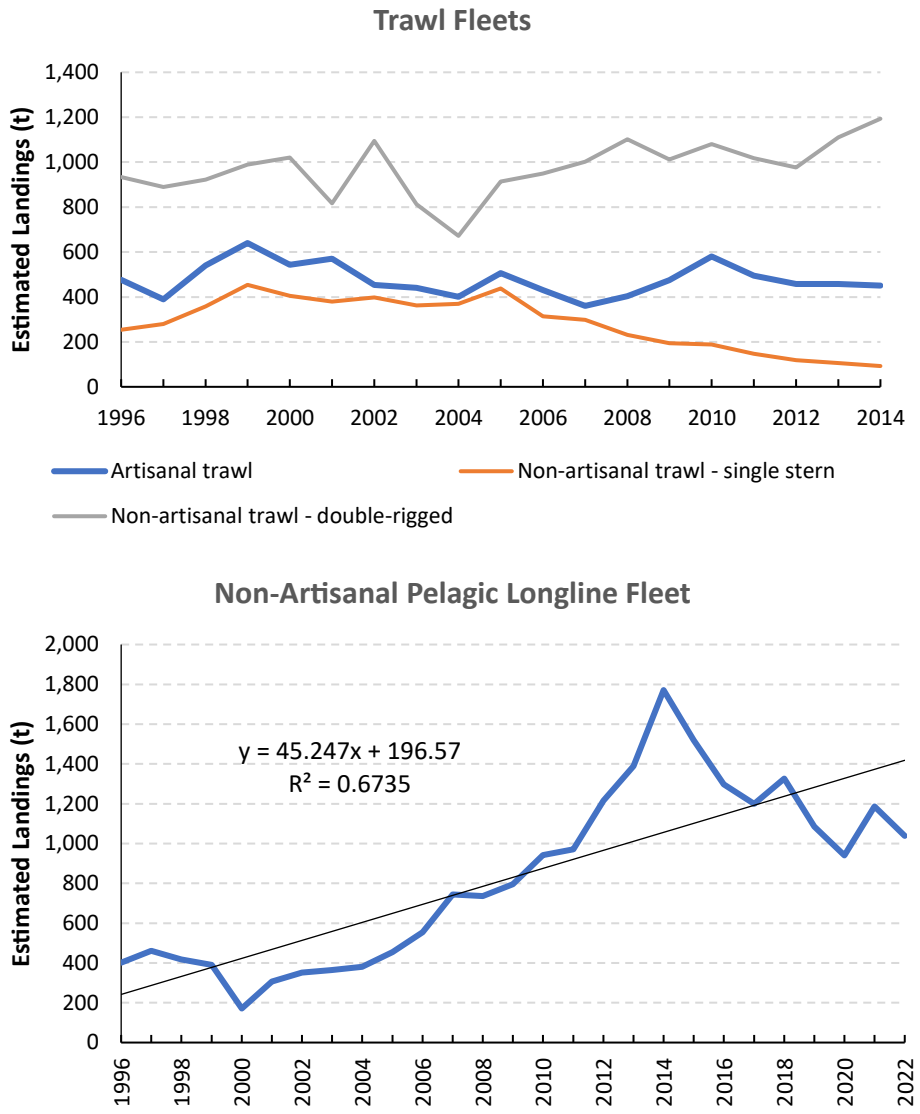


Figure 1. Trends in estimated landings (tonnes - t) of selected fleets in Trinidad

Figure 1. depicts the trends in estimated annual landings for selected fleets in Trinidad. The annual landings of the artisanal multi-gear fleet (using predominantly nets and lines; non-trawl) have generally declined between 1998 and 2012, with the highest landings in 2002 (12t) and the lowest in 2012 (5t). In the case of the artisanal trawl fleet, the annual landings have remained relatively stable over the period 1996 to 2014 (average annual landings of 477t, with the highest in 1999 of 640t and lowest in 2007 of 360t). The annual landings of the non-artisanal, single stern trawl fleet ranged from 254t to 454t over the period 1996 to 2005, after which it decreased steadily from 438t in 2005 to 93t in 2014 while similar estimates for the non-artisanal double-rigged trawl fleet averaged 974t over the period 1996 to 2014, with the highest in 2014 of 1,193t and lowest of 672t in 2004. The annual landings of the non-artisanal longline fleet have generally increased between 1996 and 2022, with the lowest of 171t in 2000 and highest of 1,771t in 2014, with a subsequent decline to 1,038t in 2022.

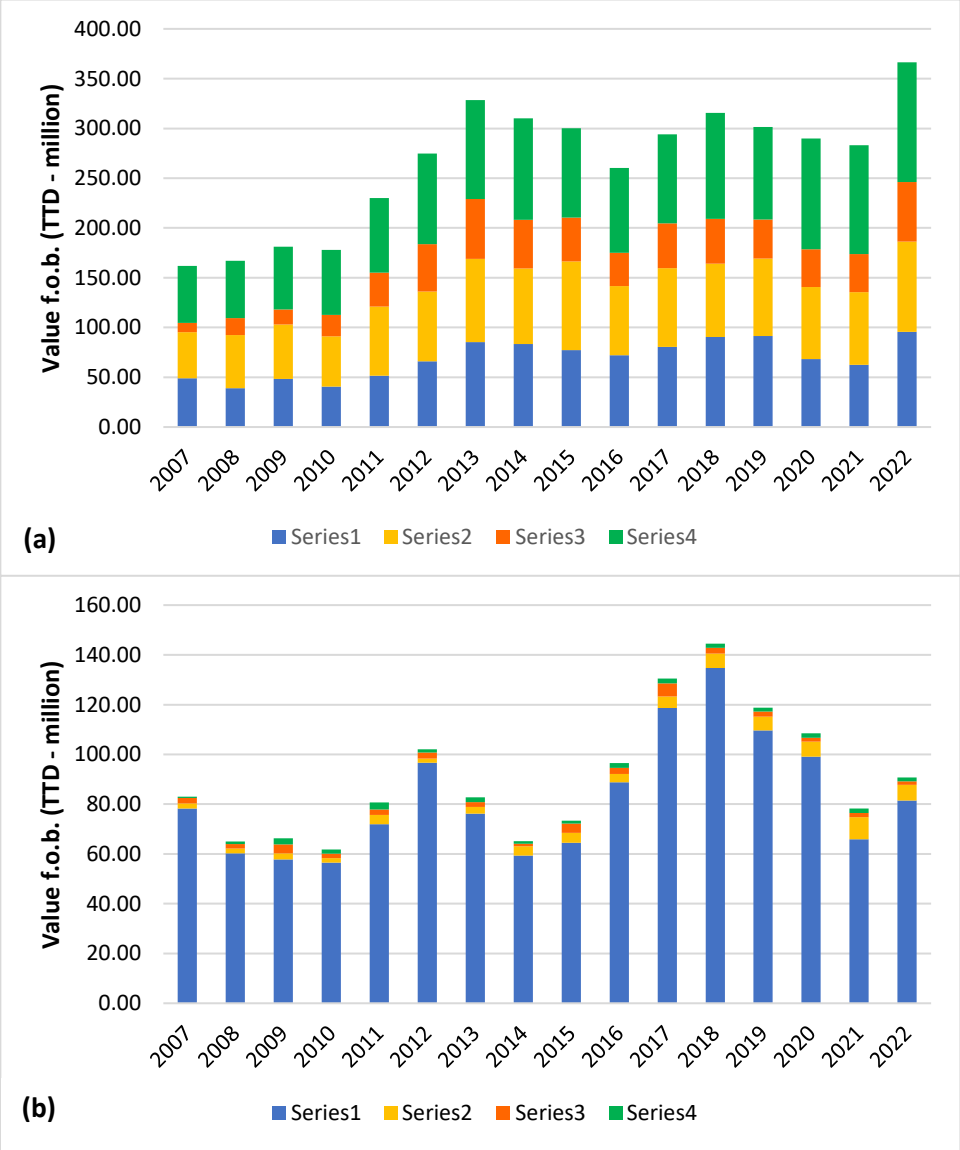


Figure 2. The Value of Fish (a) imported into; and (b) exported from Trinidad and Tobago between 2007 and 2022 – Data Source: Central Statistical Office, Ministry of Planning and Development

Series	
1	Fish, fresh (live or dead), chilled or frozen
2	Fish, dried, salted or in brine; smoked fish (whether or not cooked before or during the smoking process); flours, meals and pellets of fish, fit for human consumption
3	Crustaceans, molluscs and aquatic invertebrates, whether in shell or not, fresh (live or dead), chilled, frozen, dried, salted or in brine; crustaceans, in shell, cooked by steaming or boiling in water, whether or not chilled, frozen, dried, salted or
4	Fish, crustaceans, molluscs and other aquatic invertebrates, prepared or preserved, n.e.s.

Trade

TTO is a net importer of fish and fish products (chilled, frozen, processed, or live). **Figure 2**. depicts the value of the trade in fish and fish products between 2007 and 2022. The value of fish and fish products imported has increased considerably from TT$161.7 million in 2007 to TT$366.6 million in 2022 with processed products accounting for between 56% and 66% total value in any given year. There is some annual variability in exports of fish and fish products, with peaks observed in 2007 (TT$102 million), 2017 (TT$130.5 million) and 2018 (TT144.5 million). Exports comprise primarily fresh or frozen fish and to a lesser extent live fish (mainly in the aquarium, ornamental fish trade) – ranging between 84% and 95% of total value of fish and fish products exported in any given year.

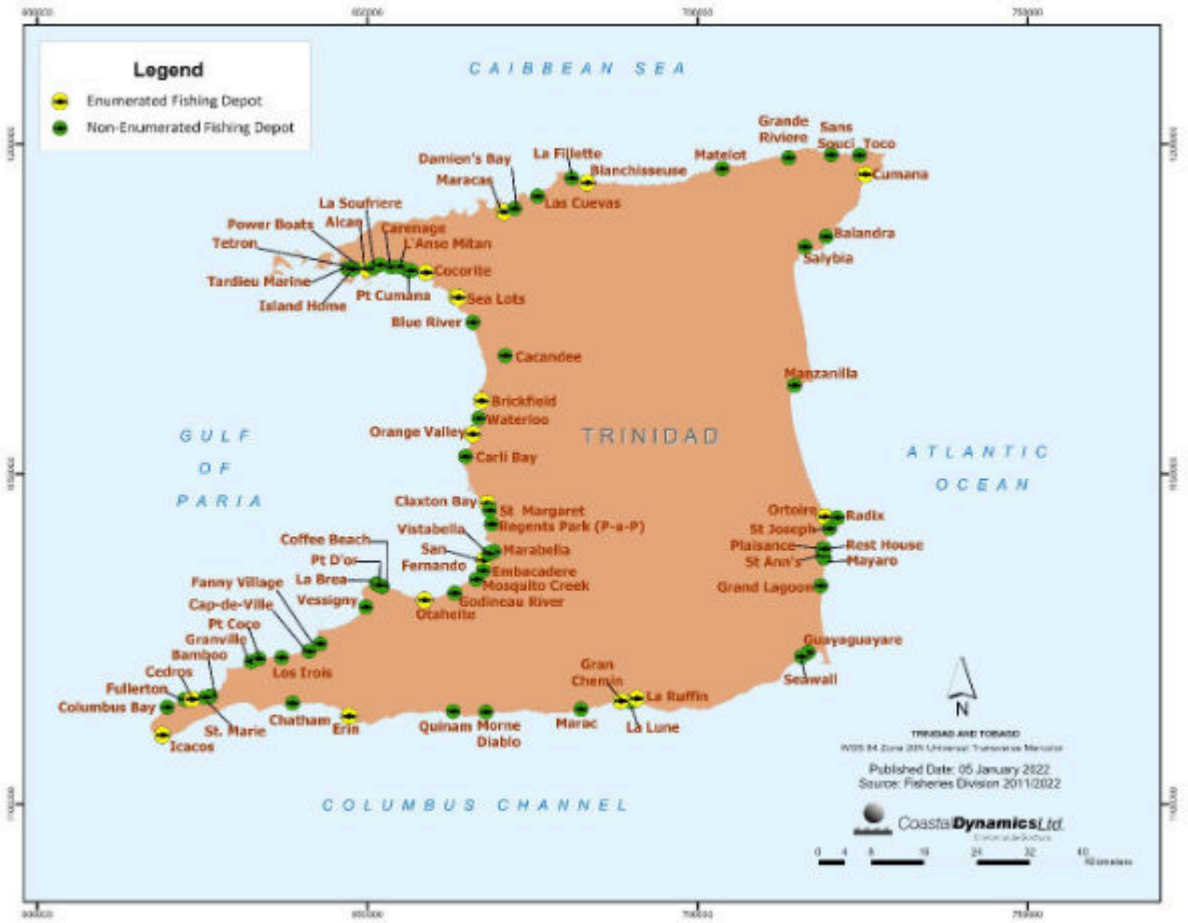


Figure 3. Fish Landing Sites along the coast of Trinidad

3. INDUSTRY OPERATIONS

There are several fish landing sites around the coast of Trinidad (**Figure 3**), 42% distributed along the south-west coast (Godineau River) to south coast (Moruga); 28% distributed along the north-east coast (Matelot) to the south-east coast (Guayaguayare); 20% distributed along the west coast and 11% distributed along the north-west coast (Chaguaramas) to north coast

(Blanchisseuse). Subject to the availability of funding the government provides infrastructure at selected fish landing sites, which may include: engine storage lockers; vessel, engine and net repair areas; processing stalls; vending stalls (retail); designated areas for wholesale of fish; slipways for vessel access. Currently varying degrees of fisheries infrastructure are available at 23 fish landing sites located at: Erin, La Ruffin (Moruga), Morne Diablo, Bonasse, Fullerton, Otaheite, San Fernando, Marabella, Claxton Bay, Carli Bay, Orange Valley, Brickfield, Carenage, Cocorite, Maracas, Las Cuevas, Blanchisseuse, Matelot, Grande Riviere, Toco, Cumana, Balandra, Sans Souci. A new fishing port is currently under construction at Gran Chemin (Moruga).

Based on Fisheries Division records, the estimated number of artisanal commercial fishing vessels operating in Trinidad for 2021 was 2145 with an estimated 4290 fishers (based on average of 2 fishers/boat), and the number of non-artisanal commercial fishing vessels was 90 with an estimated 388 fishers for 2021. The number of artisanal vessels in Trinidad has been increasing, with the number in 2021 representing a 79% increase in the number recorded in 2010. For Tobago (based on records of the Department of Marine Resources and Fisheries of the Tobago House of Assembly, THA), there were an estimated 648 artisanal commercial vessels for 2020 with an estimated 1296 artisanal fishers, and 9 non-artisanal commercial fishing vessels for 2020 with an estimated 27 non-artisanal fishers. The following are used to estimate the number of non-artisanal fishers: 3 fishers /vessel up to 12m; 4 fishers /vessel up to 24m; 6 fishers per vessel larger than 24m; 3 fishers / vessel for Tobago. The current (2022/23) numbers of artisanal and non-artisanal vessels in Tobago (880 and 12, respectively) represent an increase of the 2020 numbers by 36% and 33%, respectively.

The various gear types used in the fisheries may be grouped into nets (trawl, gillnets, beach seines, tuck seines, cast nets), hooks and lines (trolling, demersal and pelagic longlines, bank lines) and fish pots or traps. Trawl nets are used predominantly off the west and south-west coasts and to a lesser extent off the north-west coast (subject to zoning regulations), gillnets are used along all coasts while lines are used mainly off the north and east coasts and fish pots off the east and south-west coasts. Based on Fisheries Division records (October 2021), it is estimated that some 53% of artisanal fishing vessels use gillnets (27% multifilament; 26% monofilament) as their primary gear, 38% use lines (20% banking; 7% *a-la-vive*; 5% trolling; 3% palangue; 2% switchering) as their primary gear, while 5% use trawl nets, 3% fish pots, and 2% seines (1% tuck seine; 1% bait seine; 0.4% beach seine) as primary gear. With respect to the Trinidad non-artisanal vessels, 43% are longliners, 40% trawlers, and 17% multi-gear. The major fishing areas and associated use of the various gear types are shown in **Figure 4**.

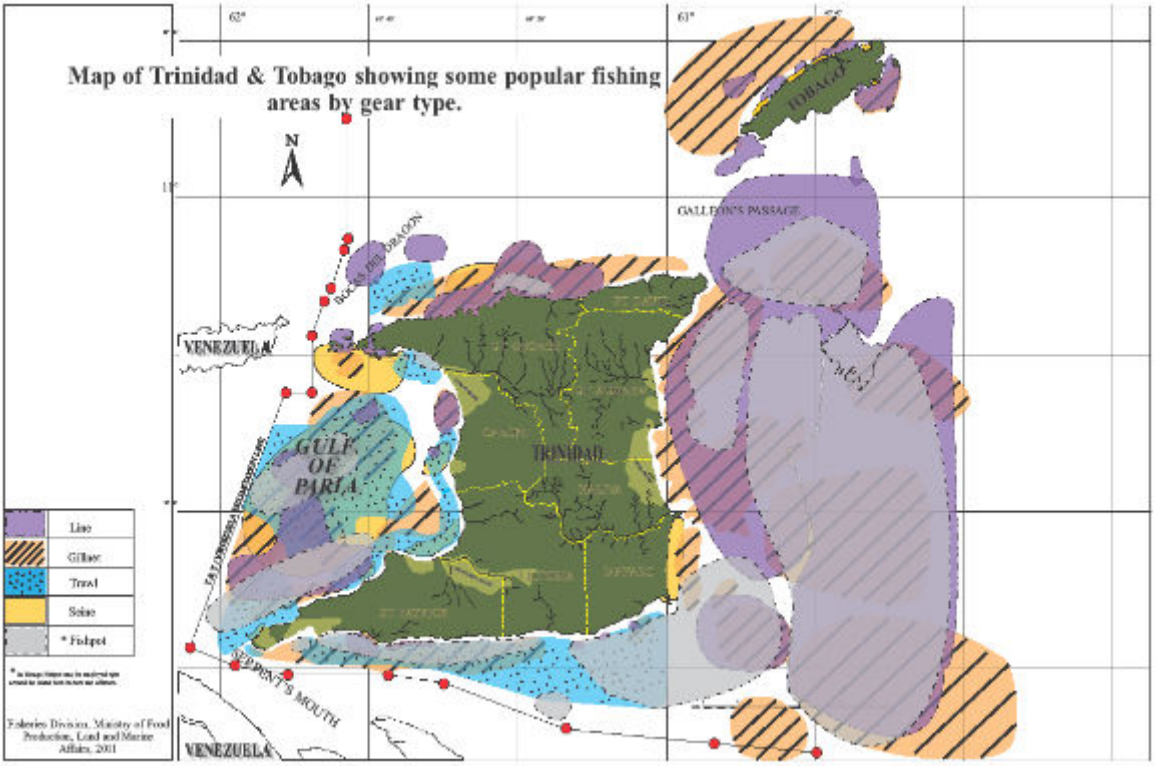


Figure 4. Main Fishing Areas and Gear Use in the waters of Trinidad and Tobago

Trinidad and Tobago's non-artisanal, pelagic longline fleet comprises non-artisanal vessels ranging between 15 to 34 m in length that fish in waters under TTO's jurisdiction and on the high seas in the northwestern Atlantic Ocean. Over the past 8 years the number of operational vessels in the fleet ranged from 23 to 32 with the highest numbers of operational vessels (31 and 32) in the years 2016 and 2017 respectively, and the lowest number of operational vessels (23) in the years 2019 and 2020. The number of operational vessels for the year 2022 is 25. The vessels are equipped with fish finders, GPS, communication equipment, hydraulic equipment for setting and retrieval of gear and a fish/ice hold. There are no freezer facilities on board and fish is stored chilled on crushed ice. There are no on-board facilities for processing. The major fish species, based on quantities landed, include: yellowfin tuna, albacore, bigeye tuna, swordfish, blue marlin, white marlin and sailfish.

In the case of food fish processing, there are presently twelve (12) fish processors in Trinidad. They are actively involved in the purchasing of fish and fish products (locally and imported) and adding value to them through various methods. The resulting fish and fish products are made available to both local and foreign customers (exports).

With respect to aquaculture, there are currently only 18 registered commercial farms in operation. This significant decline from the 42 farms that existed in 2015, is due primarily to loss of formalized marketing arrangements and continually increasing feed costs. Subsistence aquaponics operations have increased but do not contribute any meaningful fish production. With the exception of one large-scale commercial operation, ornamentals are mainly produced by hobbyists and small-scale operators.

4. MANAGEMENT MEASURES

The overall general fisheries management objective is to achieve long term sustainability of fisheries resources and related ecosystems for the benefit of the people of Trinidad and Tobago. Specific objectives include: optimizing the benefits from the fisheries resources and related ecosystems and implementation of systems to improve the range and quality of data and information available for decision-making. In the case of multi-sectoral issues which are not under the portfolio of the fisheries administrations, the approach to management is through inter-agency collaboration, cooperation, and coordination.

The trawl fishery of Trinidad, as it currently operates, is considered unsustainable based on: the results of assessments conducted to date of the shrimp fishery and key associated groundfish species; the large quantity of discards which include juvenile fish (some species of which support other fisheries); and consequent negative impacts on biodiversity and the environment (through possible destruction of the ocean floor and areas which may be critical fish habitats). In August 2013 and June 2014, the Cabinet of the Government of Trinidad and Tobago agreed to the amendment of the existing trawl and fisheries regulations to implement new management measures for the trawl fishery including closed seasons and a phased implementation of a ban on non-artisanal trawlers. While these measures have not been implemented due to a subsequent change in political administration as well as focus on the finalization of the Fisheries Management Bill 2020, as of 1 September 2013 no additional vessels are being approved by the Fisheries Division to enter the trawl fishery, with the "recognized" participants in the trawl fishery being only those vessels operating as of 1 September 2013 and continuing; and inspected in the last quarter of 2013 by the Fisheries Division. Update of the 2014 Shrimp and Groundfish Management Plan was initiated under Project GCP/RLA/201/GFF Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC) and UNDP/GEF CLME+ *Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (Shrimp and Groundfish Sub-Project) as part of an Integrated Fisheries Management Plan for Trinidad and Tobago, based on new data and results of studies conducted under REBYC II, and applying the Ecosystem Approach to Fisheries (EAF), and in line with the Sub-regional Plan for the Shrimp and Groundfish resources of the Guianas-Brazil Continental Shelf.

Since Trinidad and Tobago is a Contracting Party to the International Convention for the Conservation of Atlantic Tunas, its resources of tuna and tuna-like fishes (including marlins, shark and mackerels), and related operations of its non-artisanal pelagic longline fleet, as well as aspects of its artisanal and recreational fisheries, are managed (to the extent possible) in

tandem with the comprehensive set of conservation and measures adopted under the Convention although these measures are not yet incorporated in domestic law. (See **Institutional and legal framework** section immediately below).

The length, width and stretched mesh size of a range of nets are regulated in law. However, for the most part all fisheries which do not utilize nets remain unregulated i.e. there are no conservation and management measures in place. Size restrictions apply to some major species of mackerels, snappers, groupers and salmon but a reassessment of size at maturity is required due to the considerable time since the original size limits were imposed.
Turtles are protected (killing, catching, possessing, purchasing and selling are prohibited) under the Protection of Turtles and Turtle Eggs Regulations made under the Fisheries Act of 1916 while the Fisheries (Conservation of Marine Turtles) Regulations made under the same Act provide for installation of Turtle Excluder Devices in commercial trawl nets and the safe release and resuscitation (if in a comatose state) of any turtles caught in trawl nets, among other things. Turtles, as well as marine mammals, are also protected under the Conservation of Wildlife Act while under the Environmentally Sensitive Species (ESS) Rules, 2001 made under the Environmental Management Act, five species of turtles are protected.

Major constraints in the management of fisheries in Trinidad and Tobago remain the outdated legislative framework and the significant resource deficiencies in the fisheries administrations in Trinidad and in Tobago, including the lack of a fisheries monitoring, control, surveillance and enforcement capacity.

5. INSTITUTIONAL AND LEGAL FRAMEWORK

The management of fisheries falls under the mandate of the Fisheries Division (FD) of the Ministry of Agriculture, Land and Fisheries (MALF) in Trinidad and under the mandate of the Department of Marine Resources and Fisheries (DMRF) of the Division of Food Security, Natural Resources, the Environment and Sustainable Development, of the Tobago House of Assembly (THA) in Tobago. The THA's jurisdiction extends six nautical miles from the archipelagic baseline, while the MALF has overall responsibility for fisheries management and for addressing matters regional and international in nature. Several other government regulatory agencies have a role in fisheries management. In Trinidad these agencies include: (a) the Forestry Division (Competent Authority for matters related to the Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES) and Animal Production and Health Division within the MALF; (b.) the Maritime Services Division (Ministry of Works and Transport) which is the Competent Authority for registration of vessels; (c) the Customs and Excise Division (Ministry of Finance); (d) the Ministry of National Security; (e) the Ministry of Trade and Industry; (f) the Ministry of Planning and Development (which includes the Environmental Management Authority); (g) the Ministry of Labour; (h) the Ministry of Local Government and Rural Development (which executes some functions of the Ministry of Health; and (i) the Ministry of the Attorney General and Legal Affairs (responsibility includes the

drafting of new legislation).[3] In Tobago, other government regulatory agencies with a role in fisheries management include: (a) the Division of Finance, Trade and Economy; (b) the Division of Infrastructure, Quarries and Urban Development; (c) the Division of Health, Wellness and Social Protection; and (d) the Labour Department in the Office of the Chief Secretary.

Inter-agency collaboration for regulating fishing, fishing related activities and relevant trade is formalized through a memorandum of understanding (MOU) signed in August 2019 among six of the above-listed agencies including the MALF (FD) and THA (DMRF). The MOU aims to strengthen long-term routine inter-agency collaboration (cooperation and coordination) to undertake integrated fisheries monitoring, control, surveillance and enforcement to prevent, deter and eliminate illegal, unreported and unregulated fishing. It is also intended to formalize the collaboration between the MALF and THA in fisheries management and related activities, in preparation for implementation of new fisheries management legislation.

Fisheries are managed under three pieces of legislation: (1) the Fisheries Act of 1916; (2) the Control of Importation of Live Fish Act of 1950; and (3) the Archipelagic Waters and Exclusive Economic Zone Act of 1986 (specific to foreign fishing). There is currently no legal framework for the management of aquaculture. Regulations made under the Fisheries Act provide for restrictions in fishing gear, the areas and time fished, fish size limits, protection of turtles and turtle eggs (including the requirement for Turtle Excluder Devices to be fitted on trawl gear) and specific regulation of mesh size of nets, and regulation of trawling (temporal and spatial), among other things. National policies and strategies of relevance to the fisheries and aquaculture sub-sectors include: the National Development Strategy - Vision 2023, the Aquaculture Strategic Plan: A framework for Sustainable Development in Trinidad and Tobago 2018 to 2023, the Fisheries Legislative Review Report, the Draft Integrated Coastal Zone Management Policy Framework, the National Maritime Policy, Strategy and Action Plan and the Biodiversity Strategy and Action Plan for Trinidad and Tobago - 2017 to 2022.

A new Fisheries Management Bill is currently before a Joint Select Committee of the Parliament. Once enacted, the new fisheries management legislation would provide for the regulation of fishing and fishing related activities (such as landing, buying, selling, processing, transshipping, trading) of both TTO-flagged and foreign-flagged vessels in the waters under TTO's jurisdiction as well as such activities of TTO-flagged vessels in areas beyond national jurisdiction. The Bill would modernize fisheries conservation and management in TTO, in accordance with international best practices including application of the ecosystem, precautionary and participatory approaches to fisheries management as well as provide the legal framework for fulfilling TTO's international obligations as a flag, coastal, port and market State.

TTO is a member of two regional fisheries bodies, the Caribbean Regional Fisheries Mechanism (CRFM) and the Western Central Atlantic Fishery Commission, and a Contracting Party to one Regional Fisheries Management Organization, the International Commission for the

[3] Source: Department of Marine Resources and Fisheries, Division of Food Security, Natural Resources, the Environment and Sustainable Development, Tobago House of Assembly

Conservation of Atlantic Tunas (ICCAT) (having ratified the respective Convention in 1999). In addition to the United Nations Convention on the Law of the Sea, Trinidad and Tobago has also signed on to the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement), the United Nations Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement) and the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (Port State Measures Agreement).

There is currently no legislation governing the development and management of aquaculture in Trinidad and Tobago. Current activities are informed by the Draft Aquaculture Strategic Plan – 2017 to 2022, now to be updated.

6. RESEARCH, EDUCATION, AND TRAINING

Research initiatives: The Fisheries Division's research activities are dictated mainly by regional donor-funded projects in which Trinidad and Tobago is participating. Although data are collected on landings and effort of the artisanal fishing fleet and the non-artisanal longline fleet, as well as biological data on selected species in the catches of the trawl fleets (artisanal and non-artisanal), there remains significant need to analyze the data holdings of the Division (which include information on recorded vessels, fishers and vessel owners' socio-economic information) to produce information for management decision-making. Human resource and competency limitations preclude such analyses. The main research initiatives undertaken over the last 20 years include:

a. Stock assessments for the following species: Kingfish or King Mackerel (*Scomberomorus cavalla*); Cavalli (*Caranx hippos*); Four-winged flyingfish (*Hirundichthys affinis*); Shrimp species complex - Brown (*Farfantepenaeus subtilis*); White (*Litopenaeus schmitti*); Pink (*F. notialis*); Honey or Seabob (*Xiphopenaeus kroyeri*); Pink-spotted (*F. brasiliensis*); Cro-cro or Croaker (*Micropogonias furnieri*) and Lane Snapper (*Lutjanus synagris*). **Appendix 1** provides some details on the assessments conducted including the years and fishing gear methods for which data were analysed, the status of the resource and recommendations made for the management of the fishery;
b. Analysis of data on catches (including discards) for the artisanal and non-artisanal trawl fleets collected under an at-sea Observer Programme established since 2017 (Bachew, 2021);[3]
c. Experimental gear trials with Bycatch Reduction Devices (BRDs) on non-artisanal double-rigged trawlers to facilitate the release of juvenile fish thereby decreasing discards and improving the efficiency of onboard sorting operations (Khan 2021);[3]
d. Investigation of drivers of shrimp bycatch and discard practices. (Hutchinson 2021)[3];
e. Development of socio-economic profiles of major trawl communities of Orange Valley and Otaheite (Hutchinson 2021a)[3];
f. Fisherfolk Diagnostic study to evaluate the self-governance capacity of selected local fisherfolk organizations (small-scale and non-artisanal), including identification of the challenges to proper organizational functioning and recommendations with the aim of

boosting their performance - led by Duke University and UWI, CERMES in collaboration with CANARI. (Nenadovic et al. 2021)[3];

g. Study of shrimp trawl bycatch value chain with opportunities identified for increased value added of shrimp trawl bycatch species and policy recommendations to the communities, government, local and regional technical/aid agencies (Hutchinson et al. 2019)[3];
h. Socioeconomic analysis of shrimp trawl market activities in Trinidad and Tobago – including an estimate of loss of potential earnings from discards of shrimp and bycatch species by non-artisanal double-rigged trawlers (Hutchinson 2022)[3];
i. Comparative analysis of artisanal trawl catches within and beyond one nautical mile of the Gulf of Paria coastline to better understand impacts of new policies on small scale fishers (Fisheries Division, 2017)[3];
j. Project to address lost, abandoned and otherwise discarded fishing gear (ALDFG) by Global Ghost Gear Initiative c/o Ocean Conservancy in partnership with the University of the West Indies and Natural Resources Consultants to create a predictive model on the impacts of ALDFG in Trinidad and Tobago;
k. Study of the economic performance and technological features of the non-artisanal longline fleet;
l. Conceptualisation, design and construction of a range of fish culture and aquaponic systems (e.g. green water recirculating aquaculture systems, earthen pond fish culture, raceway fish culture systems, floating raft aquaponics, media bed (ebb and flow) aquaponics, dutch bucket aquaponics, nutrient film technique aquaponics, vertical pipe aquaponics) with testing for functionality, practicality and economic relevance;
m. Experimentation with tank culture and aquaponics using the Black Conch (*Pomacea urceus*); and
n. Development of a flow through tank-based recirculating system whereby fish is cultured in tanks using water from earthen ponds to address a range of challenges with management of earthen ponds, including predation from birds, caimans, praedial larceny, unavailability of labour for harvesting.

Within the national context, assistance was obtained from the Global Environment Facility and the Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWEco) to develop a National Research Strategy and Action Plan for the Collection of Environmental Data for Trinidad and Tobago. The consulting firm, Environmental Governance Consulting (EGC) produced draft documents for review in early August 2023. The proposed new fisheries management legislation mandates that the Director of Fisheries causes the routine collection of data in sufficient detail to allow sound statistical analysis in accordance with international standards and guidelines. The respective data include catch and fishing effort data and biological, ecological, environmental, oceanographic, social and economic data required to support stock assessment and the ecosystem approach to fisheries management.

Public education and outreach activities: In the case of fisheries, there is currently no formal structured programme for public education and outreach. However, such opportunities arise through invitation to the Division by schools, community groups and other government agencies to mount displays (which may be interactive) and exhibitions, give lectures on careers in

fisheries, provide information on key areas of marine fisheries, aquaponics and aquaculture and facilitation of field visits to the Division's Aquaculture Demonstration Centre, the latter primarily by primary and tertiary educational institutions. In addition, the Division's Aquaculture Unit conducts training for current and potential fish farmers in various aquaculture and aquaponics systems. Some of the key courses offered are Introduction to Commercial Aquaculture, Pond Construction, Aquaponics and Hatchery Management. Consequently, the various systems at the Aquaculture Demonstration Centre of the Unit are demonstration systems that have been used for stakeholder training purposes. They allow for projections on the construction and running costs as well as offer the opportunity for stakeholders to get hands-on demonstration of components and economical construction techniques used. The Greenwater Recirculating Systems conceptualized at the Unit have been successfully adopted by most of the tank-based tilapia producers.

The Caribbean Fisheries Training and Development Institute (CFTDI), a statutory body affiliated with the Ministry of Agriculture, Land and Fisheries delivers training leading to basic maritime certification as well as training in fish handling and processing, fish handling and vessel sanitization, quality assurance and quality control for fish and fishery products. It is the intention of the Fisheries Division to develop a comprehensive and structured fisheries extension programme that focuses on implementation of impending new fisheries management legislation and key national, regional and international issues in fisheries management including the US Marine Mammal Protection Act and Moratorium Protection Act and implications for fish exports to the United States, the World Trade Organization Agreement on Fisheries Subsidies and various fisheries management plans and instruments adopted by the CRFM Ministerial Council, the Western Central Atlantic Fishery Commission and the International Commission for the Conservation of Atlantic Tunas.

Capacity-development and training activities/plans: Opportunities for capacity development arise mainly through donor-funded projects as there is very limited domestic funding to support such activities. Under the Third PSMA Global Capacity Building Programme, staff of the Fisheries Division and other national regulatory agencies were trained in port inspection procedures, introduction to risk assessment and introduction to Catch Documentation Schemes. Capacity-development opportunities are also available through the CRFM's formal arrangements with regional and international entities and universities and through the activities of its fisheries and aquaculture working groups and data, methods and training working group. Through the activities of the various species working groups of the Western Central Atlantic Fishery Commission, staff of the fisheries administrations in Trinidad and in Tobago also receive training. With the impending passage of new fisheries management legislation, the respective fisheries administrations would be collaborating to develop a comprehensive capacity development plan for both their staff as well as industry stakeholders to facilitate its implementation. The identified training will include training: to strengthen fisher organizations to engage in the fisheries management decision-making process; on the key elements of new fisheries management legislation (staff and stakeholders); to complete a range of application forms for entry on the Record of Trinidad and Tobago Fishing Vessels; for registration as a fisher or fish worker; for authorisations, licences or permits; on use of new digital fisheries management information system; on use of the Single Electronic Window eModules on

Licensing and Permits, Maritime, eGoods Declaration; on fisheries monitoring, control, surveillance and enforcement procedures (staff); to meet the basic certification in safety at sea for registration as a fisher (fishers).

7. KEY DEVELOPMENT TRENDS OVER THE LAST 20 YEARS

Over the past 20 years the key development trends pertain to efforts to develop new fisheries management legislation; strengthening of the Fisheries Division's Database and Information Systems and Fisheries Statistical System as well as preservation of historical catch and effort records dating back to the 1950s, for informed decision-making; increased collaboration among the range of regulatory agencies with a role in fisheries management; strengthened monitoring of fishing vessels and efforts to have the Fisheries Division as a client agency on the TTBizLink Single Electronic Window established to facilitate trade, but also used for monitoring of vessel arriving and departing the jurisdictional waters of Trinidad and Tobago.

Development of new fisheries management legislation – Trinidad and Tobago, with significant assistance from the Food and Agriculture Organization of the United Nations, has been engaged in a process since 1993 aimed at updating its framework fisheries law and in October 2020 a draft *Fisheries Management Bill (FMB) 2020* was laid before the Parliament. The FMB 2020 is intended to regulate all fishing (artisanal, non-artisanal, commercial, recreational, local, and foreign) and fishing related activities within the waters under national jurisdiction (including the EEZ) and similar activities by Trinidad and Tobago fishing vessels in areas beyond national jurisdiction. It is aligned with international fisheries management best practices and approaches (including provisions for development and implementation of fisheries management plans, strategies and programmes and application of the ecosystem, participatory and precautionary approaches), provides flexibility in the range of fisheries management tools and mechanisms that may be applied and fully enables Trinidad and Tobago to meet its international obligations as a flag, coastal, port and market State. The FMB makes provisions for enhanced fisheries monitoring, control, surveillance and enforcement, including implementation of vessel monitoring systems, logbook and observer programmes, establishment of a Fisheries Inspectorate within the government agencies with responsibility for fisheries management in Trinidad and in Tobago, with extensive duties and powers of authorised officers and observers, strengthened port State control and increases in the type and form of admissible evidence and presumptions. The system for addressing non-compliance includes imposition of administrative sanctions, penalties (fines and terms of imprisonment) that are sufficiently high to deter fisheries crimes as well as several other factors for consideration by the court (such as forfeiture, recidivism, banning order). The FMB 2020 proposes consequential amendments to several pieces of national legislation necessary for its full and effective implementation. The FMB has been under review and consideration of a Joint Select Committee of the Parliament since November 2020, with particular focus on addressing stakeholder review comments on the FMB received between December 2022 and March 2023. It is expected that a revised version of the FMB, taking into consideration the comments received from stakeholders, would be produced in August 2023 and a final round of stakeholder consultations convened before the FMB is further amended and submitted to be debated in both Houses of the Parliament in late 2023.

Strengthening the Fisheries Division's Database and Information Systems (catch, effort, vessel, fisher) - A National Fisheries Management Information System is being developed for TTO in collaboration with the Information Technology (IT) Unit of the Ministry of Agriculture, Land and Fisheries (MALF), and with the support of the FAO through Project GCP/INT/228/JPN - "Fisheries Management and Marine Conservation within a Changing Ecosystem" since 2016, as well as the Global Environment Facility (GEF) Project "Climate Change Adaptation in the Eastern Caribbean Fisheries Sector. This system is intended to integrate various categories of fisheries data over time to strengthen the information base for fisheries management decision-making. Review and verification of computerized fish landing and effort data for the artisanal and trawl fisheries, and their import into the new database are in progress. The Fisheries Division received technical support to develop R-scripts for generating reports from the existing fish catch and effort artisanal data. The new database (Calipseo) which currently focuses on the Vessel Registry and Landing Data was deployed on the MALF's server in the first quarter of 2021, and computerization of vessel records is proceeding, with engine information also being included as of March 2023. Capacity building was conducted by the FAO on the use of the open source statistical software R (introductory training in 2018 and advanced training in 2019), which is the backbone of the statistics computation of the Scalable Software Framework (SSFK) being developed by the FAO IT Department for Trinidad and Tobago. Staff of the Fisheries Division, the MALF's IT Unit, and the Tobago House of Assembly (THA)) benefitted from the training.

(a)

Figure 5. Participatory Mapping Exercise undertaken with Fishers from (a) San Fernando; and (b) Otaheite

In addition, under the Project GCP/RLA/201/GFF *Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries* (REBYC-II LAC), a Marine Geospatial Database for fisheries management, with focus on the trawl fishery and the Gulf of Paria ecosystem was developed using a Participatory GIS (PGIS) approach (Baldwin 2019). The exercise entailed use of participatory research methods (including preliminary assessment, key informant interviews, participatory mapping exercises, seasonal calendars, historical lines) to collect a range of socio-economic, habitat, resource and space-use information and fill identified data gaps (**Figure 5** depicts the mapping exercises undertaken with fishers from San Fernando and Otaheite). The data sets collected, digitized and displayed as maps include the following: landing sites and fishing areas / fishing grounds with local area names identified; coastal marine management areas; jurisdictional boundaries; marine habitats by substrate types; coastal habitats; coastal marine resources – seagrass and mangrove swamp habitat; coastal marine threats; groundfish and fishing resources; coastal marine infrastructure; shrimp trawling areas for the different trawl types and distribution of the different shrimp species; and other coastal marine resources highlighting nursery areas and sites where bait, birds, crabs and oysters are found. **Figures 6, 7 and 8** depict the local area (Gulf of Paria) maps generated from the Marine Geospatial Database for marine habitats - substrate type, coastal marine infrastructure, and coastal marine resources, respectively.

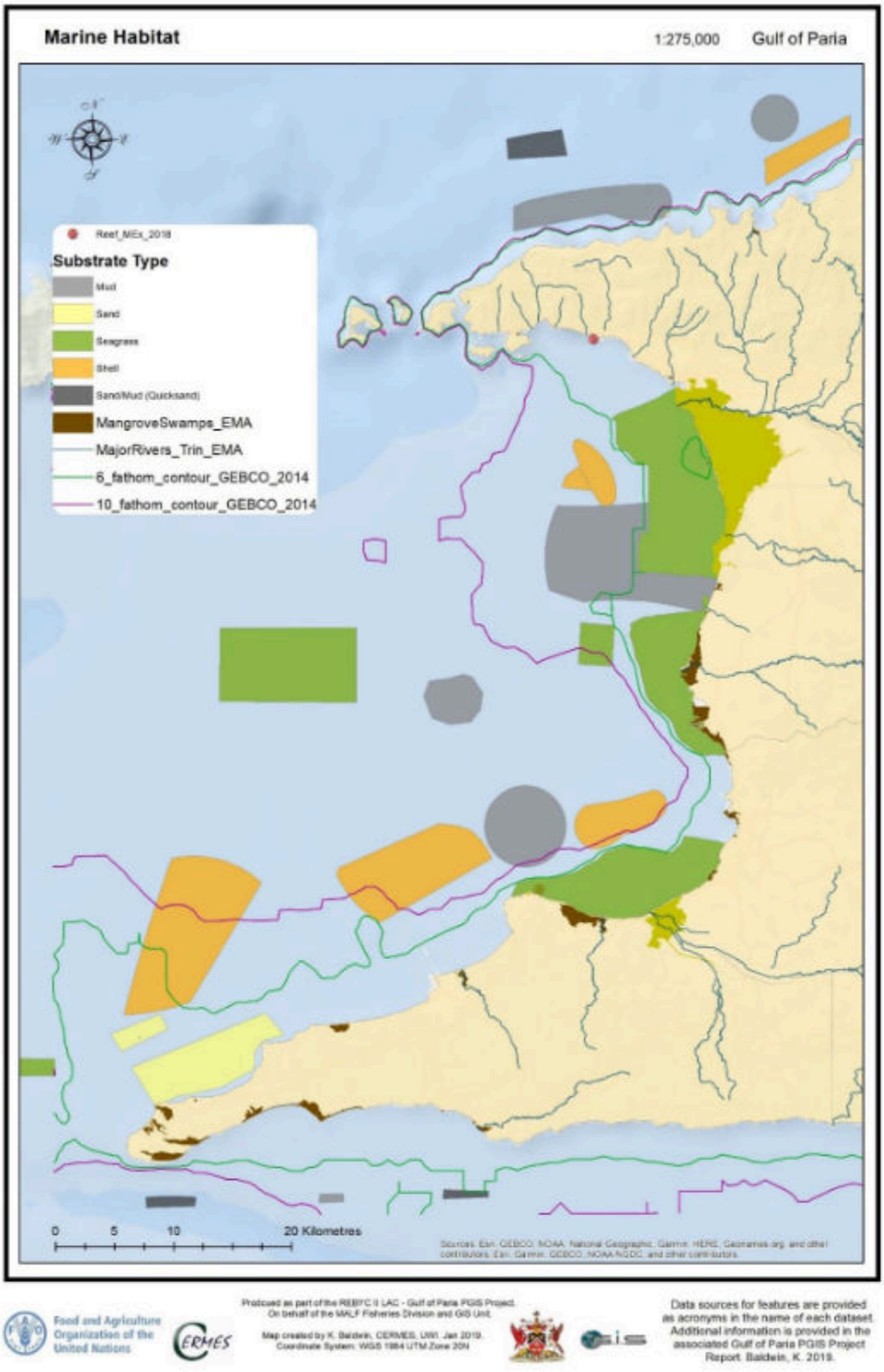


Figure 6. Marine Habitats – Substrate Types in the Gulf of Paria

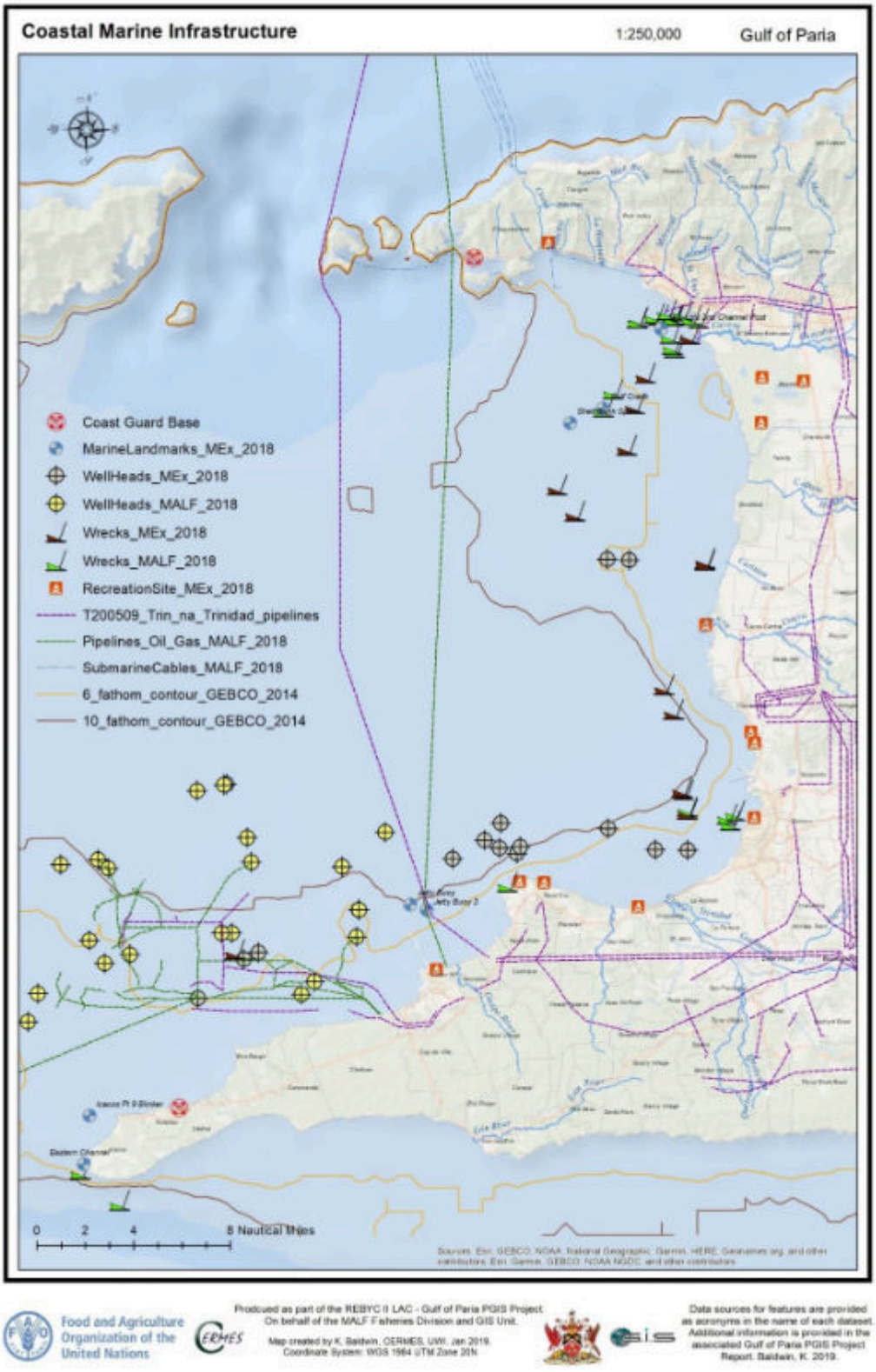


Figure 7. Coastal Marine Infrastructure in the Gulf of Paria

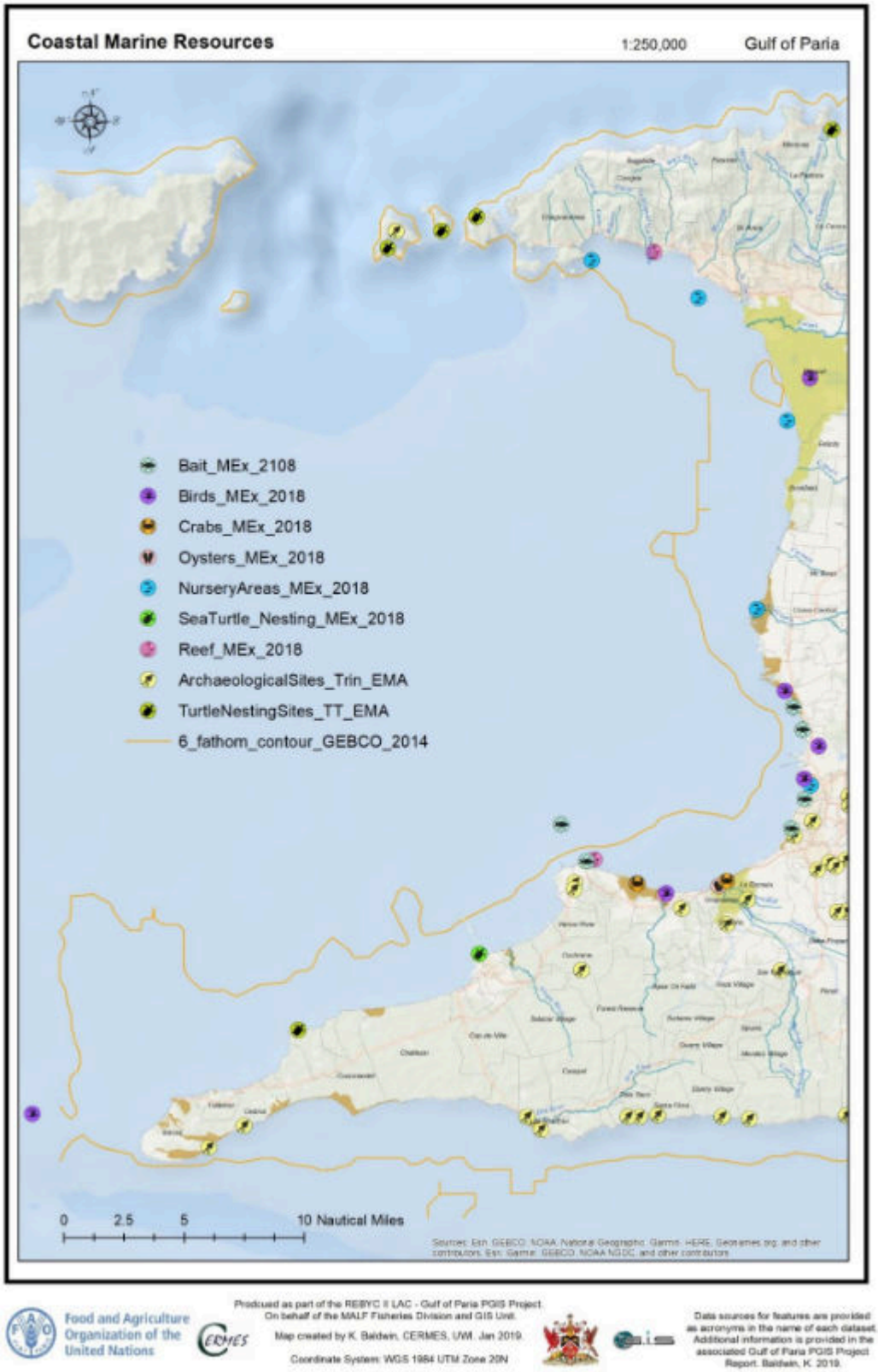


Figure 8. Coastal Marine Resources in the Gulf of Paria

Strengthening of the Fisheries Statistical System: The FAO is also supporting the review and update of the current fisheries statistical system in Trinidad and Tobago with a consultant mission conducted in July 2018, and in February 2021, a virtual statistics workshop held with FAO Consultants and officers of the Fisheries Division, which reviewed the fisheries statistics data collection scheme in Trinidad and proposed an updated data collection strategy, defining the strata, fishing units, landing sites, and number of samples based on stratified sampling for cost efficiency and in line with available resources. A 'Training for Enumerators on the Artisanal Catch and Effort Data Collection System' workshop was then held on 6th-8th July 2022 by the Fisheries Division (with the FAO consultants in virtual attendance). The plan is to implement a six (6) month pilot phase of the updated data collection strategy, in three of the seven zones around Trinidad. In addition, under the Project GCP/RLA/201/GFF *Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries* (REBYC-II LAC) an at-sea Observer Programme was established in 2017 for all trawl fleets (artisanal and non-artisanal) to facilitate data collection on catches including discards.

Preservation of Historical Fish Catch and Effort Records - This project includes the inventory, indexing and scanning of raw data sheets, with initial focus on the 36 year period from 1959 to 1994 which exist only on paper which is fast deteriorating. This is to avoid loss of vital fish catch and effort data which would facilitate the examination of trends in fish landings, fishing effort, and catch rates and allow for improved assessments of the status of the fish stocks and consequently improve the quality of the management advice provided to ensure the sustainability of the country's fisheries resources. In the last fiscal and the current fiscal to date alone (20 months), over 49,000 historical catch and effort data sheets were inventoried and indexed, and over 26,500 sheets scanned. It is estimated that some 176,500 data sheets remain to be scanned for the 36 year period.

Strengthened inter-agency collaboration, cooperation and coordination in fisheries conservation and management – To facilitate routine collaboration among several national regulatory agencies with a role in fisheries conservation and management, primarily the ministries with responsibility for fisheries (including the counterpart Division of the Tobago House of Assembly), maritime services, customs and excise, trade and national security, a Memorandum of Understanding (endorsed by the Cabinet) was signed on 19 August 2019 for Collaboration in Regulating Fishing, Fishing Related Activities and Relevant Trade (MOU-IUUF). A Cabinet-appointed Committee (Oversight Committee) was established in March 2021 to oversee, monitor, and report on implementation of the MOU-IUUF. The Oversight Committee reports on its achievements to the Cabinet on an annual basis. It is engaged in a range of activities aligned with its Terms of Reference, including implementation of standard operating procedures for the import of a vessel to be used for fishing, registration of fishing vessels, import and export of fish, advance notification of arrival of a fishing vessel at port and inspection of fishing vessels at port; implementation of a vessel monitoring system for the non-artisanal longline fleet operating in areas beyond national jurisdiction; development of a draft national control plan and a draft inspection plan and draft inter-agency standard operating procedures for implementation of the Port State Measures Agreement and transshipment and landing of fish and fish products (with assistance from the FAO); development of a National Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (with assistance from the CRFM

Secretariat) as well as a range of capacity-building workshops in risk assessment, catch documentation schemes and port inspection procedures (with assistance from the FAO), participation in a range of regional and international meetings and initiatives to improve fisheries monitoring, control and surveillance and increased maritime domain awareness through use of a range of tools and strengthened linkages with regional and international institutions and initiatives. Through strengthened linkages with the Caribbean Community Implementing Agency for Crime and Security (CARICOM IMPACS) and the Blue Justice Initiative as well as use of emerging monitoring, control, and surveillance (MCS) tools and data and information platforms, the Fisheries Division has significantly improved its maritime domain awareness. It is intended to update the MOU-IUUF and Committee Membership to address matters and include expertise in relation to health (human, animal, port) and immigration in the coming years.

Monitoring, Control and Surveillance - VMS and EMS on non-artisanal longline vessels - The Fisheries Division, in collaboration with the stakeholders of the TTO non-artisanal longline fleet, has implemented a vessel monitoring system (VMS) from Collecte Localisation Satellites Ltd. This system includes position reporting once per hour, twenty-four hours a day and electronic logbook reporting. The VMS is monitored in real time through a web-based Fisheries Monitoring Centre with oversight from the Fisheries Division and the Trinidad and Tobago Coast Guard. At present, the Fisheries Division is exploring the feasibility of electronic monitoring of the non-artisanal longline fleet and is in the preliminary stages of developing this programme.

Monitoring, Control and Surveillance- Single Electronic Window (SEW) - The Fisheries Division, in collaboration with the Ministry of Works and Transport (Maritime Services Division), has been allowed access to the e-Maritime Module of the Single Electronic Window. The SEW is a digital platform that revolutionizes international trade processes by seamlessly integrating government agencies, regulatory bodies, and businesses. It provides a streamlined system for submitting, tracking, and processing documents which eliminates excessive paperwork and manual processes leading to improved efficiency and transparency. Through SEW, the Fisheries Division has access to essential information and documents (registration documents, licenses, catch and effort data, and arrival notices) regarding fishing vessels (both foreign and TTO flagged) entering and leaving the ports of Trinidad and Tobago. The information received plays a crucial role in building compliance history, conducting preliminary risk assessments and aiding in the prioritization of targeted offload inspections allowing the Division to optimize its resources. The e-Maritime Module is the identified platform for implementation of the Port State Measures Agreement, in particular for receiving requests for vessel entry to and use of port, for the conduct of due diligence checks on documentation received on the vessels engaged in fishing and fishing related activities including the conduct of risk assessments, communicating the requisite approvals or denials to the vessel agents as well as other regulatory agencies, for identification of vessels to be inspected and sharing of documents, including inspection reports with other regulatory agencies.

Future Research Projects: Trinidad and Tobago endorsed the Project Identification Forms for Global Environment Facility-funded projects “Strategies, technologies and incentives to manage bycatch in tropical Large Marine Ecosystem Fisheries” (REBYC-III CLME+) and “Enhancing capacity for the adoption and implementation of EAF in the shrimp and groundfish fisheries

(EAF4SG) of the North Brazil Shelf Large Marine Ecosystem (NBSLME)" on 25 August 2021 and 23 November 2021, respectively. For the EAF4SG, co-financing has been confirmed from the Fisheries Division of the MALF, as well as two (2) fisherfolk organizations (Claxton Bay Fishermen Association, Moruga La Ruffin Fishing Cooperative) and Future Fishers (an NGO) in 2022. For the REBYC III, co-financing has been confirmed by the Fisheries Division as well as two (2) NGOs (Future Fishers, Nature Seekers). Trinidad and Tobago (via the Minister of Agriculture, Land and Fisheries) signed the EAF4SG and REBYC-III Project Documents on 7 June 2023. As well, the Fisheries Division is collaborating with Wider Caribbean Sea Turtle Conservation Network (WIDECAST) and Ecolibrium, Inc. which submitted a project proposal to the US National Fish and Wildlife Foundation aimed at estimating and addressing the causes for leatherback turtle decline in the Northwest Atlantic, with focus on the north-east coastline of Trinidad and Tobago. The project is still in the preparation phase with approval pending.

Multi-sectoral Approaches – a multi-sectoral approach is being taken to address matters of fisheries monitoring, control, surveillance, and enforcement as outlined above under "Institutional and Legal Framework". In addition, the Fisheries Division is one of the government regulatory agencies with a role in the process implemented by the Environmental Management Authority (EMA) for the issuance of Certificates of Environmental Clearance (CEC) – specifically, the Fisheries Division reviews applications for CECs and any associated Environmental Impact Assessments and provides technical comments and recommendations, attends meetings convened by the EMA with relevant stakeholders and may be required to undertake specific monitoring related to the sector once the CECs are issued. The Fisheries Division was also represented on a Cabinet-appointed inter-Ministerial Committee on Integrated Coastal Zone Management 2017 and 2020. This Committee finalized an Integrated Coastal Zone Management Policy framework and advanced preparation of an Action Plan (2021 to 2030) to guide implementation of the ICZM Policy. Cabinet's approval of the ICZM policy framework and re-establishment of the Inter-Ministerial Committee is awaited.

Collaboration within the CRFM Framework: Apart from the collaboration at meetings of the Caribbean Fisheries Forum and Ministerial Council of the CRFM as well as matters addressed through the Secretariat and the Executive Committee, TTO has collaborated with CRFM partners on a range of matters, including:

(a) St Vincent and the Grenadines – to develop a draft Memorandum of Understanding, between TTO and relevant Third States whose vessels engaged in fishing and fishing related activities, 192tilize the ports of TTO, for Collaboration to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. In 2019 the Cabinet endorsed the draft MOU and agreed that TTO engage relevant States towards negotiation of final MOUs amended accordingly to suit the specific situations;
(b) Belize – for advice in its consideration of implementation of a vessel monitoring system for TTO's non-artisanal longline fleet; initial engagement towards negotiation of the MOU at (a); sharing of information concerning procedures and documentation required for entry to port, in preparation for implementation of the Port State Measures Agreement;
(c) Guyana – for investigation of matters concerning vessels of interest;
(d) Suriname – for investigation of matters concerning vessels of interest;

(e) Grenada – on matters concerning trade, of relevance to the International Commission for the Conservation of Atlantic Tuna, investigation of vessels of interest and sharing of information concerning procedures and documentation required for entry to port, in preparation for implementation of the Port State Measures Agreement.
(f) Several CRFM States – training of fisheries personnel with respect to ICCAT statistical data reporting

8. PROJECTIONS FOR FUTURE ADVANCEMENT OF THE SECTOR AS WE TRANSITION TOWARDS A BLUE ECONOMY

The 'blue economy' is an emerging concept that encourages sustainable exploitation, innovation and stewardship of our ocean and its life-giving 'blue' resources. Current approaches to ocean governance are fragmented and sometimes non-strategic, generating outcomes in which economic benefits are at times skewed away from social interests, which can result in long-lasting damage to the social fabric of coastal communities, as well as the ocean and coastal ecosystems. To address this challenge, a Blue Economy 'Rapid Readiness Assessment' (RRA) pilot project was undertaken in Trinidad and Tobago in November 2022. The project examined Trinidad and Tobago's readiness to embark on the transition to a Sustainable Blue Economy (SBE). The RRA approach is based on the United Nations Environment Programme's (UNEP's) Sustainable Blue Economy Transition Framework and is being trialed by the Commonwealth Secretariat, in partnership with UNEP, Howell Marine Consulting and the University of Portsmouth, under the Commonwealth Blue Charter programme. The study was informed by desk-based analysis, in-country stakeholder workshops and interviews, the RRA process centered on facilitating dialogue to develop a shared understanding of the current situation regarding the transition to a SBE and the actions needed to further progress. A report on the findings of the RRA was prepared (Commonwealth Secretariat and United Nations Environment Programme, 2023) and circulated to stakeholders in December 2022 and a Webinar was held in March 2023 detailing the findings of the study.

The RRA concluded that, although transitioning towards SBE is at times complex and is challenging maritime institutions globally, that TTO is well placed to advance its own transition. However, the study identified TTO as distinctly different to its Caribbean neighbours, with an ocean-based economy shaped by significant economic contribution of the oil and gas sector, and with relatively lower focus on tourism, fisheries or other ocean sectors. There has been slow progress in implementation of ocean policy and legislation. Consequently, developing an SBE would require expediting the passage of fisheries and shipping (including marine pollution) legislation and implementation of ICZM and maritime policies. The RRA also identified a fundamental need to secure increased high-level commitment to an SBE and to channel the needed resources, developing a shared vision for SBE. Specific recommendations of the RRA included: (a) reappointment of the Inter-ministerial ICZM Committee; (b) agreement on SBE definition and vision; (c) accelerated approval of relevant legislation and policies; (d) stakeholder engagement; (e) development of an SBE strategic action plan and SBE roadmap for TTO and (f) improving access to existing finance. Other priorities for consideration included: (a) sustainable economic diversification; (b) mobilizing funding for implementation; (c) better integration of

social outcomes; (d) improved valuation of sectors and ecosystem benefits; (e) development of a capacity-building strategy; and (f) investment in technical capacity.

Advancement of the SBE falls under the mandate of the ministry with responsibility for planning and development. However, the Fisheries Division plans to work with the ministry and other relevant agencies to support and promote alternative economic and livelihood development for users of the marine space, in an attempt to reduce pressure on existing fisheries stocks and better capitalize on economic benefits available to the fisheries sector.

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APPENDIX 1: STATUS AND MANAGEMENT OF MARINE FISHERIES RESOURCES

Compiled by Fisheries Division, Ministry of Agriculture, Land & Fisheries, Trinidad & Tobago
Source documents included in list of references

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
ARTISANAL FLEET (Gillnet, Surface handlines, Seines)				
Carite or Spanish Mackerel (*Scomberomorus brasiliensis*)	1972-2002 (Trinidad); 1977- 2002 (Southern Caribbean & nearby Atlantic)	Fully exploited to overexploited	Managers should specify management objectives for the fishery, as well as one or more alternative management procedures to be studied.	Minimum diagonal stretched mesh of 4.25" (10.8 cm) for gillnets (except where mullet and flyingfish are targeted). [Note: Minimum diagonal stretched mesh of 3.5" (8.9 cm) for monofilament gillnets catching mullet. (No species, other than mullet, may be landed in excess of 15% of the total catch.)] Gear regulations (length, width, mesh size of fillet nets and seines). No carite or kingfish less than 12" (30.5 cm) shall be taken, sold, or be exposed for sale.
	1991-1992 (Trinidad: artisanal gillnet & line)	Fully exploited	-No increase in fishing effort; -Gillnet mesh size should not be less than 4.75" (12.1 cm) stretched mesh; -Line fishing to be encouraged over the use of gillnets.	
Kingfish or King Mackerel (*Scomberomorus cavalla*)	2006-2007 (Trinidad: a la vive, troll, switchering & banking)	There has not been a significant change in fishing mortality in the last 10 years	Current levels of fishing effort should not be increased.	
	1996-1998; 2004 (Trinidad: artisanal a-la-vive, banking, switchering, troll)	Overexploited	-Reductions in fishing effort by as much as two-thirds may be required to reduce the risk of stock collapse; -Implement a combination of the following measures: introduce a six month closed season; increase size at first capture (e.g. by enforcing fish and/or mesh size limits) from the current 50 cm up to 60 cm; introduce a limited entry regime to replace the current free access.	
	1995-2003 (Trinidad: artisanal troll & a-la-vive); 1950-2003 (Gulf of Mexico to Guianas)	Fully exploited to overexploited	-No increase in fishing effort and catch of all gears beyond the current levels; -A regional fisheries management commission should be established in the Caribbean to manage sub-regionally shared stocks.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
	1987 (Trinidad: artisanal gillnet & line)	Fully exploited	-No increase in fishing effort; -Gillnet mesh size should not be less than 4.75" (12.1 cm) stretched mesh; -Line fishing to be encouraged over the use of gillnets.	
Cavalli *(Caranx hippos)*	1995 to 2007 (Trinidad artisanal multi-gear fleet)	The catch per unit of effort has remained stable between 1995 and 2007 suggesting similar stability in population size	-Fishing pressure should not be allowed to increase until the dynamics of the stock are better understood; -Management measures proposed for other important commercial species in this multi-species fishery should also promote long-termed sustainability of *C. hippos* resources.	Gear regulations (length, width, mesh size of fillet nets and seines).
Shark (*Carcharinus porosus*)	1992 (Trinidad)	Underexploited		[Note: A precautionary approach to harvesting is advised due to the vulnerability of sharks to overfishing as they are slow growing and take a long time to attain sexual maturity.]
Four-winged flyingfish (*Hirundichthys affinis*)	1989/90 – 1990/91 (Tobago)	Heavily exploited	-Reduce foreign fishing effort; -There should be a conservative approach towards increasing local effort; -Management plan should consider the multi-species nature of this fishery.	Minimum diagonal stretched mesh of 1.75" (4.5 cm) for monofilament gillnets.

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
	1988 to 2008 (Eastern Caribbean)	Regionally the stock is not overfished and overfishing is not occurring. Catch rates have remained stable since 1988. However, this does not imply that local depletion may not be occurring.	- No immediate action is required to conserve the stock unless there is a significant increase in catch; - A trigger point of 5,000T should be established when action may be taken to ensure that the stock does not become overfished; - Should catches rise above the trigger point further fishery development should be discontinued and the stock re-assessed; - Improve quality of catch and effort data for assessment.	
Herrings, anchovies, sardines				No sardine shall be sold except to bona fide fishermen for the purpose of bait.
TRAWL FLEET (Artisanal, Semi-industrial and Industrial trawlers)				
All shrimp species: Brown (*Farfantepenaeus subtilis*); White (*Litopenaeus schmiti*); Pink (*F. notialis*); Honey or Seabob (*Xiphopenaeus kroyeri*); Red-spotted (*F. brasiliensis*).	1988-2012 estimated total catch for Trinidad in Gulf of Paria; 1988-2009, 1975, and 1988 Annual catch and effort data for artisanal inboard (Type II) and semi-industrial (Type III) trawlers for Gulf of Paria; 2008 ParFish Interview Data for all Trinidad trawl fleets.	Significant probability that the stock is overfished and that overfishing occurring.	Reduction in effort will improve fishery, both in terms of socio-economic outcomes and conservation objectives. Taking no action could leave the fishery chronically overfished, with all the attendant problems associated with this. Closed seasons of 2-4 months for all trawlers will reduce effort, benefit those that remain in the fishery, and may provide the best option for balance between conservation and socio-economic objectives.	Controls on entry to the fishery, of industrial and semi-industrial trawlers. Zoning of areas of operation of trawl fleets in Gulf of Paria: artisanal trawlers permitted outside one nautical mile (1.85 km) from the coast; non-artisanal trawlers with engine size <=180Hp permitted outside the 6 fathom (11 m) isobath; non-artisanal trawlers with engine size >180Hp permitted outside the 10

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
All shrimp species: Brown (*Farfantepenaeus subtilis*); White (*Litopenaeus schmiti*); Pink (*F. notialis*); Honey or Seabob (*Xiphopenaeus kroyeri*); Red-spotted (*F. brasiliensis*).	1975, 1988-2009 (Trinidad & Venezuela: trawl); ParFish (Participatory Fisheries Stock Assessment) interviews (43 conducted with fisherfolk in the Trinidad artisanal, semi-industrial and industrial trawl fleets, Apr-Oct 2008)	Overall stock biomass likely to be stable or increasing. However, local depletion in Trinidad waters could still be taking place. It should be noted that there are severe and increasing limitations on the available data.	A harvest control rule should be implemented for Trinidad in order to control the amount of fish caught. At the very least, a fixed seasonal closure of 1-2 months each year, which is considered a relatively crude measure, should be implemented to reduce fishing effort.	fathom (18.3 m) isobath. Trawling is permitted: outside of 2 nautical miles (3.7 km) on the South coast of Trinidad; outside of 2 nautical miles (3.7 km) on the North coast of Trinidad, West of Saut D'eau, Nov 15-Jan 15 between 6am and 6pm. Trawling is prohibited: off the East coast of Trinidad; between 12 nautical miles (22.2 km) and the coast of Tobago. Minimum stretched mesh of cod-end (bag) of trawl net is 7.5 cm (3") for fish and 3.5 cm (1.5") for shrimp. Use of TEDs (Turtle excluder devices) by the industrial and semi-industrial fleets.
All shrimp species: Brown (*Farfantepenaeus subtilis*); White (*Litopenaeus schmiti*); Pink (*F. notialis*); Honey or Seabob (*Xiphopenaeus kroyeri*); Red-spotted (*F. brasiliensis*).	1975, 1988-2004 (Trinidad & Venezuela: trawl)	Overexploited. Stock biomass is declining.	Introduce new fishing controls in both Trinidad & Tobago and Venezuela to decrease the total number of days at sea. This can be done by implementing a closed season for trawling and limiting the numbers of trawlers with a view to reducing the fleet size.	
Pink shrimp (*F. notialis*); Honey or seabob (*X. kroyeri*)	1992-2002 (Trinidad: trawl)	Fully exploited to overexploited	-Do not increase fishing effort; -Attempt to reduce fishing effort; -Target larger shrimp as catch is predominantly young shrimp.	
Brown shrimp (*F. subtilis*)	1988-2001 (Trinidad: trawl); 1973-2001 (Venezuela: trawl)	Severely overfished, with overfishing taking place since the 1970s.	-Introduce measures to reduce fishing mortality; -Adopt a common strategy for effort control by both countries targeting the resource.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
	1988-1996 (Trinidad: trawl); 1973-1996 (Venezuela: trawl)	Overfished	Fishing effort should remain at or below the 1996 level (9,000 days at sea) for a few years to allow the stock to rebuild.	
Shrimp fishery	1995-1996 (Trinidad: trawl); 1995-1998 (Venezuela: trawl)	Fully exploited to overfished, over-capitalised	20% reduction in existing levels of effort would improve profits to the fishery by 12% and reduce the probability of the biomass falling below sustainable levels.	
Cro-cro or Croaker (*Micropogonias furnieri*)	1987, 1989-1997 (Trinidad: artisanal trawl, gillnet & line; Venezuela: trawl) 1995-2006 (Trinidad: artisanal gillnets & lines; artisanal, semi-industrial & industrial trawl)	Fully exploited to overfished	No increase in fishing effort.	
Salmon or Weakfish (*Cynoscion jamaicensis*)	1989-1997 (Trinidad: artisanal trawl, gillnet & line)	Fully exploited to overfished	No increase in fishing effort.	
Lane Snapper (*Lutjanus synagris*)	1963, 1975, 1995 - 2004 (Trinidad: artisanal gillnet, line, fishpot & all trawl fleets)	Overall stock biomass does not appear to be affected by the high local fishing mortality. It is theorized that this may be due to relatively constant recruitment to	-No specific management advice at this time; -Fishing effort should be monitored and, pending further research, a precautionary approach to management is recommended.	No snapper under 8" (20.3 cm) in length should be taken or sold.

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
		the fishery in Trinidad from an external source of the stock in the region.		
Groundfish fishery	1989-1997 (Trinidad artisanal trawl & gillnet)	Fully exploited to overfished	Limit effort for all fleets.	
ARTISANAL FLEET / SEMI-INDUSTRIAL MULTI-GEAR FLEET / RECREATIONAL FLEET (Fishpot, Demersal line)				
Snapper Plumhead (*Rhomboplites aurorubens*)	1992 (Trinidad: artisanal fishpot on North & East coast)	Fully exploited	Restrict fishing.	No snapper under 8" (20.3 cm) in length should be taken or sold.
Lane snapper (*Lutjanus synagris)*	1980-1981 (Trinidad: artisanal fishpot on North & East coast)	Underutilised but the species may be currently fully exploited to overexploited	Increase the age of first capture of species.	
Redfish (*L. purpureus*)	1992 (Trinidad: artisanal fishpot on North & East coast)	Fully exploited	-Limit effort; -Increase mesh size of fishpots.	
Yellowedge Grouper (*Epinephelus flavolimbatus*) Sweetlip (*Mycteroperca interstitialis*)	1992 (Trinidad: artisanal fishpot on North & East coast)	Fully exploited or overexploited	-Restrict effort; -Increase mesh size of fish traps; -Establish impact of illegal fishing by fleets of other countries on these resources.	

SEMI-INDUSTRIAL PELAGIC LONGLINE FLEET / SEMI-INDUSTRIAL MULTI-GEAR FLEET / RECREATIONAL FLEET				
*Yellowfin tuna (*Thunnus albacares*)	ICCAT database – annual submissions from countries and entities exploiting the resources and findings of scientific research papers	Fully exploited.	- Total Allowable Catch (TAC) for the ICCAT Convention Area (Annex 1) of 110,000 t beginning in 2013. -Contracting and Cooperating Parties (CPCs) of ICCAT whose vessels fish yellowfin tuna to implement a Multi-annual Management and Conservation Programme initiated in 2012. -CPCs to issue specific authorization to vessels (excluding recreational vessels) 20m length over all (LOA) or greater flying their flag allowed to fish yellowfin tuna. -CPCs to submit to ICCAT a list of authorized vessels. -ICCAT to establish and maintain a record of authorized vessels, vessels not entered into this record are not authorized to fish, retain on board, tranship, transport, transfer, process or land yellowfin tuna from the Convention area. -Time-area closure for FAD associated fishing from 1st January to 28th February each year in the area delineated by the following limits; Northern limit: parallel 5° / North latitude, Southern limit: parallel 4° / South latitude, Western limit: Meridian 20° / West longitude, and Eastern limit: the African Coast effective June 2016. -CPCs to ensure that its vessels ≥ 20m LOA record their catch -CPCs to submit to ICCAT Management Plans for FAD associated fishing. -Observer programme to be established to ensure observer coverage of 100% of all surface fishing vessels 20m LOA or greater fishing yellowfin tuna during the area/time closure. -Port Sampling Plan to be implemented at landing or transhipment ports to collect data on yellowfin tuna caught in the geographical area of the area/time closure to report to ICCAT describing country of landing, species composition, landings by species, length composition and weights.	These species are currently managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT). Trinidad and Tobago is a contracting Party to ICCAT. ICCAT measures to take effect upon promulgation of new fisheries management legislation. *Recommendations pertain to fishing activities conducted within the ICCAT Convention Area (Annex 1).

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Bigeye tuna (*Thunnus obesus*)	ICCAT database – annual submissions from countries and entities exploiting the resources and findings of scientific research papers	Fully exploited to over exploited.	-TAC of 65,000 t for the ICCAT Convention Area (Annex 1) for each year from 2016 to 2018. -CPCs to implement a Multi-annual Management and Conservation Program initiated in 2012. -CPCs to issue specific authorization to vessels (excluding recreational vessels) 20m length over all (LOA) or greater flying their flag allowed to fish bigeye tuna. -CPCs to submit to ICCAT a list of authorized vessels. -ICCAT to establish and maintain a record of authorized vessels, vessels not entered into this record are not authorized to fish, retain on board, transhipping, transport, transfer, process or land bigeye tuna from the Convention area. -Annual catch limits do not apply to CPCs whose annual catch in 1999 (reported to SCRS in 2000) was less than 2,100 t. -Annual catch limit of 1,575 t for CPCs that are coastal developing members of ICCAT. - CPCs to report quarterly the amount of bigeye tuna caught by vessels flying their flag. -Time-area closure for FAD associated fishing from 1st January to 28th February each year in the area delineated by the following limits; Northern limit: parallel 5° / North latitude, Southern limit: parallel 4° / South latitude, Western limit: Meridian 20° / West longitude, and Eastern limit: the African Coast effective June 2016. -CPCs to ensure that its vessels ≥ 20m LOA record their catch -CPCs to submit to ICCAT Management Plans for FAD associated fishing. - Observer programme to be established to ensure observer coverage of 100% of all surface fishing vessels 20m LOA or greater fishing bigeye tuna during the area/time closure.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
			-Port Sampling Plan to be implemented at landing or transhipment ports to collect data on yellowfin tuna caught in the geographical area of the area/time closure to report to ICCAT describing country of landing, species composition, landings by species, length composition and weights.	
*Skipjack tuna (Western Atlantic stock) (*Katsuwanus pelamis*)		Stock status (2020 = *last year used in assessment*): Overfished – No Overfishing – No	-CPCs to issue specific authorization to vessels (excluding recreational vessels) 20m length over all (LOA) or greater flying their flag allowed to fish skipjack tuna -Time-area closure for FAD associated fishing from 1st January to 28th February each year in the area delineated by the following limits; Northern limit: parallel 5° / North latitude, Southern limit: parallel 4° / South latitude, Western limit: Meridian 20° / West longitude, and Eastern limit: the African Coast effective June 2016. This measure was intended to reduce the mortality of juvenile bigeye and yellowfin tuna; however as it is a complete closure, impacts are expected on all tropical tunas. - Observer programme to be established to ensure observer coverage of 100% of all surface fishing vessels 20m LOA or greater fishing skipjack tuna during the area/time closure. - Port Sampling Plan to be implemented at landing or transhipment ports to collect data on skipjack tuna caught in the geographical area of the area/time closure to report to ICCAT describing country of landing, species composition, landings by species, length composition and weights.	TTO Non-Artisanal Longline Fleet prohibited from landing marlin (blue or white) and spearfish from 1 October 2016.

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Albacore (North Atlantic stock) (*Thunnus alalunga)*		Fully exploited.	-Annual TAC of 28,000 t for the North Atlantic stocks within the ICCAT Convention Area (Annex 1). -CPCs fishing Northern albacore to limit number of fishing vessels from 1999 onwards to the average number in 1993-1995; -EU, US, Venezuela, and Chinese Taipei allocated quotas, other CPCs with the exception of Japan to limit catches to 200 t in 2017-2018 and 215 t in 2019-2020; -CPCs to issue specific authorization to vessels (excluding recreational vessels) 20m length over all (LOA) or greater flying their flag allowed to fish North Atlantic albacore -CPCs may allow bycatch of North Atlantic albacore by vessels not authorised to fish once maximum onboard bycatch limit established and accounted for within the CPCs quota or catch limit; CPCs to report to ICCAT the maximum bycatch limit -Data submitted to standing committee on research and statistics.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Albacore (South Atlantic stock) (*Thunnus alalunga)*		Fully exploited to overexploited	-Annual TAC of 24,000 t for the South Atlantic stocks within the ICCAT Convention Area (Annex 1). -Individual catch limits, Angola (50 t), Belize (250 t), Brazil (2,160 t), China (200 t), Chinese Taipei (9,400 t), Cote d'Ivoire (100 t), EU (1,470 t), Japan (1,355 t), Korea (140 t), Namibia (3,600 t), South Africa (4,400 t), St Vincent and Grenadines (140 t), UK St Helena (100 t), Uruguay (440 t), Vanuatu (100 t); other CPCs to limit their catch to 25 t. -CPCs to issue specific authorization to vessels (excluding recreational vessels) 20m length over all (LOA) or greater flying their flag allowed to fish South Atlantic albacore -CPCs may allow bycatch of South Atlantic albacore by vessels not authorised to fish once maximum onboard bycatch limit established and accounted for within the CPCs quota or catch limit; CPCs to report to ICCAT the maximum bycatch limit-Data submitted to standing committee on research and statistics.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Marlin: Atlantic blue marlin (*Makaira nigricans*) Atlantic white marlin (*Tetrapturus albidus*) Roundscale Spearfish (*Tetrapturus georgii*) Longbill Spearfish (*Tetrapturis pfluegeri*)		Atlantic blue marlin overfished. Atlantic white marlin overfished.	-Annual TAC of 2,000 t for blue marlin and 400 t for white marlin/spearfish for the ICCAT Convention Area (Annex 1). -Country specific annual catch limit for blue marlin (Trinidad & Tobago 20t limit) and white marlin /spearfish (Trinidad & Tobago 15t limit) -Specific annual catch limit for recreationally-caught blue marlin (Trinidad & Tobago 10t limit) and white marlin/spearfish (Trinidad & Tobago 2t limit) -Appropriate measures to be taken by the CPC as it approaches its landings limits to ensure that all blue marlin and white marlin are alive by the time of boarding and released in a manner that maximises their survival. -CPCs with recreational fisheries to maintain 5% scientific observer coverage of blue marlin and white marlin/spearfish tournament landings. -CPCs to adopt regulations to establish minimum sizes in recreational fisheries that meet or exceed 251cm and 168cm lower jaw fork length (LJFL) for blue marlin and white marlin/spearfish respectively, or comparable limits by weight. -CPCs to prohibit the sale, or offering for sale, of any part or whole carcass of blue marlin or white marlin/spearfish caught in recreational fisheries. -CPCs to inform ICCAT of steps taken to implement recommendations. -CPCs to report their methods for estimating live and dead discards of blue marlin and white marlin/spearfish, these estimates are critical to the stock assessment process.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Swordfish (North Atlantic stock) (*Xiphias gladius)*		Stock status (2020 = *last year used in assessment*): Overfished – No Overfishing – No	-Annual TAC of 13,200 t for North Atlantic stocks within the ICCAT Convention Area (Annex 1). -Country specific catch limits (Trinidad and Tobago 125 t annual catch limit) -Optional transfers of annual catch limits (Trinidad and Tobago to Belize 75 t) -Minimum size: 25 kg live weight / 125 cm LJFL with 15% by number tolerance or 15 kg / 119 cm LJFL/ 63 cm cleithrum to keel with no tolerance; - -CPCs to issue specific authorization to vessels 20m length over all (LOA) or greater flying their flag allowed to fish for North Atlantic swordfish. - CPCs may allow bycatch of North Atlantic swordfish by vessels not authorised to fish once maximum onboard bycatch limit established and accounted for within the CPCs quota or catch limit; CPCs to report to ICCAT the maximum bycatch limit. -Data submitted to standing committee on research and statistics.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Swordfish (South Atlantic stock) (*Xiphias gladius)*		Stock status (2020 = *last year used in assessment*): Overfished – Yes Overfishing – Yes	-Annual TAC target of 14,000 t for South Atlantic stocks within the ICCAT Convention Area (Annex 1). -Country specific catch limits -Minimum size: 25 kg live weight / 125 cm LJFL with 15% by number tolerance or 15 kg / 119 cm LJFL/ 63 cm cleithrum to keel with no tolerance; - CPCs to issue specific authorization to vessels 20m length over all (LOA) or greater flying their flag allowed to fish for South Atlantic swordfish. - CPCs may allow bycatch of South Atlantic swordfish by vessels not authorised to fish once maximum onboard bycatch limit established and accounted for within the CPCs quota or catch limit; CPCs to report to ICCAT the maximum bycatch limit. -Data submitted to standing committee on research and statistics.	
*Atlantic sailfish (West Atlantic stock) (*Istiophorus albicans*)		Fully exploited.	- CPCs to maintain appropriate measures to limit sailfish mortality - CPCs to enhance efforts to collect data on catches of sailfish, including dead and live discards, -Data submitted to standing committee on research and statistics.	
*Atlantic sailfish (East Atlantic stock) (*Istiophorus albicans*)		Fully exploited.	- CPCs to maintain appropriate measures to limit sailfish mortality - CPCs to enhance efforts to collect data on catches of sailfish, including dead and live discards, -Data submitted to standing committee on research and statistics.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
*Small Tunas: Blackfin Tuna (*Thunnus atlanticus*) Bullet Tuna (*Auxis rochei*) Atlantic Bonito (*Sarda sarda*) Frigate Tuna (*Auxis thazard*) Little Tunny (*Euthynnus alletteratus*) Wahoo (*Acanthocybium solandri*) Dolphinfish (*Coryphaena hippurus*)		Indeterminate	Precautionary approach – no large increases in effort above the current level until stock dynamics are better understood.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
Sharks: *Blue shark *(Prionace glauca)*		North and South Atlantic stocks suggest stability but results are uncertain.	-Precautionary management measures should be considered for stocks -CPCs mandated to report annually on catches -CPCs vessels to fully utilize their entire catches of sharks defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing. -CPC vessels to not have on board fins that total > 5% of the weight of sharks onboard up to first point of landing -In fisheries not directed at sharks CPCs to encourage release of live sharks, especially juveniles, which are not used for food and/or subsistence. -Fishing vessels are prohibited from retaining on board, transshipping or landing any fins harvested in contravention of this Recommendation. -CPCs to implement research on pelagic shark species caught in the Convention area to identify possible nursery areas. -CPCs to report annually on actions taken to implement recommendations, in particular steps taken to improve data collection for direct and incidental catches.	

Sharks: *Shortfin mako *(Isurus oxyrinchus)*		Fully exploited to over exploited	-CPCs to require vessels flying their flag to promptly release North Atlantic shortfin mako in a manner that causes the least harm, while giving due consideration to the safety of crew members. - CPCs may authorise vessels (>12m) to catch and retain on board, tranship or land North Atlantic shortfin mako provided that: the vessel has either an observer or a functioning electronic monitoring system on board which can identify whether the fish is dead or alive; shortfin mako is dead when brought along side for taking on board; the observer collects data on the numbers hooked, body length, sex, condition, maturity and weight of each shortfin mako caught as well as fishing effort; when shortfin mako is not retained the number of dead discards and live releases shall be recorded by the observer or estimated from the records of the electronic monitoring system -CPCs may authorise vessels (<12m) to catch and retain on board, tranship or land north Atlantic shortfin mako provided that shortfin mako is dead when brought along side for taking on board the vessel. - CPCs may authorise their vessels to catch and retain on board, tranship or land North Atlantic shortfin mako provided that: shortfin mako is dead when brought along side for taking on board the vessel and; retention of shortfin mako does not exceed the fishing vessel's average shortfin mako landings while an observer is on board and this is verified by mandatory logbooks and landings inspection conducted on the basis of risk assessment. -CPCs mandated to report on catches, including estimates of live and dead discards and size frequencies.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
Sharks: *Longfin mako *(Isurus paucus)*	2006 (IUCN Red List Assessment)	Fully exploited to overfished	-Precautionary management measures should be considered for stocks -CPCs mandated to report annually on catches -CPCs vessels to fully utilize their entire catches of sharks defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing -CPC vessels to not have onboard fins that total > 5% of the weight of sharks onboard up to first point of landing; -In fisheries not directed at sharks CPCs to encourage release of live sharks, especially juveniles, which are not used for food and/or subsistence. -Fishing vessels are prohibited from retaining on board, transshipping or landing any fins harvested in contravention of this Recommendation. -CPCs to implement research on pelagic shark species caught in the Convention area to identify possible nursery areas. -CPCs to report annually on actions taken to implement recommendations, in particular steps taken to improve data collection for direct and incidental catches.	
Sharks: *Oceanic Whitetip (*Carcharhinus longimanus*)	2006 (IUCN Red List Assessment)	Fully exploited and overfished.	-CPCs to prohibit retaining on board, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of oceanic whitetip sharks in any fishery. -CPCs to record through observer programs the number of discards and releases of oceanic whitetip sharks and status (dead or alive) and report to ICCAT.	

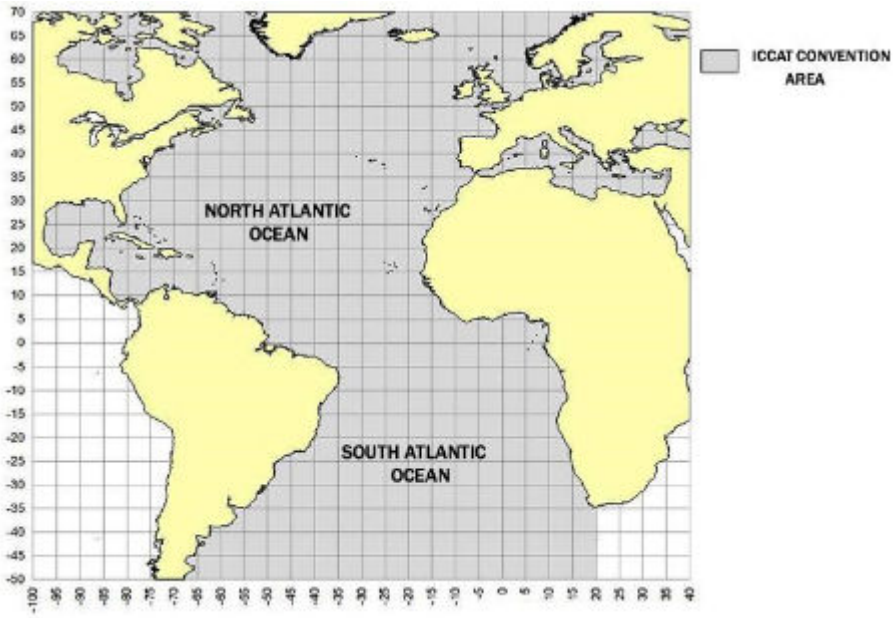
SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
Sharks: *Blacktip Shark *(Carcharhinus limbatus)*	2009 (IUCN Red List Assessment)	Overfished.	-Precautionary management measures should be considered for stocks -CPCs mandated to report annually on catches -CPCs vessels to fully utilize their entire catches of sharks defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing -CPC vessels to not have onboard fins that total > 5% of the weight of sharks onboard up to first point of landing; -In fisheries not directed at sharks CPCs to encourage release of live sharks, especially juveniles, which are not used for food and/or subsistence. -Fishing vessels are prohibited from retaining on board, transshipping or landing any fins harvested in contravention of this Recommendation. -CPCs to implement research on pelagic shark species caught in the Convention area to identify possible nursery areas. -CPCs to report annually on actions taken to implement recommendations, in particular steps taken to improve data collection for direct and incidental catches.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
Sharks: *Tiger shark *(Galeocerdo cuvier)*	2009 (IUCN Red List Assessment)	Overfished.	-Precautionary management measures should be considered for stocks -CPCs mandated to report annually on catches -CPCs vessels to fully utilize their entire catches of sharks defined as retention by the fishing vessel of all parts of the shark excepting head, guts and skins, to the point of first landing -CPC vessels to not have onboard fins that total > 5% of the weight of sharks onboard up to first point of landing; -In fisheries not directed at sharks CPCs to encourage release of live sharks, especially juveniles, which are not used for food and/or subsistence. -Fishing vessels are prohibited from retaining on board, transshipping or landing any fins harvested in contravention of this Recommendation. -CPCs to implement research on pelagic shark species caught in the Convention area to identify possible nursery areas. -CPCs to report annually on actions taken to implement recommendations, in particular steps taken to improve data collection for direct and incidental catches.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
Sharks: *Sharks:Silky shark *(Carcharhinus falciformis)*	ICCAT database – annual submissions from countries and entities exploiting the resources and findings of scientific research papers	Fully exploited and overfished.	-CPC's vessels release all silky sharks whether dead or alive, and prohibit retaining on board, transshipping, or landing any part or whole carcass of silky shark. -CPCs to require vessels promptly release silky sharks unharmed, giving due consideration to the safety of crew members. -CPCs shall record through their observer programs the number of discards and releases of silky sharks with indication of status (dead or alive) and report it to ICCAT.	
Sharks: *Bigeye Thresher (*Alopias superciliosus*)	ICCAT database – annual submissions from countries and entities exploiting the resources and findings of scientific research papers	Fully exploited and overfished.	-CPCs to prohibit, retaining on board, transhipping, landing, storing, selling, or offering for sale any part or whole carcass of bigeye thresher shark. -CPCs to require vessels flying their flag to promptly release unharmed bigeye thresher sharks when brought along side for taking on board the vessel. - CPCs to strongly encourage vessels flying their flag do not undertake a direct fishery for species of thresher sharks of the genus *Alopias spp*. -CPCs require the collection and submission of Task I and Task II data for *Alopias spp* in the Convention area in order to identify potential nursery areas.	

SPECIES	DATA USED IN STUDY	STATUS OF STOCK	MANAGEMENT RECOMMENDATIONS	CURRENT MANAGEMENT MEASURES IN PLACE FOR EACH FISHERY / STOCK
Sharks: Hammerheads *Scalloped Hammerhead (*Sphyrna lewini*) *Great Hammerhead (*Sphyrna mokarran*) *Smooth Hammerhead (*Sphyrna zygaena*)	ICCAT database – annual submissions from countries and entities exploiting the resources and findings of scientific research papers	Fully exploited and overfished	-CPCs to prohibit retaining on board, transhipping, landing, storing, selling, or offering for sale any part or whole carcass of hammerhead sharks of the family Sphyrnidae (except for *Sphyrna tiburo*) taken in the Convention area associated with ICCAT fisheries. -CPCs to require their vessels to promptly release unharmed hammerhead sharks when brought alongside the vessel. -CPCS required to record the number of discards and releases of hammerhead sharks and their status (dead or alive) and report to ICCAT. -CPCs where possible to implement research on hammerhead sharks in the Convention area in order to identify potential nursery areas.	

ANNEX 1



Source: http://www.iccat.int/en/convarea.htm

Figure 1. ICCAT Convention Area: Limits, as bounded by the North and South Atlantic Oceans, of the designated Convention Area as defined by ICCAT

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