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**INTRODUCTION**

The Republic of Trinidad and Tobago is an archipelagic state which lies off the South American Continent east of Venezuela. In Trinidad and Tobago large migratory pelagics are harvested by a fleet of longliners comprising both foreign and local vessels. The foreign vessels are predominantly Taiwanese, together with a small number of vessels (5) from the region (mainly St. Vincent and the Grenadines). These vessels trans-ship both frozen and chilled fish from the National Fisheries Company (NFC). The local fleet is small, comprising 7 vessels. These are between 13.7 to 23 m with diesel engines of about 180 to 350 HP. The number of Taiwanese vessels using the port fluctuates as there are other trans-shipment ports in the region.

While landings are trans-shipped from Trinidad and Tobago, much of the fishing activity occurs on the high seas and, in the case of the Taiwanese vessels, in the South Atlantic. Local vessels and foreign vessels from the region usually spend 7 to 14 days at sea. Records indicate that individual Taiwanese vessels use the port an average of once every 6 months.

The inshore, artisanal hook and line and gillnet fisheries target the more coastal pelagics e.g. mackerels (*Scomberomorus brasiliensis* and *S. cavalla*), dolphinfish (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), and also land some of the species targeted by the offshore, longline fishery e.g. albacore off Tobago. There are 208 and 432 artisanal vessels involved in these fisheries respectively. Vessels operate as 'day boats'. They are generally small, wooden fibreglass or fibreglass coated wooden boats between 7 to 9 m in length.

There are approximately 440 vessels in the recreational fishery. Three fishing tournaments are held annually, one of which is an international tournament specifically targeting billfish and tuna.

**NATIONAL STATISTICAL SYSTEM FOR LARGE MIGRATORY PELAGICS**

The collection of statistical data on large migratory pelagics is currently an *ad hoc* activity. The existing system was designed to collect statistics on the coastal, artisanal fishery. Recent initiatives to commence a logbook system for industrial type vessels have been met with suspicion on the part of the fishers, as there is no tradition of reporting catches locally and there is concern that data collected may be used for taxation or other purposes, and not solely for fisheries management.

Since it was commissioned in 1972, NFC has been the site of off-loading and trans-shipment of large pelagics. The company provided the support services necessary for the efficient handling of landings and servicing of vessels. However, in recent years the company's activities have been greatly reduced and many services are no longer provided.

Fish landed at NFC is recorded in the following ways:

1. Fish purchased by NFC is recorded on "NFC Reception Bills" by species and weight.
2. Chilled fish trans-shipped is recorded on "Trans-shipment Bills" by species, weight and value for each vessel.
3. Frozen fish trans-shipped is recorded by container weight only.
4. Fish sold to processors or vendors are recorded as "Across the Dock" sales by weight and value only.

Bunkering data which record the fuel purchased by a specific vessel in port, and customs data which record the return of a vessel to port, can be combined with data from the above sources to give an indication of the number of vessels/trips per month/year.

Data from the various sources are transcribed by Fisheries Division Staff and combined to give total landings by the industrial longline fishery. It should be noted that the data collection system was developed by the company, with little or no involvement from the Fisheries Division and it continues to exist in this way. Data obtained are not a true reflection of catch or landings by these vessels, as data are recorded only for those activities which contribute to the company's revenue. Further, there are no apparent linkages or means of validation among the various data sources. The Division is in the process of upgrading the existing statistical collection system. This is expected to include greater involvement in data collection at NFC, refinement of the data being collected to include more meaningful categories and continuation of the logbook system for local industrial vessels.

Swordfish and tuna both chilled and frozen, are generally trans-shipped. Other billfish may be either trans-shipped or sold "across the dock" to local processors or vendors. Local vessels land mainly chilled fish, principally swordfish and yellowfin tuna. Frozen fish is landed primarily by the Taiwanese vessels and is predominantly albacore. Other species include: bigeye tuna, yellowfin tuna, skipjack and bluefin tuna.

Statistics for the inshore, artisanal fishery are collected by statistical collectors at a sample of fishing beaches. Total enumeration of landings by species and vessels, is done for a specific number of days per month. The data are then raised to account for non-enumerated days and beaches.

There is no official mechanism for collecting data on the recreational fishery. The Trinidad and Tobago Game Fishing Association collects data at their fishing tournaments only.

#### LANDINGS BY THE INDUSTRIAL LONGLINE FISHERY

Nominal Statistics for the period 1983 to 1992 are presented in Table 1. It is difficult to compare figures over the years, given interruptions in the data collection mechanisms in most years. However, there are some apparent trends which can be mentioned. Frozen fish trans-shipments generally account for 75% of the landings, therefore, Taiwanese vessels account for the largest quantity of fish trans-shipped. Landings of tuna species were relatively high, with albacore and yellowfin tuna accounting for the bulk of the tuna landed. The category "Tuna sp." has been indicated to comprise largely these two species but the relative proportions are not known.

Some sharks (usually mako) are trans-shipped although most are sold locally for processing.

#### NUMBER OF VESSELS/TRIPS FOR THE INDUSTRIAL LONGLINE FISHERY

The number of trips and vessels using the port for 1989 and 1990 are indicated in Table 2. In 1989 and 1990, approximately 184 and 221 trips respectively were conducted, with 44 vessels being recorded in 1989 and 64 vessels in 1990. Local vessels accounted for 25% of the vessels in both years but conducted 47% of the trips in 1989 and 36% in 1990.

#### LANDINGS BY THE INSHORE FISHERY

Landings of the relevant species by this fishery are presented in Table 3. Carite (*Scomberomorus brasiliensis*) landings were largest in all years. This is the most important finfish fishery in Trinidad and Tobago. It is essentially a gillnet fishery but carite is also landed by hook and line methods. Kingfish (*S. cavalla*) landings may be underestimated as it does not include the landings by a new fleet of vessels in the 13 to 15 m length range.

The catch recorded primarily at the International Game Fishing Tournament by the recreational fishery, is presented in Table 4. The main species caught are yellowfin tuna, sailfish, dolphinfish, blue marlin and wahoo.

#### TRENDS

##### In The Fishery

There has been no change in the number of local, industrial longline vessels during 1991 and 1992, but several vessels in the fishery have been replaced. The uncertain future of NFC, particularly negative speculation about its functioning as a port (including the servicing of vessels), is a major factor which could affect current attempts to monitor the fishery. Vessel owners are now exploring other possibilities for trans-shipment. In the absence of supporting legislation to establish designated fish ports, this will act to disperse landing activities, making it even more difficult to monitor the fishery. With regard to the trans-shipment activities by foreign longliners, this may result in the relocation of such activities to other ports in the region.

Within the last year, the number of hook and line vessels targeting kingfish and associated species has increased. These vessels are between 13 to 15 m and the principal fishing method is locally called "A La Vive" (live bait fishing). It is necessary that mechanisms are put in place to monitor this activity.

With regard to the recreational fishery, the Trinidad and Tobago Game Fishing Association assisted by the Fisheries Division, has introduced a (currently non mandatory) 'tag and release' format to the annual International Game Fishing Tournament. This was initiated during the 1993 tournament, thus promoting a more conservation oriented approach to recreational fishing for large pelagics.

##### In Research

Between 1990 and 1992, the Government of Trinidad and Tobago in co-operation with the United Nations Development Programme (UNDP) and the Food and Agriculture Organisation (FAO), implemented a project entitled "Establishment of Data Collection Systems and Assessment of Fisheries Resources". Through this project and subsequent research, data collection systems were examined and recommendations for improving them were made (Henry and Martin, 1992; Samlalsingh and Pandohee, 1992; Chan A Shing, 1993). However, mitigating circumstances suggest that external assistance may be required to implement the recommendations fully.

Through the project mentioned above, a pelagic fisheries research group has been formalised. Currently, management oriented research is focused on the coastal fishery for fin fish and sharks. Preliminary stock assessments have been completed for two of the major pelagic fisheries (Henry and Martin, 1992; Samlalsingh and Pandohee, 1992). With regard to the large migratory pelagics, the national policy is to prevent any duplication of effort and support the global approach to the management of these resources.

Attempts have been made to participate in billfish data collection coordinated by the Billfish Foundation. This is expected to be a part of the integrated, upgraded data collection system.

### In Legislation

Existing legislation is deficient in many ways. First drafted in 1917, legislation has not been made to keep up with the industry, the information needs of fishery managers and the obligation of the administration to manage and monitor fishery resources. There have been initiatives to improve existing legislation related to different fisheries e.g. the Demersal Trawl Fishery for which regulations have been made. However, a holistic approach to enhancing fisheries legislation has only recently been approached, and is expected to be implemented with the assistance of the Food and Agriculture Organisation of the United Nations.

### REFERENCES

Chan A Shing, C., (1993).

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Samlalsingh, S. and E. Pandohee, (1992).

Preliminary Stock Assessment for the Flyingfish Fishery of Tobago. Technical Report of the Project for the Establishment of Data Collection Systems and Assessment of the Fisheries Resources. FAO/UNDP: TRI/91/001/TR11. Port of Spain (Trinidad). July, 1992: 41p.

TABLE 1: Summary of Annual Landings (kg / year) for the Industrial Longline Fishery 1983-1992

SCIENTIFIC NAME	COMMON NAME	YEARS									
		1983	1984	1985*	1986*	1987	1988	1989	1990	1991	1992
<b>Tuna</b>											
<i>Thunnus albacora</i>	Albacore	268,188	194,311	317,685	-	-	-	214	1,885	-	247,447
<i>T. chuanxi</i>	Bigeye	190,686	41,162	21,911	-	-	960	18,921	56,674	263,225	-
<i>T. thynnus</i>	Bonito	-	-	560	-	-	46	118	-	-	-
<i>Katsuwonus pelamis</i>	Skipjack	702	2,489	1,110	-	288	954	-	-	-	-
<i>T. albacares</i>	Yellowfin	231,823	30,601	350	-	-	566	10,012	302,657	540,115	-
<i>Thunnus sp.</i>	Tuna sp.	149,549	21,358	24,920	-	3,055,905	1,229,257	3,110,387	3,537,867	-	4,428,125
<b>Billfish</b>											
<i>Makaira indica</i>	Black marlin	966	5,676	2,410	16,272	446	-	25,538	1,844	-	-
<i>M. nigricans</i>	Blue marlin	1,720	196	-	-	-	-	914	-	-	-
<i>Makaira sp.</i>	Marlin sp.	21,286	31,646	3,958	70,028	153,164	73,952	18,840	15,605	7,129	-
<i>Istiophorus albicans</i>	Sailfish	64,415	57,688	14,094	24,158	34,766	23,683	8,810	3,587	1,203	-
<i>Tetrapturus gonaodon</i>	Spearfish	-	-	-	53,819	74,602	9,674	6,654	1,000	-	-
<i>Xiphus gladius</i>	Swordfish	20,628	26,264	5,942	45,264	151,185	42,020	79,070	65,875	71,022	562,395

Table 1 continued.

SCIENTIFIC NAME	COMMON NAME	YEARS									
		1983	1984	1985*	1986*	1987	1988	1989	1990	1991	1992
Shark											
<i>Isurus paucus</i>	Short fin mako	40,258	27,063	8,540	39,792	120,018	12,085	147,974	-	-	
<i>I. paucus</i>	Long fin mako										
<i>Alopias superciliosus</i>	Bigeye thresher	4,890	2,738	-	-	-	-	-	-	-	
<i>A. vulpinus</i>	Thresher Shark										
	Shark sp.	32,164	29,565	10,506	2,260	-	55,732	-	54,763	3,552	
	Shark fin	11,024	-	-	-	-	-	28	-	-	22,464
Other Species											
<i>Caranx hippos</i>	Cavalli	-	-	-	-	-	-	1,287	-	-	
<i>Coryphaena hippurus</i>	Dolphinfish	13,574	12,521	12,616	6,644	15,324	4,366	1,809	5,781	266	
<i>Scomberomorus cavalla</i>	Kingfish	20,170	43,267	11,430	38,248	81,694	36,342	5,966	7,541	35	
Oemphyidae	Yukun	-	-	-	14,646	99,146	16,546	9,895	709	39	
	Unknown sp.	-	-	-	-	-	-	36,425	461,558	-	
ANNUAL TOTAL		1,072,045	546,549	436,032	311,201	3,786,738	1,506,183	3,482,862	4,517,346	1,004,850	5,260,431
* Landings for only 6 months available, "-" no data available. Thresher and mako shark figures comprise both species.											

Table 2: Number of Trips/Vessels of the Industrial Longline Fishery for 1989 and 1990

1989		
	Tot. # Trips	Tot. # Ves.
Local longliners	87	9
Taiwanese longliners	50	21
Other foreign longliners	47	14
TOTALS	184	44

1990		
	Tot. # Trips	Tot. # Ves.
Local longliners	79	10
Taiwanese longliners	74	25
Other foreign longliners	68	29
TOTALS	221	64

Table 3: Estimated Landings (kg/year) by the Inshore Artisanal Fishery (1988-1992)

Landings (Kg) / Year						
SCIENTIFIC NAME	COMMON NAME	1988	1989	1990	1991	1992
<i>Scomberomorus cavalla</i>	Kingfish	715,669	534,972	416,774	656,590	NC
<i>S. brasiliensis</i>	Carite	2,704,230	2,864,102	2,470,811	2,748,640	NC
<i>Coryphaena hippurus</i>	Dolphinfish	-	36,038*	63,383*	72,584*	139,012
<i>Acanthocybium solandri</i>	Wahoo	NA*	NA*	NA*	117,772	NC
<i>Thunnus sp.</i>	Tuna	NA	NA	NA	50,580	NC
<i>Istiophorus albicans</i>	Sailfish	-	688	2,017	1,347	2,173
-	Shark	1,063,000	1,068,000	873,000	922,227	NC

Tuna includes albacore, skipjack and blackfin tuna. \* Data available for 6 months only. Shark includes 15 species of shark. NA, no data available. NC, not currently available

Table 4: Catch (kg) from Recreational Fishing Tournaments (1983-1993)

Catch (kg) / Year												
SCIENTIFIC NAME	COMMON NAME	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
<i>Scomberomorus cavalla</i>	Kingfish										102	195
<i>Coryphaena hippurus</i>	Dolphinfish					162	744	216	2261	1117	535	952
<i>Acanthocybium solandri</i>	Wahoo					139	419	378	345	272	733	239
<i>Thunnus albacares</i>	Yellowfin tuna					65	53	625	517	2678	4247	242
<i>Istiophorus albacares</i>	Sailfish	243	78	175	621	386	302	549	905	227	490	370
<i>Makaira nigricans</i>	Blue marlin	155	525	469	487	538	232	604	1136	1620	538	450
<i>Caraux hippas</i>	Cavalli										6	62
<i>Thunnus sp.</i>	Tuna										39	
-	Shark										51	
Number of days fishing		2	3	3	3	-	-	-	4	-	3	3

Source: Trinidad and Tobago Game Fishing Association.