

FISHERIES OF SOUTH EAST TRINIDAD

1. Major areas of activity

The major sites of fishing activity in south east Trinidad and specifically in the immediate study area are Ortoire and Plaisance/ Mayaro on the east coast, and Guayaguayare on the south east coast. Included in the wider study area are the fishing port of Moruga on the south coast, west of Guayaguayare, and Manzanilla on the east coast, north of Ortoire, where some minimal activity occurs. (Insert map)

2. Numbers and types of vessels

There are 128 vessels operating out of sites in the wider area, ie. between Manzanilla on the east coast and Moruga on the south coast, and 62 vessels operating out of sites in the study area.

The vessels operating out of all sites in this region are artisanal day fishing vessels (pirogues). They are generally 7 – 12 metres in length, powered by outboard engines and the fishing gear is manually operated. In Ortoire where the majority of the fishpot vessels are based, the pirogues are generally larger 12 – 13 m. Fishing trips are made daily and the vessels carry ice to keep the fish fresh.

Fishing grounds off the south coast are shared with Venezuela, under the 1997 *Agreement between the Government of the Republic of Trinidad and Tobago and the Government of the Republic of Venezuela for Cooperation in the Fisheries Sector*. Article II of this agreement delineates the common fishing area, the vessels permitted in this area and the conditions and obligations under which the vessels of contracting parties may operate.

Under the agreement, trawlers from Trinidad and Tobago and Venezuela, are permitted to fish in a common fishing zone in the Columbus Channel, outside of two miles from the south coast of Trinidad and the coast of Venezuela.

Local industrial trawlers based at Sea Lots and Orange Valley on the west coast operate in the Gulf of Paria and in the Columbus Channel. The local fleet consists of about 25 double-rigged, Gulf of Mexico type trawlers, 11 – 24 metres in length with inboard diesel

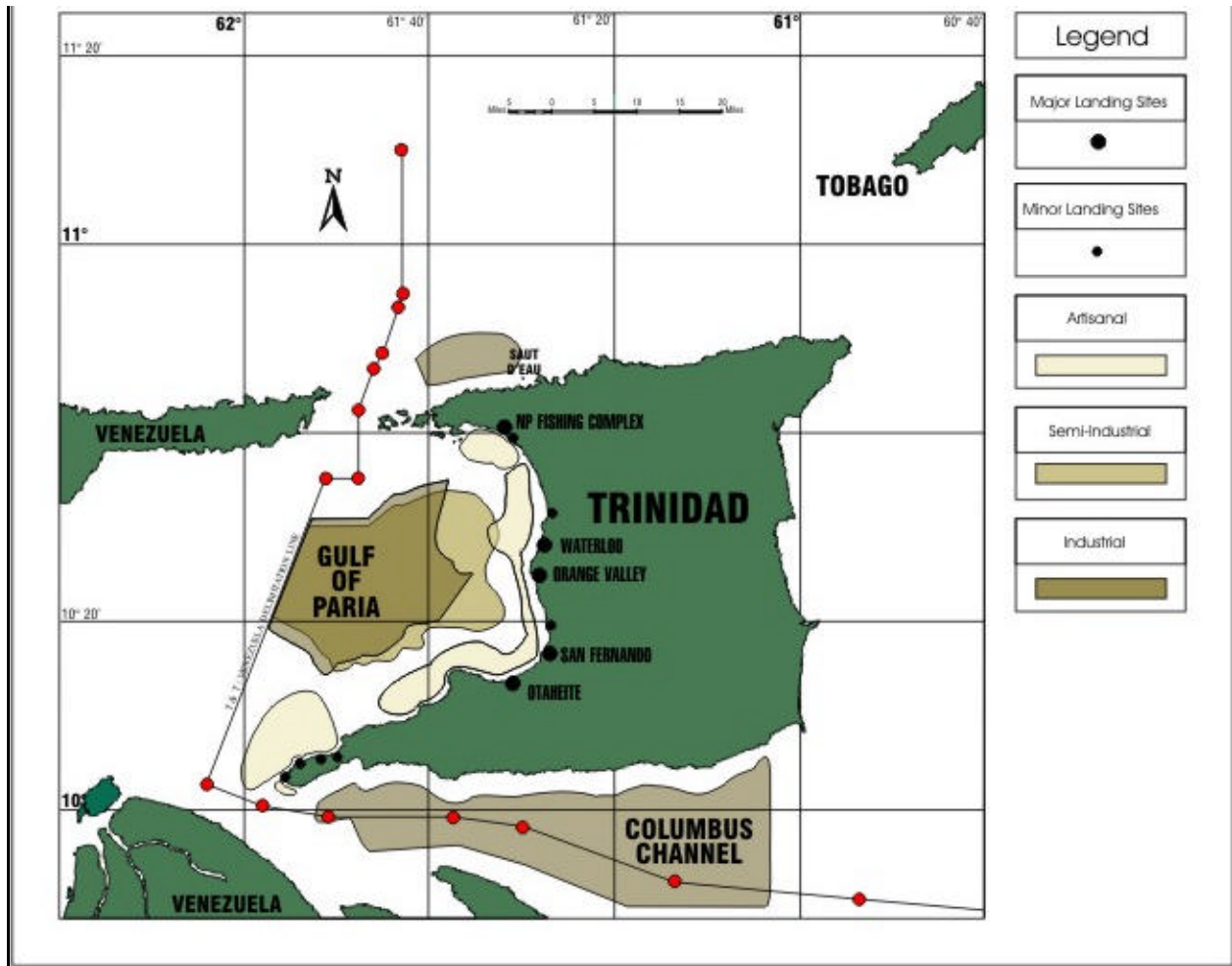


Figure 1. Map of Trinidad and Tobago showing main trawling areas by fleet type (source: Kuruvilla et al., 2000).

engines and mechanized gear operations. They operate at depths of 18 – 24m in the Columbus Channel. These vessels generally fish for 10 – 14 days and store the shrimp and fish in refrigerated or ice holds. Trawling is not permitted on the east coast of Trinidad.

A fleet of Venezuelan semi-industrial vessels operating mainly out of ports on Margarita island, target snapper and grouper resources in the waters off north eastern Venezuela, and illegally off the north and east coast of Trinidad using both handlines and longlines (J. Mendoza and A. Larez, 1996). The presence of these vessels around the rigs off the south east coast has been widely reported.

3. Fishing Gear

Table 1. lists the primary gear used by the vessels at each of the sites. Gear type has been linked to broad target species grouping, ie. demersal /groundfish species, pelagic/ mid-water species, or a mix of the two groups.

Table 1. Primary gear for fishing vessels at landing sites in south east Trinidad.

Home Port	Fishing Gear		Total for target group	Target Species Grouping	Fishing Areas
Manzanilla	Banking	1	2	Demersal	
	Palangue	1			
	Gillnet (demersal)	1	1	Mixed	
	Total	3			
Ortoire	Fishpot	9	14	Demersal	
	Banking	5			
	Gillnet (surface)	1			
	Trolling	1			
	Gillnet (demersal)	9	9	Mixed	
		Total	25		
Plaisance/ Mayaro	Fishpot	3	3	Demersal	
	Gillnet (surface)	5	5	Pelagic	
	Gillnet (demersal)	7	11	Mixed	
	Beach Seine	4			
		Total	19		
Guayaguayare	Banking	2	3	Demersal	
	Palangue	1			
	Gillnet (surface)	11	11	Pelagic	
	Gillnet (demersal)	3	4	Mixed	
	Beach Seine	1			
	Total	18			
Moruga (Grand Chemin, La Retraite)	Banking	4	7	Demersal	
	Fishpot	2			
	Palangue	1			
	Line (trolling, a la vive, switchering)	23	29	Pelagic	
	Gillnet (surface)	6			
	Gillnet (demersal)	27	27	Mixed	
	Total	63			

Total for study area (Ortoire, Plaisance/ Mayaro, Guayaguayare)					62
Total for the wider area (including Manzanilla and Moruga)					128

Artisanal vessels located at sites in the wider study area

Demersal species are caught with banking lines, fish pots, palangue (bottom-set longlines), and bottom set gillnets (monofilament, nylon nets). The fishpots are generally of the arrow-head design and the construction materials range from the traditional wooden frame and wire mesh to the larger steel frame with polyethylene mesh. The mesh size is generally 2 inch hexagonal (Mohammed, 2001). The target species are the redfish/ snapper, grunts, groupers and lobsters. These species are also caught by spearfishing. Ortoire is one of the more important sites for demersal fishing activity.

Pelagic species are caught with lines and surface gillnets in the south and south east coastal areas. The surface gillnets are made of nylon multifilament and are generally deployed at night. Most of the vessels using this type of gear operate out of Guayaguayare and Moruga. These vessels target the kingfish and the spanish mackerel year round, with a peak in activity associated with the rainy season (June – November). During the peak season, fishing vessels may migrate to these sites from fishing ports along the south west and west coasts.

The monofilament gillnets catch both demersal and pelagic species in shallow coastal areas. The target species for this gear are the spanish mackerel, salmon, croaker and associated whitefish. This gear is used predominantly in Moruga, Plaisance/ Mayaro and Ortoire. Beach seines catch a mix of both pelagic and demersal species but usually target pelagic species on a seasonal basis. There are a few beach seines fished seasonally along the stretches of the Mayaro coastline.

Table 2: Characteristics of gillnets.

Type of Net	Mesh Size (inches)	Weight(lbs)	Mesh Depth	Length (m)
Nylon Multi-filament	4” 3.75”	50 or 25lb bales (3 -6 bales per net)	100 mesh/ 50lb	732 – 1190 m
Nylon Mono-filament	4” 3.75”	50 or 25lb bales (5 – 8 bales per net)	100 mesh/50lb 50 mesh/25lb	450 – 1098m

(From Chan A Shing, 2002)

Industrial trawling in the Columbus Channel

Local industrial trawlers are double-rigged with each boom carrying two doors (2.7 x 1.2 m), and a net with a headrope length of 15m, and mesh size of 3.5cm. This is a demersal trawling operation for shrimp and groundfish. The Venezuelan trawl fleet is considerably larger than the local fleet and the Columbus Channel is one area of the wider range of operation. This fleet targets both fish and shrimp.

Venezuelan artisanal vessels on the East Coast.

An analysis of catch data for the Venezuelan fleet for the period 1981 – 1992 (Mendoza and Larez, 1996), states that the red snapper made up 45% of handline catches and the grouper 59% of demersal longline catches. Snappers were the dominant species in the Atlantic area off Trinidad.

4. Commercially important species in coastal southeast Trinidad

The commercially important species targeted with fishpots and lines are the snappers, grunts and groupers. The snapper species of importance are the southern red snapper (*Lutjanus purpureus*), lane snapper, (*L. synagris*) and the vermilion snapper (*Rhomboplites aurorubens*). Groupers targeted are mainly *Epinephelus* spp. and *Mycteroperca* spp. Bycatch from the demersal fishery may include lobsters (*Panuliris* spp) and grunts (*Haemulon* spp).

The demersal fish caught by artisanal gill nets and lines are dominated by six main species groups. These are croaker (*Micropogonias furnieri*), salmon (comprising several *Cynoscion* sp.; *Macrodon ancylodon*), blinch (*Diapterus* spp.), redfish/snapper (primarily *Lutjanus synagris*), grunts (several species of *Haemulon* and *Orthopristis*; *Genyatremus luteus*) and catfish (several species of *Bagre* and *Arius*).

The main target species of the pelagic fishery are the carite or Serra Spanish mackerel (*Scomberomorus brasiliensis*), King mackerel (*Scomberomorus cavalla*) and several species of sharks (*Sphyrna tudes*, *Rhizoprionodon lalandii*, *Carcharhinus porosus*, and *C. limbatus*). Associated species include Cavalli (*Caranx hippos*) and other Carangids (Henry and Martin 1992).

The main species of commercial importance to the trawl fishery are the penaeid shrimp, *Farfantepenaeus brasiliensis* (pink-spotted shrimp, hoppers), *F. subtilis* (brown shrimp) *F. notialis* (pink shrimp), *Litopenaeus schmitti* (white/cork shrimp), and *X. kroyeri* (honey/jinga shrimp). The finfish associated with this grouping belong to the *Sciaenidae* (salmon and croaker), *Gerridae* (blinch), *Haemulidae* (grunts), *Lutjanidae* (snappers) and *Ariidae* (catfish). Table 3 lists the commercially important species exploited by the major fishing gears in coastal areas of southeast Trinidad.

Table 3: Commercially important species in southeast Trinidad

Fishing Gear	Family	Common	Species
Fishpot	Lutjanidae	Red snapper	<i>Lutjanus purpureus</i> , <i>L. synagris</i> ., <i>Rhomboplites aurorubens</i>
	Haemulidae	Grunt	<i>Haemulon album</i> , <i>Conodon nobilis</i>
	Serranidae	Goupers	<i>Epinephelus flavolimbatus</i>
		Lobster	<i>Panulirus argus</i>
Demersal gillnet, banking lines, demersal longline	Lutjanidae	Red snapper	<i>Lutjanus purpureus</i> , <i>L. synagris</i> ., <i>Rhomboplites aurorubens</i>
	Sciaenidae	Weakfish	<i>Cynoscion spp.</i> , <i>Macrodon ancylodon</i> , <i>Micropogonias furnieri</i> .
	Haemulidae	Grunt	<i>Haemulon spp.</i> , <i>Orthopristis spp.</i> , <i>Genyatremus luteus</i>
	Ariidae	Catfish	<i>Arius spp.</i> , <i>Bagre spp.</i>
	Scombridae	Spanish mackerel	<i>Scombermorus brasiliensis</i>
	Carangidae	Cavalli , jacks	<i>Caranx spp.</i> , <i>Trachinotus spp.</i> , <i>Seriola spp.</i> , <i>Decapterus spp.</i> , <i>Selene spp.</i>
Surface gillnet, trolling/switching, live bait lines	Scombridae	Mackerel, tuna, kingfish, carite	<i>Scombermorus brasiliensis</i> , <i>S. cavalla</i> , <i>Thunnus spp.</i>
	Sphyrnidae	Shark	<i>Sphyrna spp.</i>
	Carangidae	Cavalli , jacks	<i>Caranx spp.</i> , <i>Trachinotus spp.</i> , <i>Seriola spp.</i> , <i>Decapterus spp.</i> , <i>Selene spp.</i>
	Sphyraenidae	Barracuda	<i>Shyraena spp</i>
Demersal trawl	Penaeidae	Shrimp	<i>Farfantepenaeus subtilis</i> , <i>F. notialis</i> ,
	Sciaenidae	Salmon	<i>Cynoscion spp.</i> , <i>Macrodon ancylodon</i> , <i>Micropogonias furnieri</i> .
	Gerreidae	Blinch	<i>Diapterus spp.</i>
	Haemulidae	Grunt	<i>Haemulon spp.</i> , <i>Anisotremus spp.</i> , <i>Genyatremus luteus</i> .

	Lutjanidae	Red snapper	<i>Lutjanus synagris</i>
	Ariidae	Catfish	<i>Arius spp., Bagre spp.</i>

5. Status of the Resources

Research findings suggest that the coastal marine resources are either heavily exploited or over exploited. There does not appear to be any potential for expansion of the coastal pelagic fishery for carite and kingfish or for the coastal fishery for shrimp and groundfish. There are problems of incidental capture of non target species in both of these fisheries and a high level of discards of juvenile finfish in the trawl fishery.

Snappers and Groupers

Assessments of the major offshore snapper and grouper species found that the red snapper was fully exploited, the vermilion snapper was overexploited, the yellowedge grouper was underfished, while the yellowmouth grouper was fully fished. Increased yields could be obtained by increasing the age at first capture (Heileman, 1992). **An increase in mesh size for fishpots was recommended. Evidence of significant loss of pots and concerns about ‘ghost fishing’ prompted a recommendation for the use of biodegradable escape panels in fish pots.**

An analysis of catch data from the Venezuelan artisanal medium range fishery off northeastern Venezuela for the period 1981 to 1992 (Mendoza and Larez, 1996), states that the red snapper made up 45% of handline catches and the grouper 59% of demersal line catches. Snappers were the dominant species in the Atlantic area off Trinidad. The analysis showed a 60% decline in catch per unit of effort over the study period.

Croakers and Weakfish

Stock assessments of the whitemouth croaker, *Micropogonias furnieri*. (Manickchand-Heileman and Kenny, 1990) indicated that the maximum sustainable yield was already being obtained, and any increase in fishing mortality would result in overexploitation. Further to this, a stock assessment for the croaker and salmon *Cynoscion jamaicensis* was performed using monthly catch and effort data for the period 1989 to 1997(Soomai et al 1999). The results of this assessment clearly indicated a very intensive exploitation of these resources.

A joint assessment by Trinidad-Tobago and Venezuela was performed (Alio et al 1999) for the croaker using data collected from the fishing fleets of both countries over the period 1987 - 1997. The Maximum Sustainable Yield (MSY) of the species in the region is approximately 1500t. This level of exploitation was generally surpassed between 1987 and 1993 and in 1998 when 1800t were landed. **Recommendations were made to limit the level of exploitation of groundfish species and to replace the open access fishery with a limited effort regime.**

Mackerels

An assessment of the carite (Henry and Martin, 1992) investigated the impacts of varying mesh size on the estimated catch weight, mean individual weight, catch rate and spawning biomass of the species. Of the mesh sizes investigated, the 4 ¾" was predicted to yield the greatest catch. The estimates of catch rate and spawning biomass at the fishing effort and mesh size existing in 1991 suggested that the fishery was at full exploitation. **The study recommended, among other things, a reduction of fishing effort and a phased increase in mesh size to 4 ¾".**

Shrimp

The results of length-based assessments of the *F. notialis* and *X. kroyeri* stocks exploited by all Trinidad trawl fleets over the period 1992 to 2002 (Medley and Ferreira, 2004), suggested that the stocks were close to full exploitation. **The study recommended a restriction on increases in the number of trawlers beyond the existing level and future reduction in fleet size.**