

**Status of Artisanal Fisheries in
Trinidad and Tobago**

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Trinidad and Tobago consists of two main islands and several smaller ones. The former, with a land area of 1,863 mi² is the second largest of the group of islands formerly called the British West Indies, while Tobago has 116.2 mi². This gives a total land area of 1,980 mi² or 5,1339 km². Trinidad and Tobago sit on the continental shelf of northeast South America with Trinidad just 7-8 nautical miles from Venezuela at its southwestern tip, while the continental shelf falls off sharply from Tobago. A combination of oceanographic factors, such as currents, effluents, salinity and temperature, from the Amazon River and the rivers of the Guianas, Venezuela and Trinidad, have resulted in almost two distinct fisheries in Trinidad and Tobago.

Our food import bill is now quoted at over \$800 million TT per annum.

Resources.--Tobago is surrounded by reef formations and has fisheries similar to the more northern islands of the Caribbean and the species most commonly caught are: Pelagic - flying fish (Exocoetidae), dolphin fish (Coryphaena hippurus), wahoo (Acanthocybium solandri); and Demersal - snappers (Lutjanidae), groupers (Serranidae), shark (several species) and reef species.

Trinidad, on the other hand, has fisheries similar to the Guianas and Venezuela in terms of species. The pelitic and sandy substrates around Trinidad allow trawling except in certain areas of the east coast which tend to be rocky. Species of fish and shell fish common to Trinidad are: (1) Pelagic - carite or Spanish mackerel (Scomberomorus brasiliensis), king fish (Scomberomorus cavalla) cavalli (Caranx hippos); (2) Demersal - seatrout (Cynoscion sp.), croaker (Micropogon sp.), snappers, groupers and sharks (Charcharinidae); (3) Shrimps - seabob or honey shrimp (Xiphopenaeus kroyeri), white (Penaeus schimitti), pink (P. notialis), spotted pink (P. brasiliensis) and brown (P. subtilis).

Fleet.--The fishing fleet which exploits the marine resources around Trinidad and Tobago is mainly artisanal. Of the 1,403 fishing boats listed in Table 1 (1980 census), 14 are trawlers owned by the National Fisheries Co., Ltd. which exploits fishing grounds off Brazil, 12 are secondhand trawlers exploiting local fishing grounds and the remaining 1,377 are bum boats and pirogues ranging in length from 14 ft (4.3m) to 34 ft (10.4m).

Table 1. Distribution of fishing boats (1980)

County	Trawlers and Boats
St. Andrew	35
St. David	47
Nariva	24
Mayaro	26
Caroni	91
Victoria	161
St. Patrick	321
St. George	315*
Tobago	383
Total boats	1403

*This figure includes 14 trawlers belonging to National Fisheries Company and 12 second hand trawlers exploiting local fishing grounds.

The bum boat is found only in Tobago while the pirogue, hitherto used only in Trinidad, is now becoming popular in Tobago also. The main differences between the bum boat and the pirogue lie in the method of construction: (1) The bum boat has a true keel while the pirogue is built on a shell with a false keel for protection; (2) The bum boat has carvel planking (edge to edge) as opposed to the pirogue which has clinker planking (overlapping). Bum boats are constructed from wood while pirogues are constructed from wood, wood protected with fiberglass or reinforced fiberglass.

The trawlers referred to above are the typical Gulf of Mexico, double rigged, shrimp trawlers 75 ft (23m) long except three owned by the National Fisheries Co. Ltd. which are 90 ft (27.6m) LOA and are combination fish/shrimp trawlers.

Within recent years about eight boats in the 35 ft (10.7m) - 40 ft (12.3m) range have entered the fleet. Six of these are trawlers and two are multipurpose vessels capable of long lining, fish potting, trolling, and banking. More sophisticated than the pirogue, these boats have sleeping accommodation, greater capacity for ice, fuel and navigational and fishing aids.

All the pirogues and bum boats are mechanized. Outboard engines range from 15 hp to as high as 235 hp, but the most common means of propulsion is 2-48 hp outboards. Some pirogues which are engaged in trawling use inboard engines and these operate from three beaches (Otaheite, Cacandee and Orange Valley) in the Gulf of Paria. Trawling, hitherto carried out with inboard engines, is now done with outboard engines also. Many fishermen now operate with two engines per boat. A growing tendency, and one which is causing concern to the Fisheries Administration, is the use of larger and larger outboard engines (up to 235 hp) on fishing boats. When the incentive scheme is explained this concern will be better appreciated.

Fishing Methods.--As should be expected from the diverse number of fish and shell fish species found around Trinidad and Tobago, a variety of fishing methods are employed to exploit them. The methods employed depend on the behavior of the fish (schooling or not), the level at which the fish live (pelagic or demersal) and in the case of trawling, on the topography of the bottom.

The fishing methods employed for demersal species are: (1) Trawling - Bottom trawling is employed by the artisanal fishing fleet with both inboard and outboard engines for such species as shrimps, snapper, seatrout and croaker. A single net is pulled along the bottom of the sea while being kept open by two trawl doors. This method is employed only in Trinidad. (2) Long Lining - The gear consists of a main line with several baited branch lines. Locally, it is also called the palangue and is employed both in Trinidad and Tobago. Species caught include the sharks, snappers and groupers. (3) Fish Pots - Several fish pots are strung together on the bottom of the sea. This method is employed in Trinidad and Tobago and catches fish as mentioned at (2) above. (4) Banking - A hook and line method employed from a stationary boat in an area which is generally shallower than surrounding areas. Species caught in Trinidad and Tobago include the snapper and sharks.

Pelagic species are fished by the following methods: (1) Gill netting (filet net) - A wall of net generally fished on the surface, one end of which is attached to the drifting boat. Species caught in Trinidad and Tobago include the king fish, carite, cavalli, flying fish and jacks (Carangidae). (2) Trolling - Dragging hooks and lures through the upper layers of the water. Species caught include king fish, carite, dolphin, tunas and bill fishes. (3) Lurking - Used for catching flying fish. While drifting with his filet or gill net ready for fishing, the fisherman attracts the flying fish with macerated fish and oils. Used only in Tobago. (4) Tight Lining - Carried out at night. The boat is anchored and a strong light is used to attract bait such as squids, jacks (Carangidae), sardines (Clupeidae) and balao (Hemiramphus sp) which are scooped up and used to catch king fish, snapper, shark and cavalli. Used only in Tobago. (5) A la vive - A hook and line method. Live bait is carried to the fishing grounds in a bait well and used to attract fish. As soon as feeding starts baited hooks are used. Employed in Trinidad only to catch king fish, carite and cavalli. (6) Seining - A seine is an encircling net used to capture pelagic fish, such as herring (Clupeidae), king fish, carite, cavalli and others. The beach seine is used from land while the Italian and tuck seines are used at sea from the larger pirogues.

Fishermen.--It is estimated that over 6,000 persons are employed directly or indirectly in the artisanal fisheries, 60% of whom are self employed. These include:

Full time fishermen	-	3,500
Part time fishermen	-	1,000
Sport fishermen	-	500
* Others	-	<u>1,000</u>
		6,000

*Wholesalers, retailers, auctioneers, net, boat and engine repairmen, gear and boat builders, gear and equipment sales personnel, jostlers, oysters and mussel vendors and collectors and other persons providing tertiary services.

Fisherman's cooperatives and other organizations, with few exceptions, have a history of failure. A notable exception is the marketing cooperative located at Charlotteville, Tobago. With the minimum of assistance this cooperative has been able to install its own cold storage to market fish on behalf of its members, as well as manage a gas station and a small shop for the sale of fishing gear. With the advent of the Extension Unit of the Fisheries Division, several organizations are being revived and new ones formed.

Beach Development.--Fishing beaches in Trinidad and Tobago are classified into three categories depending on the number of boats and fishermen operating therefrom, total landings and locations: beaches without facilities, beaches with basic facilities and designated beaches. Basic facilities provided for fishermen include: (1) Lockers for the safe keeping of outboard engines, spare parts, fishing gear and equipment; (2) Shed for the repair of fishing gear and boats; (3) Navigational aids for getting safely into port at night; (4) Slipway for hauling up and launching boats; (5) Utilities: Access roads, water, lights and toilet facilities. Facilities have been provided on 24 beaches in Trinidad and 7 in Tobago.

Marketing.--Fish are landed at some 85 beaches throughout Trinidad and Tobago. Several systems of disposing of the catch on the beach have evolved and these include: (1) Sales by the fishermen directly to the consumer, e.g. Plymouth; (2) Sales to a middleman, e.g. Otaheite; (3) Sales to or through a cooperative, e.g. Charlotteville; (4) Catch auctioned on the beach, e.g. Orange Valley; (5) Catch taken to wholesale markets at San Fernando or Port of Spain for auctioning. Fish are also distributed throughout Trinidad and Tobago by itinerant vendors, at retail markets or taken directly to restaurants and hotels.

The lack of proper handling and storage facilities often puts the fisherman at a disadvantage and the sanitary conditions under which some of the fish are sold leaves much to be desired. The beaches earmarked for marketing facilities are termed designated beaches and, in addition to the basic facilities, will have: chill storage for the preservation of fish; market stalls for the sanitary handling of fish; shops for the sale of fishing gear and equipment; and mechanized systems for hauling and launching boats.

Incentives.--Apart from the infrastructural facilities provided there is a very comprehensive incentive scheme. This scheme involves: (1) Loans - administered through the Agricultural Development Bank for engines, boats and fishing gear at 3% interest, and vehicles, trawlers and processing equipment at 6.5% interest. (2) Duty and Purchase Tax Concessions - on outboard and inboard engines, fishing gear, hooks, twine, echo sounders, radar, compasses and other equipment. (3) Purchase Tax Concession and Subsidy - on artisanal fishing boats, (4) Fuel Rebate and Subsidized Fuel - for artisanal fishing boats and trawlers respectively. (5) Purchase Tax Concessions and Subsidy - on vehicles subject to specific conditions. (6) Purchase Tax and Duty Free Concessions - on boat's processing equipment, cold storage, etc., imported into Trinidad and Tobago. The whole subsidy scheme is being reviewed and consideration is being given to the introduction of an insurance scheme.

Production.--As pointed out earlier, statistical data are collected on 16 beaches in Trinidad and three in Tobago. These beaches are Charlotteville, Plymouth and Speyside in Tobago and in Trinidad, the following: Port of Spain, Bonasse, Carenage, San Fernando, Icacos, Otaheite, Orange Valley, Toco, Erin, Las Cuevas, Mayaro, Fullerton, Gran Chemin, Maracas, Lans Mitán and La Lune. Table 2 gives the total landings and value on these 19 beaches for 1982. It also gives the percent landed by species and the average wholesale price per kilogram.

The landings on the 19 beaches amounted to 4.1 million kg valued at \$26 million and the estimated total landings for all beaches is 9 million kg valued at \$58 million. Table 2 also reveals that the fishermen were paid an average of \$9.82 and \$9.78 TT for shrimp and king fish respectively. However, the consumer was often asked to pay twice this amount.

Table 2. Fish and shrimps landed at 16 beaches throughout Trinidad and Tobago during 1982

Category	Weight (kg)	Value (\$ TT)	Total Weight (%)	\bar{x} Price/kg (\$ TT)
Carite	1,106,252	6,765,551	27.0	6.12
Shrimp	699,772	6,879,912	17.0	9.82
Sharks	414,521	1,283,420	10.1	3.10
King Fish	184,402	1,803,372	4.5	9.78
Cavali	169,923	1,124,082	4.1	6.62
Snappers	148,250	1,368,149	3.6	9.23
Herring	76,190	130,063	1.9	1.71
Misc.	1,306,229	1,724,820	31.8	5.15
Total	4,105,539	26,070,369	100.0	6.35

Imports and Exports.--Trinidad and Tobago continued to import the equivalent wet weight of what it produces. The 1982 import figures reveal that 5.14 million kg (processed weight) were imported at a value of \$30.6 million. In terms of value salted

cod accounted for 41.1% of imports and canned sardines 14.9% with the rest made up of a variety of products. The total consumption of fish and fish products is 18.2 million kg and, at an estimated population of 1.2 million for 1983, the per capita consumption is determined to be 15.2 kg. Export figures for 1982 show that commodities to the value of \$5.8 million were exported. This was made up almost entirely of frozen fish and shrimps not included in the production or import figures and, therefore, does not affect our consumption calculations.

Aquaculture and Inland Fisheries.--Many farmers are now growing fish in the ponds used to provide water for irrigating their crops. The Fisheries Division supplies tilapia fingerlings and cascadura (Hoplosternum littorale) to these farmers. There is no estimate of the fish produced by these farmers since most are for personal consumption. Several species of freshwater fish are eaten locally but here again there is no estimate of production.

Two species of fresh water fish are exported for aquariums, teta (Hypostomus robinii) and pui pui (Corydoras aeneus). Export trade reached a peak in 1976 at \$489,280 but figures for 1982 reveal that 474,755 and 17,590 respectively valued at \$202,286 were exported.

Ten Year Development Plan.--In August, 1979 the Permanent Secretary, Ministry of Agriculture, Lands and Food Production, appointed a committee to examine several proposals for fisheries development, including the White Paper on Agriculture. By August 1980 a draft plan was submitted. The main objectives of the plan were to increase the local supply and consumption of fish and fish production to 19,500 tons (43 million lb) by 1989. This was to be achieved through increased local production, exploiting foreign grounds and aquaculture. It is hoped to raise income levels and improve the lot of the fisherman.

The main elements of the plan now being implemented are: (1) Resource Assessment and Exploratory Fishing, for example, the Artisanal Shark Project. (2) Commercialization of specific fisheries, such as flying fish. (3) Marketing and Beach Developments include the wholesale fish market recently opened at Sea Lots and cold storage being installed at Icacos and Orange Valley. National Fisheries Company has established over 12 outlets for its products throughout Trinidad. (4) Processing and product development is mainly done through the National Fisheries Company, Limited. It is now producing fish sausages, burgers, chowder, breaded sticks and a variety of frozen products. (5) Improvements in boat and fishing gears for the Artisanal Shark Project. (6) Extension - A unit has just been set up to administer the incentive program to disseminate information on improved fishing techniques and handling of fish. (7) The Caribbean Fisheries Training and Development Institute (C.F.T.D.I.) formerly trained personnel for the trawler fleet. Recently, however, Trinidad and Tobago decided to re-establish the Institute with the emphasis on training for the artisanal fisheries. (8) Incentives - Continuation of an incentive program and investigation of the possibility of insurance. (9) Aquaculture - Intensification of the aquaculture program, concentrating mainly on small scale projects. Some large scale projects are also under consideration.

Law of the Sea and Fishing Agreements.--In December, 1982 Trinidad and Tobago signed the Convention of the Law of the Sea in Jamaica and by May, 1983 declared itself an Archipelagic State with a 200 mile Exclusive Economic Zone (EEZ). This brings benefits and obligations such as resource assessment, sharing surplus stocks, marine research and pollution. Trinidad and Tobago is involved in fishing agreements and other arrangements for fishing in the waters of foreign countries, but the one that affects the artisanal fisheries is the Trinidad and Tobago/Venezuela Fishing Agreement. Under this Agreement artisanal fisheries boats from Trinidad and Tobago are permitted to fish in Venezuelan waters and vice versa.

Laws and Regulations.--A new fisheries act is being prepared. In the interim, regulations for the management and conservation of the resources are being developed.

Fisheries Division.--The Fisheries Division of the Ministry of Agriculture, Lands and Food Production has the responsibility for policy and implementation of the various elements of developments mentioned above. It is assisted in its endeavors by several organizations for different aspects: (1) Research - University of the West Indies, Institute of Marine Affairs and Caribbean Fisheries Training and Development Institute; (2) Marketing and Processing - National Fisheries Company, CARIRI (Caribbean Industrial Research Institute); (3) Training - Caribbean Fisheries Training and Development Institute, Institute of Marine Affairs and University of the West Indies; (4) Beach Developments - Ministry of Works, Drainage and Maintenance, State Enterprises, e.g., National Fisheries Company, Field Engineering Division, Ministry of Agriculture, Lands and Food Production; (5) Other - Coast Guard, Harbour Master.

Constraints to Development.--There are several constraints to the development of the artisanal fisheries in Trinidad and Tobago. These include: (1) Insufficient trained staff at the Fisheries Division; (2) Different organizations involved in fisheries development under different ministries; for example, Fisheries Division, under Ministry of Agriculture, Lands and Food Production, National Fisheries Company under the Ministry of State Enterprises; cooperative development under the Ministry of Labour, Social Security and Cooperatives, etc.; (3) Priorities differ. Fishermen with very few exceptions, are not properly organized. Therefore, it is sometimes difficult to know their needs and priorities; (4) Training - for all sectors of the industry. At the fishermen level it is required in improved techniques, seamanship, safety at sea, preventative maintenance; (5) Resource assessment - absolutely necessary before large investment; (6) Processing and marketing - example, flying fish; (7) Finance - for infrastructural developments and other elements of development. Costs of inputs for fishing are also rising; (8) Exclusive Economic Zone (EEZ) - Surveillance and other obligations.

The 10 Year Development Plan for fisheries is being implemented and I have no doubt that with this, most, if not all, of the problems now encountered will be eliminated.