ISSN: 1998-1015

CRFM Fishery Report 2009

VOLUME 1, Suppl. 1-

National Reports

Report of Fifth Annual Scientific Meeting -
Kingstown, St. Vincent and the Grenadines
09-18 June 2009

CRFM Secretariat,
Belize, 2009

CRFM Fishery Report – 2009
Volume 1, Suppl. 1 -

National Reports

Report of Fifth Annual Scientific Meeting – Kingstown, St. Vincent and the Grenadines 09-18 June 2009

CRFM Secretariat,
Belize
2009

CRFM FISHERY REPORT - 2009. Volume 1, Suppl. 1 – National Reports. Report of Fifth Annual Scientific Meeting – Kingstown, St. Vincent and the Grenadines, 09-18 June 2009.

Correct Citation:

CRFM. 2009. Report of Fifth Annual Scientific Meeting – Kingstown, St. Vincent & the Grenadines, 09 - 18 June 2009 - National Reports. *CRFM Fishery Report – 2009*. Volume 1, Suppl. 1. 43p

ISSN: 1998-1015
ISBN: 978-976-8165-33-6

Published by the Caribbean Regional Fisheries Mechanism Secretariat,
Belize

Foreword

The Fifth Annual Scientific Meeting took place during 09-18 June, 2009. During this Meeting, CRFM Resource Working Groups examined data from the following fisheries: the spiny lobster (*Panulirus argus*) fishery of Jamaica; the queen conch (*Strombus gigas*) fishery of St. Lucia; the red hind (*Epinephelus guttatus*) and queen triggerfish (*Balistes vetula*) fisheries of Montserrat; the beach seine fishery of St. Vincent and the Grenadines; the shrimp trawl fishery of Trinidad and Tobago; and the Atlantic Seabob (*Xiphopenaeus kroyeri*) fisheries of Guyana and Suriname. The report of the assessment of Eastern Caribbean fourwing flyingfish (*Hirundichthys affinis*), completed by WECAFC in 2008, was also reviewed and acknowledged.

Additionally, the characteristics of the finfish and conch fisheries of the Turks and Caicos Islands and Nevis (of St. Kitts and Nevis) respectively were examined to make specific recommendations for improving sampling of these fisheries in the future. The LPWG did not undertake any assessments in 2009, but completed several tasks, of which the main ones were: preparation of 3 technical reports for consideration by ICCAT's Standing Committee on Research and Statistics, and development of a monitoring and management plan for the finfish fisheries of the Turks and Caicos Islands.

An informal meeting of the Working Group on Data, Methods and Training was held, during which current issues pertaining to each of the three areas (data, methods, training) were discussed, and key inter-sessional tasks were identified, as well as the need for basic training in R (statistical software) to be pursued at the next meeting of the Working Group. At the request of the Executive Committee of the Caribbean Fisheries Forum, the proposal to establish a CRFM Scientific Committee was also reviewed and finalized by the Meeting.

The Report of the 2009 CRFM Annual Scientific Meeting is published in two Volumes: Volume 1 contains the proceedings of the plenary sessions and the full reports of the CRFM Resource Working Groups for 2009. Six national reports were submitted for consideration by the 2009 Meeting, and these are published as Supplement 1 to Volume 1. Volume 2 contains part A (Overview), and the fishery management advisory summaries of individual fishery reports comprising part B of each Working Group report, where relevant. Volume 1 is intended to serve as the primary reference for fishery assessment scientists, while Volume 2 is intended to serve as the main reference for managers and stakeholders.

Table of Contents

List of Acronyms and Abbreviations

CARICOM	-	Caribbean Community
CERMES	-	Centre for Resources Management and Environmental Studies
CFRAMP	-	CARICOM Fisheries Resource Assessment and Management Programme
CITES	-	Convention on International Trade in Endangered Species
COP	-	Conference of Parties
CRFM	-	Caribbean Regional Fisheries Mechanism
DECR	-	Department of Environment and Coastal Resources
DOF	-	Department of Fisheries
EEZ	-	Exclusive Economic Zone
FAD	-	Fish Aggregating Device
FD	-	Fisheries Division
FAO	-	Food and Agriculture Organization of the United Nations
GATOSP	-	Guyana Association of Trawler Owners and Seafood Processors
GDP	-	Gross Domestic Product
GPS	-	Global Positioning System
IUU	-	Illegal, Unregulated and Unreported
MAFF	-	Ministry of Agriculture, Forestry and Fisheries
MCS	-	Monitoring, control and Surveillance
MT	-	Metric Tonne
NOAA	-	National Oceanic and Atmospheric Administration
OECS-ESDU	-	Organization of Eastern Caribbean States - Environment and Sustainable Development Unit
OECS-NRMU	-	Organization of Eastern Caribbean States – Natural Resources Management Unit
TED	-	Turtle Excluder Device
TCI	-	Turks and Caicos Islands
UK	-	United Kingdom
UNCLOS	-	United Nations Convention on the Law of the Sea
US	-	United States
USA	-	United States of America
UWI	-	University of the West Indies

GRENADA NATIONAL REPORT

By:
Paul E. Phillip, Fisheries Officer I/Marine Biologist

1. Introduction

Grenada, a tri-island State which consists of mainland Grenada, Carriacou and Petite Martinique, harvests mainly a multi-species marine capture fishery that is conducted under open access conditions. The fisheries are artisanal and small-scale in nature, and in recent years the sector has been developing from subsistence to commercial operations in order to increase earnings and employment, contribute to food security and assist in reducing poverty. Fishermen use a variety of vessels (mainly multipurpose) to target different species within the fishery waters of the country. The Grenada fisheries deploy approximately 700 vessels, employing about 6000 persons (directly and indirectly). In 2008, catches increased by approximately 9% from 2007 to 2008, (Table 1). The following report provides general information on the fisheries sector of Grenada.

2. Fishery and Fleet Description

Fisheries can be characterized by location (area of operation), species targeted, gear, etc. For the purpose of this report, the fisheries of Grenada will be characterized by location and will include a description of the vessels, gear and any significant changes that has occurred over the years.
The fisheries can be classified as:

1. Large offshore pelagic fishery - targeting yellow-fin tunas, billfishes and swordfish;
2. Small offshore pelagic fishery - for black-fin tunas, dolphin-fish, wahoo, etc;
3. Shelf and deep slope fishery – for snappers, groupers, hinds, coney, parrot-fishes, etc;
4. Coastal pelagic fishery – for scads, jacks, and sometimes bonito;
5. Reef fishery (shellfish) – where divers target lobsters, conch, turtles, etc.

The large offshore pelagic fishery occurs mainly off the west coast landing their catches at a number of landing sites (Gouyave, Victoria, Melville Street, Grand Mal, The Carenage, Waltham and Duquesne). These species are targeted throughout the year, but have a peak season between January to March.

Small offshore pelagics are targeted mainly off the east coast with the main landing site being Grenville. Some are also caught along the west coast. The peak season is between December to April.

The shelf and deep slope fisheries occur mainly on the shelf areas along the north (Grenadines), east and south coasts. The shelf along the west coast is relatively narrow, limiting that fishery.
Coastal pelagic fisheries, as the name implies is coastal on beaches along the west coast and the grenadines, the east coast being very rough.

The shellfish fisheries occur on shallow shelf areas (north, east and south coasts) where divers (skin & SCUBA) target lobsters, conch, turtles and fish.

In Grenada's fisheries, there are a number of vessels that are multi-purpose in nature, in that they participate in many different fisheries (Table 2).

As noted in table 1, fisheries of Grenada are conducted out of different types of vessels, made of different materials, powered by different engine sizes and adapted to different gear.

Fishing vessels can be classified as follows: (Table 3)

Open Pirogues

These are the most versatile of all the local vessels (multi-purpose) as they participate in all fisheries, all around the island. These vessels are made usually of wood and in some cases the wood is overlaid with FRP (Fiberglass Reinforced Plastic). One of the unique characteristics of these vessels is that they can be converted to different fisheries by simply changing their gear. They can be used as open runabouts, fishing for many different demersal species using hand-lines and bottom parlang with fresh bait. Number of hooks on parlang varies greatly. They are modified improving their capacity to carry more fuel and out riggers for trolling mainly off the east coast. Trolling is done using artificial bait (squid-like lures) and two to three lines. A small manual long-line reel (a new innovation) is sometimes added with approximately 75-100 hooks, converting the vessels into what are locally classified as a Type I long-line vessel. They are also used by local commercial divers for conch, lobsters, etc. These vessels are found island-wide, numbering about 436 in total. They are powered mainly by outboard motors and in some cases, still by manpower (oars).

Decked pirogues

These vessels were constructed locally of FRP but a few are made of wood. They also conduct different fishing activities including: hand lining, bottom parlang, trolling, long-lining (Type II) and in rare cases diving. All activities are manual in nature. They are mainly day-boats (leave in the morning and return at night) operating off the west coast and elsewhere when tunas are scarce. There are about 100 of these vessels and most are powered by two out board engines.

Launches

The launches are the largest vessels operating in Grenada's fisheries and are made of wood, fiberglass or steel. Most are mainly long-liners, targeting tunas and sometimes conduct other activities when tuna season is low. They conduct their operations mainly off the west coast. These are powered mainly by inboard engines and the FRP and steel versions have hydraulic systems. They are equipped to spend 3-5 days at sea and there are about 70 vessels operating in Grenada's fisheries waters. The number of hooks soaked depends on the size of the vessel and availability of bait.

Beach Seining vessels

These vessels are all made of wood and operate in coastal areas of the mainland and offshore islands. Originally all of these vessels were powered by oars, but because of a lack of manpower on some of the islands, a semi-pirogue type vessel was constructed to handle a small outboard engine (15-25 HP). There are about 30 vessels and their operations differ depending on the area of operation. On the mainland, beach seines encircle the fish and the seines are pulled back to shore with the catch (usually a community based operation). However, in the Grenada Grenadines, depending on the depth of water and distance from shore, the nets are 'tucked' at sea somewhat like a purse seine.

Sport fishing vessels

These vary greatly in size and power options but most are made of wood or FRP. Some are used personally by owners and some are chartered to tourists. In January or February of every year, there is a local billfish tournament (Spice Island Billfish tournament) which is a 'tag & release' tournament sanctioned by The Billfish Foundation. This tournament attracts participants from many regional countries and even as far away as the USA and UK.

3. National Fisheries Policy and Management Options

In Grenada's fisheries, management options are species specific but cover the following general objectives:

- To optimise the development of the fishery sector through effective management in order to create employment and stable sources of income for the fishers and the communities involved in fisheries and related activities.

- To optimise the amount of fish protein available for domestic consumption and export consistent with sound resource management practices.

- To optimise on the value of the limited fisheries resources through cost effective harvesting, value added processing and diversification of markets.

- To maintain or restore populations of marine species at levels that can produce the optimum sustainable yield as qualified by relevant environmental and economic factors, taking into consideration relationships among species.

- To preserve rare or fragile ecosystems, as well as habitats and other ecologically sensitive areas, especially estuaries, mangroves, sea-grass beds, and other spawning and nursery areas.

- To promote the development of management strategies for the conservation and management of shared fish stocks.

4. Research

The Fisheries Division (MAFF), for some unknown reason, seems to be given very limited support for fisheries research. Most research is done in collaboration with other agencies. At present, data collected by the Fisheries Division at fish markets include: landings, effort and exports. An ecological survey on White Sea urchin *(Tripneustes ventricosus)* was conducted in the fishery waters with the assistance of CERMES (UWI) and NOAA. The related socio-economic survey on a selected area along the east coast is presently on-going. On an annual basis, the FD collaborates with Ocean Spirit Inc. to collect information on nesting turtle activity on Levera beach and offshore islands (Rhonde Island & Isle de Caille). On occasions, joint studies are conducted together with the St. George's University.

5. Legislations and Management Regulations

Activities within the fisheries sector are managed by Legislations which include:
The Fisheries Act, # 15 of 1986 and the Fisheries Regulations, SRO # 9 of 1987 were the first legislations set out for the management of fisheries.

The Fisheries Act and Regulations makes provision for local as well as foreign fishing operations, marine reserves and conservation measures, regional cooperation in fisheries, and other fisheries management and development measures.
However, to improve the management, other regulations were passed:

- Fisheries (Amendment) regulations SRO # 24 of 1996
- Fisheries (Fishing Vessel Safety) regulations SRO # 3 of 1999
- Fisheries (Fish and Fish Products) regulations SRO # 17 of 1999
- Fisheries (Amendment) regulations SRO # 2 of 2001.
- Fisheries (Marine Protected Areas) regulations SRO #78 of 2001

The FD has designated MCS officer however other Officers of the FD, Royal Grenada Police Force (Coast Guard) and sometimes the general public (fishers) participate in MCS activities.
Other Fisheries Related legislations include:

- Grenada Territorial Waters and Marine Boundaries Act (1990) – jurisdiction within the EEZ.
- Fishing Vessel Safety Regulations (1990) – safety at sea.
- Beach Protection Act (1979) – sand mining.
- Land Development Control Act (1990) – coastal development.
- Town and Country Planning Act – controls use of coastal Zone.
- Power Craft Ordinance (1987) – controls operations of motorized vessels in near-shore zone.

Appendices

Table 1: Landing data (2008)

Fishery	**Landings (Lbs.)**
Offshore Pelagic (large & small)	3,921,378
Coastal Pelagic	187,122
Demersal	1,120,370
Shellfish	31,275
TOTAL	**5,260,145 lbs. (increase of ~ 9% from 2007)**

Approximately 20 – 30% of offshore pelagic catch is exported. Export valued at ~ US $ 10 million

Map 1: Grenada (Grenada, Carriacou & Petit Martinique)

Table 2: Vessel Types and Species targeted in Grenada's Fisheries.

Fisheries	***Types of Vessels***	***Main species targeted***
Large off-shore pelagic	Open pirogues (Type 1 Long-liner) Decked pirogues Launches Sport Fishing vessels	Yellow-fin tunas, billfishes, swordfish
Small off-shore pelagic	Open pirogues (trolling vessels) Decked pirogues	Black-fin tunas, dolphin-fish, wahoo
Shelf & deep Slope	Open pirogues Decked pirogues Launches	Snappers, groupers, red hinds, coney, parrot-fishes
Coastal pelagic	Double enders Pirogues	Scads (round & big-eye), jacks, sometimes bonito
Reef (shellfish)	Open pirogues	Spiny lobster, conch, turtles. finfish

Table 3: Information on Types of vessels in Grenada's fishery.

Vessel type	*Construction Material*	*Approximate length (m.)/Power*	*Approximate Numbers*	*Fishing Practices/Gear*	*Comments*
Open Pirogues (Hand liner, Trolling Vessels, Type I Long-liner)	Wood/FRP	5-7.5 m./15-85 HP (OBM)	436	Hand lining, bottom parlang, Trolling, Diving Hand lines, bottom parlang, fish pots, trolling lines, light long lines Diving equipment	These vessels are usually multipurpose vessels that can change their type of operation dependent on season or availability of fish. This is done by changing gear.
Decked Pirogues (Type II long liner)	FRP	7.5-9 m./2X40-75 HP (OBM)	100	Hand lining/ bottom parlang, Long lining	Some of these vessels are multi-purpose in nature and also seasonal in operations.
Launches (Type III long liner)	Wood/FRP/Steel	9.5-18.5 m./130-350 HP (IBM)	70	Hand lining/bottom parlang, Long lining	These vessels usually have their gear fixed and some are mechanical.
Sport Fishing Vessels	Wood/FRP	Vary greatly in size and power	20	Usually trolling off-shore for big game fish and deep sea species. /rod & reel	Most of these vessels are for personal use, however, some are chartered to sports fishers visiting the island.
Beach seining vessels	Wood	7.5-9 m./Oars, 15-25 HP	30	Beach Seine	Outboard power used mainly in the Grenadines.

GUYANA NATIONAL REPORT

1. Executive Summary

Guyana is on the Northern Coast of South America. It has an area of approximately 216,000 km² and is bounded by the Atlantic Ocean on the north, Venezuela on the west, Suriname on the east and Brazil on the south. The coastline of Guyana is 432 km and has a continental shelf of 48,665 km². The average width of the continental shelf is 112.6 km while the area of the EEZ is 138,240 km².

Guyana's marine environment is also heavily influenced by the Amazon whose outflow into the Atlantic south and east of Guyana is estimated at a rate of 200,000 cubic metres per second. The Amazon waters move in a northwesterly direction along the coast of South America and, on account of the heavy particles, which is brown in colour. This deep brown colour is evident 40-50 kms from the Guyanese coastline and extends as far north as Venezuela. Accordingly, the marine conditions off Guyana are estuarine and support benthic fauna such as shrimp and a variety of demersal fish species.

The country has a total population of approximately 755,000 and is divided into ten administrative regions.

Figure 1: Map of the Co-operative Republic of Guyana

In Guyana access to the resources is constrained by licenses granted by the government. The government has however failed to effectively implement fisheries management plans due to the inadequate resources both financial and personnel. Monitoring, control and surveillance activities have taken back seat to other activities such as narcotics trade and fuel smuggling which the government is trying to eradicate. Also, over the years fishing has been viewed as an activity of

last resort. However, the Government of Guyana is currently working on the revised management plans for the fisheries sector and the recommendations from these assessments can be used in developing the new management plans for the seabob resources.

Fishers through their co-operative societies and the Guyana Private Trawler and Seafood Processors Association have been trying to become more active in the management of the resources. They have asked for some assessment of seabob, grey snapper and banga mary and have indicated that they would be willing to collect the necessary data for such assessments. They have also requested training in the collection of data for the assessments.

Importance of the fisheries sector

Fisheries contribute towards food security, employment, foreign exchange earnings, and development of rural and coastal communities. Other important industries in Guyana are rice, sugar, bauxite, gold and diamonds. Fisheries is the second highest employer within the agricultural sector. The fishery sector employs about eleven thousand persons, both in harvesting and processing. It is also a major source of proteins with the estimated per capita consumption being about 45 kg. In terms of GDP fisheries has contributed between 1% and 2 %.

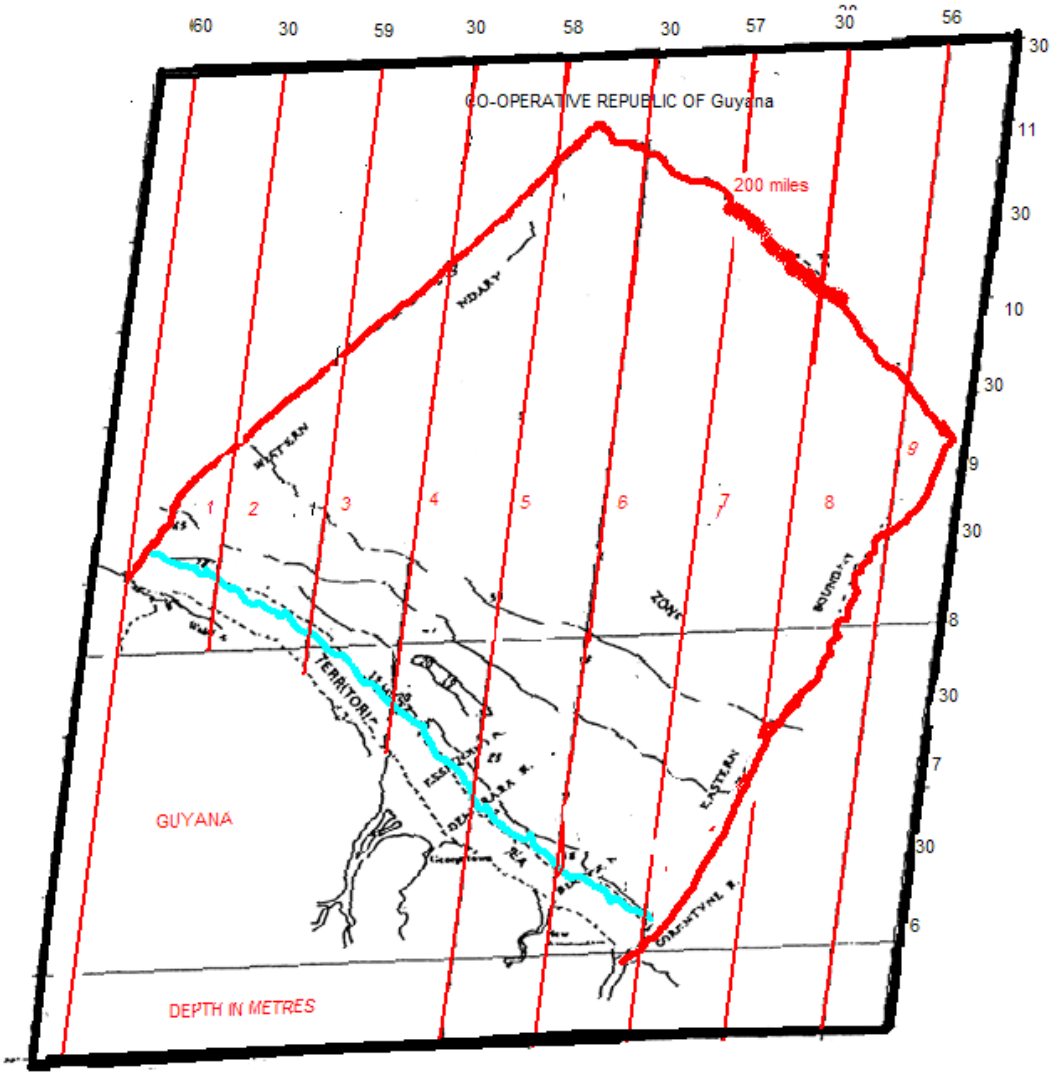
Fisheries also contribute to the export earnings, in 2005 export earnings were in excess of G$11.4 billion with quantities being approximately 19,000 metric tones. Finfish and finfish products accounted for more than half of the exports in terms of volume and just less than half in value. In 2006, export quantities dropped to about 18,000 metric tones and just over G$10 billion finfish.

Years	**Food Supplies Per capita consumption (kg)**
1980	2
1988	27
1991	45
1996	59.8

Fishing Area

The EEZ, for statistical purposes, has been divided longitudinally into nine (9) Fishing Zones, each separated by 30-degree interval. Artisanal Users operate on the continental shelf at distances up to 56 km (30 miles) from the shore, all along the coast.

Diagram Illustrating Guyana's Exclusive Economic Zone and Zoning of the Fishing Areas (Draft Fisheries Management Plan, 2006)



2. Description of the Fisheries

Guyana has three main fisheries, which is further subdivided and is as follow:

Inland Fishery

(i) Subsistence Fishery

(ii) Ornamental Fish Fishery

Aquaculture

(i) Brackish-water Culture

(ii) Fresh-water Culture

Marine Fishery

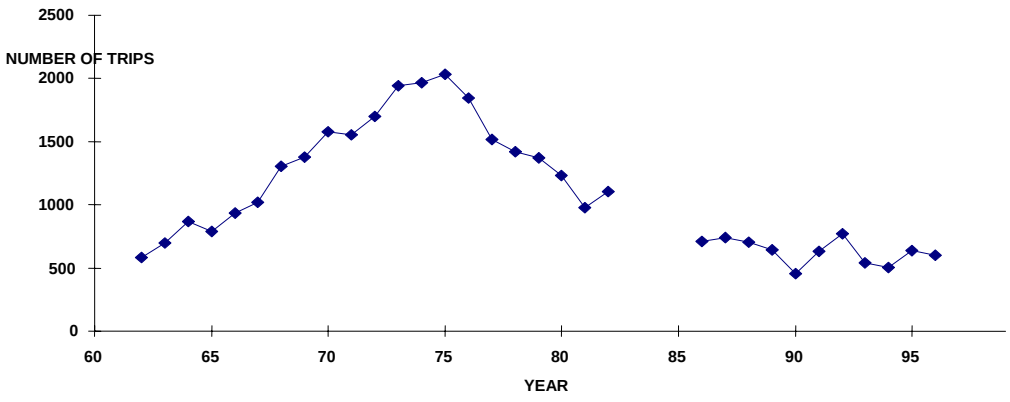
The Offshore Industrial (Trawl) Fishery
The Inshore Artisanal Fishery
The semi industrial Fishery

Inland Fishery

The Inland Subsistence Fishery involves the catching of fish in rivers, lakes, canals, flood plains, etc. by subsistence or part time fishermen for their own consumption or for sale. The activity tends to be influenced by the season and in some areas by the down periods for agricultural and other activities. This fishery is important to the well being of the hinterland population which is about 10% of the population of Guyana. A number of Amerindian communities usually get their main source of protein from the rivers and creeks in their communities. They also depend on the fish for their livelihood. Fish is caught and dried and sold to miners and foresters in their area and in other communities. Over the years a lot of harvesting of on particular species Arapaima (*Arapaima gigas*), has caused the stock to be depleted. The government made it illegal in its 1973 regulations for anyone to harvest the arapaima. However with the opening of hinterland for mining and other activities the ban was completely ignored and a cross border trade developed between Guyana and Brazil.

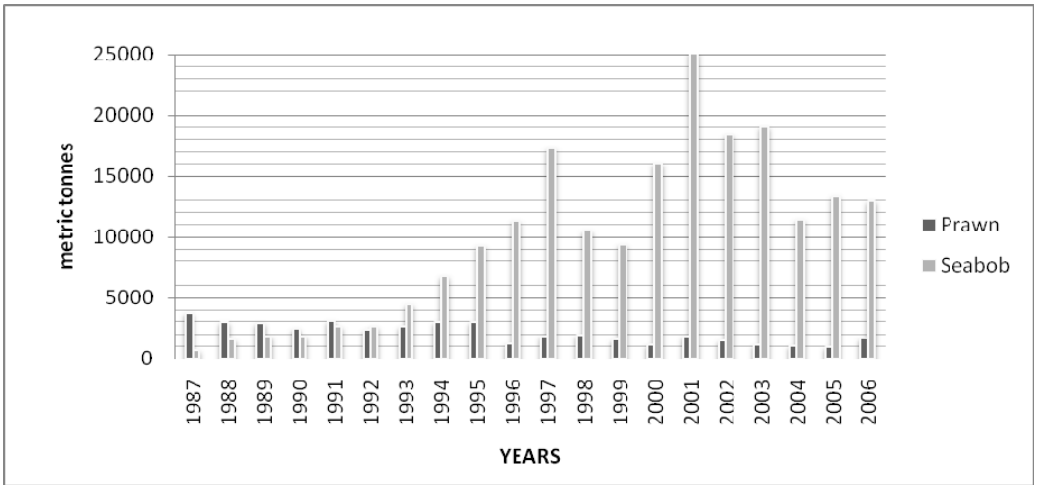
Marine Fishery

The shrimp fishery is economically the most important fishery in Guyana. In the late 1950s, foreign companies established bases in Guyana and its neighbouring countries and commenced exploitation of four species of prawn (*Penaeus spp*.) found on the continental shelf. This fishery expanded rapidly until 1975. Then in 1977 with the adoption of the EEZs the shrimp fishery became a national fishery and the local landings dropped along with the fishing effort. The late1980s saw a reduction in catch rates and the total catch of these species (*Penaeus spp*.). This forced some companies to close operations and to sell their vessels to local entities. Many of these vessel owners later converted the trawlers to catch seabob (*Xiphopenaeus kroyeri*). The gap in the data represents the period during the fuel shortage in Guyana between 1982 and 1985 due to foreign exchange deficiencies in the country.



Fishing effort in the Peneaid fishery from 1962 – 1995 (Fisheries Department)

The trawl fishery for seabob started in 1984 and experienced rapid and impressive growth in terms of vessel numbers, total catch, number of processing plants and other infrastructure, peaking in 2000. Seabob production became the dominant activity of the industrial fishery during this period. Resource management and sustainable exploitation, together with rising fuel costs, are currently the major concerns for this fishery. Figure 12 shows the rise in production of the seabob resources and the decline in the prawns' production over the years. Participants in the industrial fishery have formed the Guyana Association of Trawler Owners and Seafood Processors (GATOSP), and its membership includes all six seabob and prawn processing plants, which also own trawlers, and nearly all other trawler owners. The association advocates the cause for the industry and as a unit keeps its members in line as regards fisheries management issues and government regulations.



Seabob and Prawn Production 1983-2006 (Department of Fisheries, 2007)

The Offshore Industrial Fishery consists of 147 shrimp trawlers, five major processing plants, nine small processing plants, and a few wharves and dry docking facilities. The shrimp trawlers, 45 of them mainly exploit penaeid shrimp *(P. brasiliensis, P. notialis, P. schmitti, and P. subtilis)* with finfish and small amounts of squid (*Loligo spp.*) and lobster (*Panulirus spp.*). The other 102 vessels exploit seabob (*Xiphopenaeus kroyeri*) and various fin-fish species (*Macrodon ancylodon, Micropogonias furnieri, Nebris microps, Ariusspp.,Cynoscion spp.*,), with small quantities of penaeid shrimp as by-catch. These trawlers are all locally owned, about 85% of them are owned by the processing plants and the remainder are owned by private individuals.

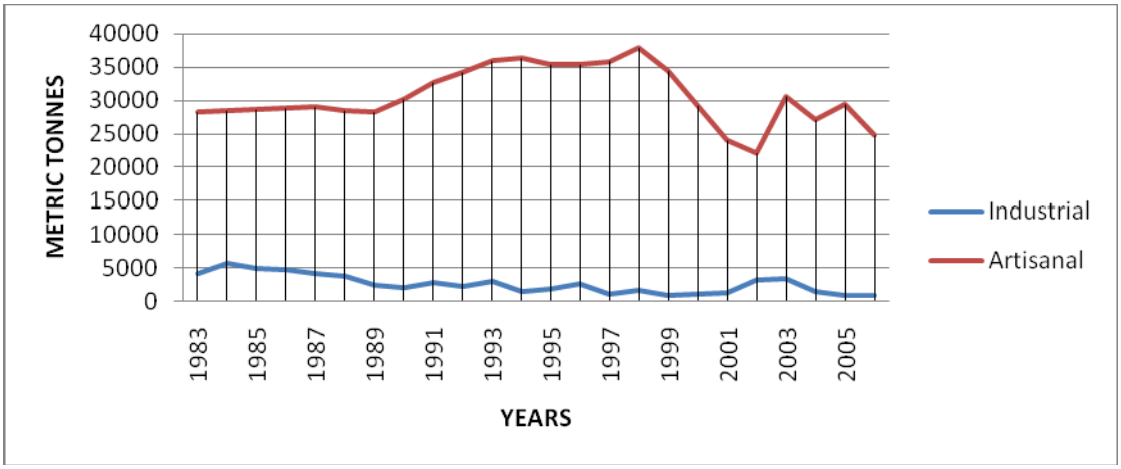
The penaeid shrimp vessels would spend an average of 30 days at sea and approximately 10 -12 trips per year. The seabob trawlers spend 5 - 9 days at sea, but an average trip lasts 7 days. A typical seabob vessel makes 2 - 3 trips per month, and an average of 30 trips per annum. (Fisheries Management Data System Terminal Workshop, Guyana Report, St Lucia, 1999).

Some of the vessels especially those configured for seabob target finfish when seabob is not in abundance. The seabob/finfish trawlers have been operating closer to shore and nearer to the artisanal vessels and have been causing a lot of gear conflicts with the artisanal fishers. (National Development Strategy of Guyana Chapter 31- Fisheries Sector).

Inshore Artisanal Fishery

The artisanal fishery has been and still is an important source of food for both rural and urban Guyanese. It is actively pursued exclusively by Guyanese and is a source of employment and

export earnings. The sub-sector experienced rapid growth both in numbers of fishers and volume of landings until 1994, and since then the levels seemed to have "plateau then decreased in 1999 until 2002 and production is now between 25,000-30,000 t from 2003-2006 increasing again". This fishery consists of approximately 1200 vessels ranging in size from 6-18 meters and are propelled by sails, outboard and inboard engines. There over 5,000 fishers and over 1000 boat owners, with most of the boat owners being members of co-operative societies which acquire and sell fishing requisites to their members.



Artisanal and Industrial Finfish Production for over 20 years (Department of fisheries, 2007)

Constraints of the fishing industry:

- Lack of inadequate scientific information and data in the resources.
- Lack of technical and financial assistance for marine fishery from government and foreign organization.
- Illegal and unregulated fishing.
- Inadequate monitoring and surveillance of fishing.
- Lack of skilled human resources.
- Status of the economy (fluctuation of currency, unrest etc.)

3. National Fisheries Policy and Management Objectives

Offshore Industrial Large Penaeid Shrimp Fishery, Industrial Seabob Fishery, Inshore Artisanal Fishery (Pin Seines, Chinese Seines, Cadell Lines, Gillnets) & Snapper/Grouper – Deep Slope Fishery:

- To rebuild and identify target and limit reference points for the Fishery.
- To maintain all non-target species, associated and dependent species above 50% of their mean biomass levels in the absence of fishing activities.
- To stabilise the net incomes of the operators in the large penaeid shrimp fishery.
- To include as many of the existing participants in the fishery as is possible given the biological, ecological and economic objectives listed above

4. Research

There is no research being carried out.

Data Collection Programme

Guyana's data collection system takes into consideration the inshore artisanal and offshore industrial logbook programme, which involves the collection of catch, effort, and biological data from the various fisheries. The logbook and observer programmes are also part of the data collection programme.

Data collection Programme

The data collection programme is a random stratified programme. Stratification is done by vessel/gear type. The landings, employment and value of the catch were important factors that led to this type of stratification. This determined the number of vessels to be sampled per month per gear type. At the start of every month, sampling schedules are prepared in the three Regions for data collection. A total of 82 vessels are chosen to be sampled for data. These vessels are randomly selected from landing sites in the Regions. They include 20 chinese seine, 17 gillnet nylon, 4 cadell 15 gillnet (outboard), 6 gillnet (inboard), 4 pin seine, 3 handlines and 2 traps for the artisanal fishery and 6 seabob and 5 prawns for the industrial fishery.

The vessels sampled in Region 4 are all the industrial vessels and forty-two artisanal. In Regions, six and two the number of vessels sampled is 13 and 14 respectively. The number of vessels being targeted for data collection has been reduced due to the manpower shortage. Only 65 vessels are being sampled per month.

Sampling is done three days per week, Tuesday to Thursday, and at least two trips are scheduled per day. The number of vessels targeted per trip would depend on the landing site being targeted, the number of data collectors and the number of vessels at the site. Catch and effort and biological data is collected from the vessels selected randomly at the landing sites. The fisheries Department has suspended its data collection activities. However the industrial fishers submit their log sheets on landing and production.

Privately Sponsored Data Collection Project

One of the offshore industrial companies has been engaged in a project where the morphometric data of seabob is being collected. This project will last for approximately two years and will conclude around December 2009. The project has been privately sponsored and the Fisheries Department has been invited to participate in the project

5. Legislation and Management Regulations

Act and Regulations in Force: Fisheries Act 2002 (replaced the 1959 Fisheries Act and portions of the 1977 Marine Boundaries Act). The DOF liaises closely with the Coast Guard and Marine Police on fisheries enforcement issues, but neither agency has adequate surveillance vessels. The Department of Fisheries monitors compliance with the TED requirements and utilises its staff (TED Inspectors) for the inspections. Despite some attempts by the fishing industry to regulate itself (e.g. aerial surveillance of offshore shrimp vessels; providing a patrol vessel for the exclusive use of the Coast Guard), more effective enforcement is required to reduce illegal foreign fishing and over-the-side sales and piracy. Foreign poaching seems to be the greatest concern in the snapper/grouper and shrimp fisheries. Theft of engines and fishing gear and the destruction of nets by other fishing vessels are problematic in the artisanal fishery.

Some of the issues affecting the effectiveness of conducting monitoring, control and surveillance have been lack of resources, the large expanse of the maritime zones of Guyana, operational problems of the Coast Guard and the unresolved maritime boundary delimitation agreements with neighbouring states.

Limitations and strengths of sampling Plan

Limitations

Sampling days are fixed and this does not give a true representation of fishing activities at landing sites.

- Inadequate resources to conduct activity
- Ineffective supervision of data collectors
- Ineffectiveness of community participation

Strengths

With the introduction of the data collection programme for the artisanal fisheries, production estimates for the artisanal fishery were revised for previous years and the estimates prepared now are more precise.

Appendices

FISHERIES SECTOR

Estimated per capita annual consumption of fish for 2006 was 59kg.
In 2008, 54kg of fish was available per person 2008

1. CONTRIBUTION

	2008	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Fisheries Contribution to GDP (G$M) real value	158	161	156	161	157	159	159	165	164
Fishing Contribution to GDP %	2.5	2.7	2.7	2.9	2.8	2.9	2.9	3.0	3.1
Annual Growth Rate	-2.0	3.2	-3.2	2.6	-1.0	0.0	-4.0	1.0	1.1

Table 1. Contribution to GDP and Growth Rate
Source: Bureau of Statistics

2. EXPORT

	2008	2007	2006	2005	2004	2003	2002	2001	2000
Year									
Prawns	623	620	872	910	648	518	682	924	1076
Seabob & Whitebelly	9,686	8,968	8,591	9,077	9,039	11,534	9,071	10,923	7,198
Dried Shrimp	15	11	17	16	21	19	14	8	13
Finfish and By-products		8,362	8,012	9,273	12,011	9,787	9,518	6,760	2,612
Crabs & Crabmeat	22	26	16	21	23	31	31	4	52
Others		47	89	22	15	12	6	70	676
Total Export	**19,097**	**18,034**	**17,597**	**19,319**	**21,757**	**21,901**	**19,322**	**18,689**	**11,627**

Table 2. Showing Exports of Marine Products 2000-2008 (Metric Tonnes

3. GUYANA FISH EXPORT DATA (FOREIGN TRADE)

Year	Amount (mt)	Value G$
2008	19,097	10.8 billion
2007*	18,304	10.1 billion
2006*	17,597	10.1 billion
2005	19,319	11.4 billion
2004	21,757	12.6 billion
2003	21,901	11.2 billion
2002	19,322	11.5 billion
2001	18,689	11.0 billion
2000	11,627	7.2 billion

Table 3. Showing Annual Exports 2000-2008

4. Production Statistics for fish and Shrimp from 2000-2009(Metric Tonnes)

	2008	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Shrimp									
Prawns (wholeweight)	931	657	1663	1020	1293	1161	1522	1608	1132
Prawns (tail weight)	582	411	1039	638	808	726	952	1005	708
Seabob	13,108	13,752	13,010	13,363	14,485	19,017	18,405	21,097	16,098
No. of Trawlers		90	127	127	139	121	80	80	81
Seabob & Whitebelly (Artisanal)	2,601	427 1039	1382 2830	1500 2254	357 2470	188 2218	730 1400	1164 1382	635 1464
Total Shrimp	**16640**	**15218**	**18885**	**18137**	**18605**	**22584**	**22057**	**25251**	**19329**
Finfish									
Fin-fish (industrial)	374	339	955	962	1486	3311	3175	942	1139
Finfish (artisanal) No. of Boats	23,455 1128	26082 1128	24295 1128	29010 1128	26501 1100	29801 1300	21587 1300	25426 1325	28629 1300
Red Snapper No. of Boats	897	976 40	424 40	341 40	540 45	612 75	424 60	524 48	510
Total Finfish	**24,726**	**27397**	**25674**	**30313**	**28527**	**33724**	**25186**	**26892**	**30278**

JAMAICA NATIONAL REPORT

Prepared by: Anginette Murray
Ministry of Agriculture, Fisheries Division

1. Fishery and Fleet Descriptions

The Jamaican fishery is made up largely of artisanal fishermen operating from open canoe type boats powered by either outboard motors or oars. The artisanal fishery which operates over inshore and offshore areas has been considered by many to be the 'employer of last resort'. The fisheries of Jamaica have over 20,000 fishers (18,294 registered fishers as at December 2008); most of these are artisanal fishers operating from open canoes or reinforced fiberglass-type boats powered by either outboard motors or oars. There are approximately 9,000 boats (4,860 registered boats as at December 2008), ranging from 4 to 9 meters, operating from 187 fishing beaches distributed around the Jamaican territorial waters. Vessels 12m and above, powered by inboard engines are considered industrial vessels.

The inshore fishery takes place in the coastal waters of the Island shelf and its nine proximal banks. Historically, this area has supported the bulk of the fishery activities in terms of manpower and vessels. The major fishing gear used for reef fish is the Z-shaped Antillean fish trap. Other common gear includes the gill nets, seine nets, hook-and-line, and spear guns. There is some collection of crustaceans, molluscs and algae by SCUBA or skin divers. Larger decked vessels target lobster and conch on the offshore banks (primarily Pedro and Morant Banks; also Formigas, Henry Holmes and Grappler Banks).

In the early 1980s, large companies and investors began processing and exporting conch and lobster caught on offshore banks. The vast majority of the catch is sold fresh for domestic consumption. Most lobster tails, conch and valuable finfish species such as snappers are exported to hard currency markets in a chilled or frozen state. Most of the remaining catch is sold in relatively small quantities to a large number of vendors who then take the fish to the nearby towns and communities where it is sold on local markets.

Landing Sites

The fisheries landing sites in Jamaica range from beaches with a small number of canoes through to hundreds of vessels including steel-hulled industrial ships. Key fishing beaches are located in Old Harbour Bay, Port Royal, Rocky Point and the modern fishing port complex in Whitehouse, Westmoreland.

Figure 1 Major marine fish landing sites of Jamaica

Landings Estimates

Annual catches of both marine and inland fishes for the period 1998 to 2007 are shown in the table below.

Table 1. Jamaica fish production trend 1998-2007

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Artisanal	4160.98	6283.74	4585.55	4348.57	7,000.00	4594.92	8811.03	7158.39	12329.85	**11,048.24**
Conch	1700.00	1366.00	0	946	946.00	504.25	550.00	640	650	640
Lobster (Industry)	169.66	284.23	287.77	166.77	130.23	294.69	450.81	300.00	300 (est)	300 (est)
Shrimp	14.54	4.49	36.67	38.5	37.54	37.00	-	875.04	476.10	-
Others [1]	-			51.38	144.00	456.00	-	-	-	-
Total Marine Fish Production	6,045.18	7,984.13	5,139.52	6,327.84	8342.21	5436.17	9495.5	8536.78	13067.83	11,838.24
Total Tilapia Production	4,300.00	4,500.00	4,500.00	5,000.00	5995.44	2968.50	4200.00	4795	7,543.35	5,600
TOTAL Fish Production MT	**10,345.18**	**12,484.13**	**9,639.52**	**11,327.84**	**14,337.65**	**8404.67**	**13695.52**	**14068.43**	**21087.28**	**17,438.24**

[1] Includes shrimp produced by Mariculture.

Table 2 IMPORTS, EXPORTS AND RE-EXPORTS OF FISH AND FISHERY PRODUCTS ALONG WITH THE TOTAL VALUE

	IMPORT DATA			
	2004	**2005**	**2006**	**2007**
Total Net Weight (kg)	18,352,807.00	18,369,946.89	22,125,333.36	22,062,187.51
Total J$ Value	2,565,934,480.79	3,302,913,630.74	3,868,123,103.03	4,347,768,254.55
Total US$ Value	41,872,292.08	52,832,165.16	58,814,667.40	63,133,544.39
	EXPORT DATA			
	2004	**2005**	**2006**	**2007**
Total Net Weight (kg)	0	1361819	1530512	1104775
Total J$ Value	0	584228122.5	689564273.3	576723701.4
Total US$ Value	0	9382105.377	10497136.77	8385922.539
	RE-EXPORT DATA			
	2004	**2005**	**2006**	**2007**
Total Net Weight (kg)	0	25000	22058	166245
Total J$ Value	0	5219214	12098250.13	45617523.88
Total US$ Value	0	84700	182516.3887	666572.1967

Table 3 SOURCE AND CONSUMPTION OF FISH IN JAMAICA, 2001-2007

Year	Estimated domestic marine catch (mt)	Total imports of fish (mt)	Farmed Tilapia (mt)	Estimated total fish consumption (mt)	Estimated total fish consumption (kg)	End of Year Population	Estimated per capita consumption (kg/cap)
2001	6,327.84	31,225.18	5,000.00	42,553.02	42,553,022.00	2,611,100	16.30
2002	8342.21	33,546.55	5995.44	47,884.20	47,884,203.00	2,619,400	18.28
2003	5436.17	36,052.10	2968.5	44,456.77	44,456,765.00	2,632,000	16.89
2004	9,495.50	18,352.81	4,200.00	32,048.31	32,048,307.00	2,644,100	12.12
2005	8,536.78	18,369.95	4,795.00	31,701.73	31,701,726.89	2,656,700	11.93
2006	13,067.83	22,125.33	7,543.35	42,736.51	42,736,513.36	2,669,500	16.01
2007	11,838.24	22,062.19	5,600.00	39,500.43	39,500,427.51	2,682,100	14.73

Sources: Fisheries Division, Ministry of Agriculture & Fisheries and Statistical Institute of Jamaica (STATIN)

2. National Fisheries Policy and Management Objectives

The main goals of the National Fisheries Policy are:

(1) Contribute to economic growth and reduction of poverty
(2) Contribute to sustainable livelihood of Jamaicans through employment in fisheries and related activities
(3) Contribute to the provision of Food security

Its immediate objectives are:

(1) Ensure sustainable development of the fisheries sector
(2) Promote efficiency of the fishing and aquaculture industry
(3) Promote economic and social development of fisheries sector
(4) Improve systems and procedures for the management of the fishing and aquaculture industry
(5) Promote partnerships with stakeholders in the management and development of capture fisheries and aquaculture, and ensure transparency and accountability in the governance of fisheries resources.
(6) Comply with international standards and best practices for capture fisheries and aquaculture development and management in keeping with Jamaica's commitments under various agreements and conventions.

The National Fisheries Policy provides a framework for the formulation of strategies designed to address the important issues and challenges and opportunities facing the industry, including: globalization, trade expansion, economic efficiency, industry structure and governance, and food safety and quality.

The goal to be achieved from proper management of the marine fisheries of Jamaica is the sustainable use of fisheries resources for the maximum benefit of the people of Jamaica. The management objectives for each fishery are discussed below.

a) Shallow-Shelf and Reef Fishery

Objective: To rehabilitate reef fisheries to sustainable levels within the context of coastal zone management and conservation-oriented fishing practices.

Most of the catch is taken by artisanal fishers using mainly Antillean Z-traps. However prohibited fishing practices such as dynamite, poisons, and other noxious substances remain problematic. Fish biomass has already been reduced by up to 80% on the fringing reefs of the north coast, mainly as a result of intensive artisanal fish trapping. It is hoped that fishing activities could be diverted from the reef for a period, which would in effect reduce fishing effort. We have to encourage co-management of the fishery. Increased surveillance and enforcement of legislation is also needed to stop persons destroying the reef.

b) Deepslope Fishery

Objective: to prohibit fishing effort on spawning aggregations and protect areas where these species normally inhabit during the early life stages.

The deepslope fishing areas within Jamaican waters is relatively small. Catches from the deep slope represent approximately 10% of total annual catch of marine fish. The fishery needs to be better studied. There is also need for increased awareness among fishers of the vulnerability of the stock and the potential for over-fishing.

c) Coastal Pelagics

Objectives: to ensure the viability of the fishery through maintaining and enhancing habitat, and protection of nursery areas.

The coastal zone where this fishery is based is an area in use by many other interests (water sport, tourist, harbour use). Management strategy must include some arrangement to reduce conflicts, arrangement to control land-based pollution and coastal development and discourage the use any destructive practices in the zone.

d) Large Pelagics

Objectives: the sustainable development of the fishery, to cooperate with other states (particularly Caribbean states) to assess, protect and conserve the large pelagic resource.

This fishery will need to be studied preferable on a regional basis, and a regional management plan developed.

e) Lobster

Objective: to restore/rehabilitate the fishery through protection of lobsters and protection and enhancement of their habitat.

There is already legislation in place to prevent the taking of berried lobster, prohibit the landing of lobsters during the close season. There is need for gear restrictions effort reduction and co-management arrangements.

f) Conch

Objectives: To ensure optimum sustainable yields and develop the fishery in other areas.

The introduction of a large-scale industrial fishery, which has almost totally displaced the artisanal conch fishery of the years prior to 1980, has increased production substantially. Conch is particularly susceptible to over-fishing because it is sedentary and aggregates in specific habitats. Estimated catches (based on export data) increased from 50 MT in 1987 to 2,051 MT in 1994, however actual catches may be much higher due to illegal fishing. The fishery therefore need close supervision and a strong management framework.

New regulations (The Fishing Industry (Amendments Of Schedule) Order 2000) provided for quantity of conch in storage to be declared before the closed season, provides for the inspection of conch in holding areas, establishes minimum size restriction for conch and reserve the coastal shelf for the artisanal fishery.

g) Shrimp

Objectives: ensure sustainability and full efficient use of the fishery.

Some of the gears used in this fishery, takes excessive bycatch due to the inefficiency of the gear. There is need therefore to introduce bycatch reduction devices to the fishery.

3. Research

The Fisheries Division conducts research and implements policies and legislations in order to manage and preserve a sustainable fishing industry. Current projects/researches along with resources necessary for their completion are listed below.

Lobster Casitas

Casitas are small artificial habitats that lobsters can be fished from. The Lobster Casita Project will seek to investigate a more efficient and sustainable system for the lobster fishery through-investigation of the use of casitas in major fishery areas, establishment of juvenile enhancement systems and establishment of pueruli (lobster larvae) monitoring programmes. Although a national project, Bowden Bay in St. Thomas is currently being used as the pilot site and technical assistance is also being sought from Mexico and Cuba. Preliminary biological assessment was also done at the said site. The project will train staff in the use and management of casitas, condominiums, and larval monitoring systems, and provide a basis from which to introduce the use of casitas to commercial fishermen in other areas.

Fish Aggregation Device (FAD)

FAD is particularly effective in initiating an innovative and sustainable way of easing fish capture through aggregation of [large quantities of] fish into prescribed areas where these artificial floating objects are placed. A trial of this device will be done in Whitehorses, St. Thomas by the fishers and is endorsed by the Fisheries Division.

Assessment of Fish Production

The Division through its sampling plan collects catch and effort and biological data to be used for stock assessment and management and for detecting fish production trends. The fisheries targeted include — reef and pelagic resource, lobster and conch, coastal pelagic resource, shrimp and ground fish. There are however a few limitations:

- Limited staff to cover a larger number of beaches thereby increasing the number of sampling days
- Additional resources are needed human, transportation and otherwise

Monitoring Fisheries Activities during and out of close seasons

The Division continues to execute its regular enforcement activities island-wide during the Lobster (April 1 – June 30) and Conch (gazetted each year) Close Seasons. During these times of enforcement, the Division relies on the support of the hotel industry in providing accommodation as the money allocated is not sufficient to cover all costs.

Development of Fisheries policy and New Legislation

This project will address the problems of declining production in the Jamaica marine capture fisheries; it will develop a framework to improve both the institutional capacity and the present management practices in the industry.

Aquaculture

The Aquaculture Branch has its main emphasis in Fingerling production, Research and Extension Services.

- *Fingerling production* of the Red Tilapia hybrid male is the main type produced and sold to farmers.
- For *Extension Services,* the Aquaculture Branch provides expert advice on Site Selection, Pond Construction, Stocking, Feeding, Harvesting and Marketing through its resource persons or extension officers.

- *Research:* work is currently being done to involve salt water culture of Tilapia. Investigations are also being done on growth and survival of the mangrove oyster *Crassostrea rhizophorea*.

Oyster Culture
Objectives of the oyster culture project include developing marketable products produced from oysters; promoting and marketing the products developed. The Scientific Research Council has responded affirmatively to the request to investigate the development of products using oysters.

Ornamental Fish Production
Ornamental fish production is a blooming area in aquaculture. One of the aims of the Aquaculture Branch is to establish ornamental fish production as a small business enterprise in inner-city communities.

In addition to the ongoing projects of the Division four major sub-projects have been added, namely:

1. Fishing beach infrastructure redevelopment for thirty (30) beaches.
2. Fisheries conservation and rehabilitation which seeks to improve capture fisheries by the rehabilitation of destroyed habitats.
3. Strengthening stakeholder capacity
4. Declaration of five fish sanctuaries.

4. Legislation and Management Regulations

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) was ratified by Jamaica on March 21, 1983. Subsequently, Jamaica has pursued a consistent policy of updating its laws to ensure full compliance with the provisions of UNCLOS.

The pieces of legislation relevant to the maritime zones and areas of Jamaica are the Maritime Areas Act 1996 and the Exclusive Economic Zone Act 1991. The Maritime Areas Act is an important piece of legislation that has significantly increased Jamaica's jurisdiction over maritime space. The Exclusive Economic Zone Act 1991 established Jamaica's 200 nautical miles EEZ. The enactment of this piece of legislation establishes a maritime regime (about 274,000 km^2) that is approximately 25 times the size of the landmass of mainland Jamaica.

The main pieces of legislation presently governing fisheries activities in Jamaica are the Fishing Industry Act 1975, the Fishing Industry Regulations 1976 and the Morant and Pedro Cays Act 1907, administered by the Fisheries Division of the Ministry of Agriculture, and the Aquaculture, Inland, Marine Products and By Products (inspection, licensing and export) Act 1999 administered by the Veterinary Division.

The main pieces of legislation relating to the management of marine fisheries of Jamaica are the Morant and Pedro Cays Act 1907 and the Fishing Industry Act 1975. These laws establish the system of registration and licensing of fishers and fishing vessels.

Several other statutes contain provisions relevant to fisheries. These are the Exclusive Economic Zone Act 1991, Maritime Areas Act 1996, Natural Resources Conservation Authority Act 1991, Beach Control Act 1956, and the Wildlife Protection Act 1945.

LEGISLATION	OBJECTIVE & SCOPE
PRIMARY LEGISLATION	
Fishing Industry Act, 1975 and Fishing Industry Regulation, 1976	licensing and fishing regulation with territorial and archipelagic seas.
OTHER FISHERIES-RELATED LEGISLATION	
Morant and Pedro Cays Act, 1907	licensing of fishers based on offshore banks
Wildlife Protection Act, 1945	prohibit deleterious fishing practises (eg. Dynamite); protection of manatees; turtles etc.
Natural Resource Conservation Act, 1991	management of coastal zone resources
Natural Resource (National Parks) Regulation, 1993	management of marine parks
Exclusive Economic Zone Act, 1991	management of resource outside 12-miles territorial limit
Town and Country Planning Act	mangrove clearance
Beach Control Act, 1945	infrastructure development on beaches; protection of black coral and organisms
Harbours Act, 1971	conduct of vessels at sea
Territorial Sea Act, 1971The Maritime Areas Act, 1996	declaration of Archipelagic State and territorial seas
The Meat, Meat products and Meat by-products Inspection (Export to specified countries) Act, 1989	export license for seafood and inspection of processing plant

LEGISLATION	OBJECTIVE & SCOPE
INTERNATIONAL CONVENTION & LAWS	
United Nations Conventions on the Law of the Sea (UNCLOS)	- legal order for the seas and oceans which will facilitate international communication and will promote the peaceful uses of the seas and oceans - conservation of living resources - the study, protection and preservation of the marine environment - navigational rights, territorial sea limits, economic jurisdiction, legal status of resources on the sea-bed beyond limits of national jurisdiction
Caribbean Community CARICOM, 1973	- economic integration (Caribbean Common Market) - co-operation in non-economic areas and operation of certain common services - co-ordination of foreign policies of independent member states
Conservation and Management of Straddling Fish Stocks and highly Migratory Fish Stocks	- part of the implementation of the provisions of the UNCLOS
Convention on Biological Diversity, 1992	- conserve bio-diversity - promote the sustainable use of its component encourage equitable sharing of the benefits arising out of the utilization of genetic resources

MONTSERRAT NATIONAL REPORT

By: John Jeffers
Fisheries Division, Ministry of Agriculture

1. Introduction

Montserrat, an overseas territory of the United Kingdom is still feeling the effects of volcanic activity on the Marine Environment, as a result of ongoing activities since 1995 the fisheries sector has been seriously affected by mudflows, ash falls, pyroclastic flows as well as other natural causes. Reefs, sea grass beds and some fishing grounds have been lost. The island produces about 60% the fish consumed.

2. Fishing Fleet

There are thirty-three (33) fishing vessels in operation, all are powered with outboard motors ranging form 25 -225 horse power. The fleet comprises of the following: 5 launches and 28 open boats. The vessels range in length from 12-30 feet, most are equipped with some safety equipment. Two of these fish for pelagics; three fish for coastal pelagics and demersals; sixteen fish for demersals only; ten fish traps and lines; and nine fish lines. 23 of these vessels are made of fiberglass, while three are of wood and fiberglass and seven are made of only wood. There are no commercial fishing vessels operating in Montserrat, this is due mainly to the following:

- Absence of a safe-harbor and adequate berthing facilities
- Absence of on-shore storage facilities
- Shortage of fishers due to the aging and migration problems

Most vessels are equipped with 1 motor and a pair of oars. The average time for retrieving traps is usually between 4-6 hours. All traps are retrieved manually.

Concessions

Fishers are allowed duty free concessions, including service charge and consumption tax on all fishing equipment including engines but are required to pay service charge on all imported fishing vessels (4%). No income tax on fishing related activities. Duty free concession on1 pick-up truck once in every 5 years (vessel owners only).

Trap Fishery

The trap fishery is a very important fishery which account for 50-60% of total landings depending on several conditions. This fishery is preferred by several fishermen who are from a fishing family and is mostly concentrated on in Carr's Bay/ Little Bay area.

With the on-set of volcanic activity the number of vessels engaged in this fishery has declined significantly. This is due to the following: migration of fishers, destruction of fishing grounds due to the on-going volcanic activities, difficulty sourcing materials, high cost of fuel etc and aging of fishers.

The traps are made from mesh wire which is not less than 1.5 mesh size. These traps are usually made in a 2 shapes (i.e z and rectangular) and are completed with wooden sticks to support the wire. In recent times some fishers began using 1/4" steel to frame their traps with anode attached to increase the working life of their traps.

A wide variety of species are usually taken in these traps in some cases as many as 20 different species. The soak time for these traps is usually 3-5 days. Given the potential of fish traps to yield good returns there are times when fishers suffer significant losses of traps due to theft and bad weather. There are several times of the year when traps are completely destroyed due to surging seas, hurricanes. etc., with the most recent being March 20-21 2008, when over 300 traps were lost as a direct result of severe rough seas. This resulted in damage to some reefs which will in turn affect fishing.

The trap fishery has also contributed to the number of ciguatera cases reported in Montserrat. As a result it is estimated that as much as ½ of catches have been discarded on an annual basis. This figure is highest in certain areas where certain species are known to be caught. The areas where the trap fishery has been most affected are the western, southern and eastern coasts.

Measurements in several traditional areas have shown a change in depth of up to 40ft in some areas due to mud flows, etc. Some traps have also returned covered with ash. According to a survey done by the Department of Earth Science University of Bristol up to 30km offshore has been affected by volcanic ash.

Beach Seine

The Beach Seine Fishery continues to play a major role in fish production. Over the last 5 years mixed results have been experienced e.g. – smaller sizes, absence of the Big eye scad compared to previous years and significant reduction in Ballyhoo (half beak). These changes are directly related to changes in the marine environment. As a result of these changes the ballyhoo that is used for bait by some fishers is virtually none existent.

This gear (the seine) sometimes captures some demersal species especially when hauled ashore to retrieve its catch. There are times that Barracudas sand sharks and even stingrays are caught in this net.

The average time spent at sea with a net varies depending on the areas visited. At least three (3) vessels combine seine fishing with trap fishing most times. The number of seine fishing vessels has fallen to 4 compared to previous years which was as high as 10.

Pelagic Fishing

This fishery has had a mixed year in 2008 due to high fuel cost and shortage of man power. Several fishermen had to curtail their fishing trips which resulted in lower catches. Vessels involved in this fishery are usually equipped with depth sounders, G.P.S. etc and would use a combination of artificial and local bait where possible. The main species targeted in this fishery are wahoos, kingfish, bonitos with no specific preference. All fish caught is usually sold to the public. There's one fisherman who would reserve a percentage of his catch for his restaurant. It must be noted that during the local fishing tournament, the first Monday in May, the majority of boats target the pelagic species. The same is done for the Montserrat open which is held in September on a yearly basis. During this time a wide variety of species are usually landed as there is usually a high demand for fresh fish from the public. The average vessel would spend between 5-10 hours trollling with 4-5 lines in water. Most of this fish is sold ungutted and is usually reserved for restaurants, hotels etc.

3. Research

In 2007 and 2008 an exercise was done to determine the changes in the marine environment and its likely impact on the fishing industry. A total of 20 sites were selected and measured for depth changes. These sites were chosen because of their location and the potential for changes was also taken on board. These sites were measured by depth sounders and lodged into a G.P.S. These were re-measured again which indicated that there is continuous shift in material reaching the marine environment and continues to have a negative effect on marine life including reefs and fishing areas. A more detailed survey was done by the University of Bristol for the Montserrat Volcano Observatory. Copy available for reference.

4. Legislation and Management

The fisheries division operates under the Fisheries Act #11 of 2000 which calls for an advisory committee, consisting of interested parties to advise the minister on the development and management of fishery resources and related matters such as fish processing and conservation. In 2008 the draft fisheries regulations was received and reviewed by a select group from the marine unit, fisheries division, customs, fish co-operatives, etc. These regulations will provide the tools needed to gather comprehensive information legally. When this is fully approved all vessels will be required to be registered and carry the necessary safety gears.

5. Data Collection

Data collection occurs at the main landing site i.e. Carr's Bay/Little Bay on Mondays through Fridays during working hours i.e. 8-4pm. However fishers are encouraged to provide the data should they arrive after normal working hours. Approximately 98% of all catches are landed whole. In some cases actual weights are recorded where as in other cases estimates are used.

Challenges

- Getting some fishers to provide the required data including areas fished.
- The time that some fishers return from fishing.
- Absence of Regulations to enforce certain provisions of the act.
- High demand of fresh fish and the absence of adequate storage facilities for fishers.
- Recruiting younger persons into the fishery.
- Availability of fishing equipment.
- Storage of catches.

NATIONAL REPORT – ST. LUCIA

Amended by:
Allena Joseph, Fsheries Biologist

1. Introduction

Saint Lucia, an independent island state, in the Eastern Caribbean, is approximately 539 km^2 in area and lies between latitude 13 ^{o} and 14^o north and longitude 60 ^{o} and 61 ^{o} west. With a population of 133,308 (Statistic Department, 2001), Saint Lucia enjoys a tropical climate moderated by the northeast Trade Winds. Nearshore fishing takes place along the coastline, which extends for 158 km. The island has a narrow coastal shelf area of 522 km^2 and a total Economic Exclusive Zone (EEZ) of 4700 km^2 (Department of Fisheries, 1999). The western coast is characterized by a narrow, steep, insular shelf in contrast to the eastern coast, which has a fairly extensive, less steep, insular shelf. The southern coast has a wider shelf area extending southwards.

Similar to other islands of the Lesser Antilles, two water bodies wash its shores, the Atlantic Ocean on the east and the Caribbean Sea on the west. The marine habitat comprises the full range of tropical marine and coastal habitats including estuaries, mangroves, lagoons, seagrass beds, fringing, patch and barrier reefs, slopes off the island platform, deep bank reefs and open oceans. Nearshore, at depths between 30 m and 80 m on the outer island shelf, are submerged Holocene or early Pleistocene reefs (Mahon, 1990). Two important fishing banks with a total shelf area of 14 km^2 are located a few miles south and northeast within the 200-m depth contour.

2. Description of the Fishery

The major fisheries resources of Saint Lucia comprise demersal, coastal pelagic and offshore pelagic fisheries. Although there is some year-to-year variability among these resources in terms of time, the fishing year of Saint Lucia can be divided into two main seasons: a "high' season that extends from December to May when significant landings of offshore migratory pelagics occur and a "low" season that extends from June to November when relatively large quantities of demersal fishes are landed. However, the main "pot-fishing" season extends from June to February (Gorbert & Domalian, 1995; Andre-Bigot, 1995).

The offshore pelagic fisheries contributed 75% of the annual landings by weight (Department of Fisheries, 2008) which is made up of a number of migratory species including dolphinfish (*Coryphaena hippurus)*; mackerel (*Stromberomorus* spp.*)*; Wahoo (*Acanthocybium solandri)*; blackfin tuna (*Thunnas atlanticus)*; yellowfin tuna (*Thunnus albacares)*; Skipjack tuna (*Katsuwonus pelamis)*; sharks (various families); billfishes (Istiophoridae, Xiphiidae) and flying fish (*Hirundichthys affinis)* (Figure 1).

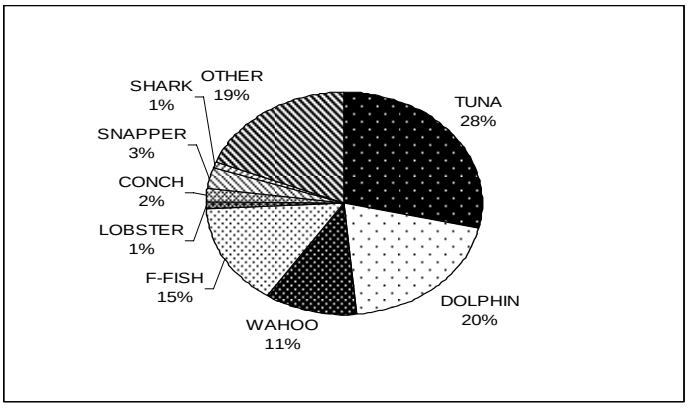


Figure 1: Percentage of landings for different families 2008.

In the coastal pelagic fishery, an array of species is targeted including: ballyhoo (Hemiramphidae spp.); barracudas (Sphyraenidae spp.); creole wrasse (*Clepticus parrae)*; herrings (Clupeidae spp.); jacks (Carangidae spp.); mackerels (*Decapterus macarellus)*; needlefishes (Belonidae spp.).

Whilst the demersal fishery lands the most highly priced and valuable species for the local, tourism and export sectors including: snappers (Lutjanidae spp.); groupers (Serranidae spp.); Caribbean spiny lobster (*Panulirus argus)*; Caribbean queen conch (*Strombus gigas)* the contribution of this fishery to the total annual landings has steadily decreased. This decreasing landings trend observed in the demersal fishery can be attributed to the increased pressure on the offshore fishery during this period and possibly the movement of some fishers into the tourism industry.

3. Policy and Regulations

The primary legislation governing management of the island's marine resources are the Fisheries Act (No. 10 of 1984) and Fisheries Regulations (No. 9 of 1994) which are based on the Organization of Eastern Caribbean States (OECS) harmonized legislation. The Fisheries Regulations specify conservation measures such as gear restrictions, fishing method restrictions, close seasons and creation of marine reserves. The policy of the Government of Saint Lucia for the fishing sector focuses on development and management of the fishing industry through the promotion of sustainability of the sector through self-sufficiency by increased production from capture fisheries and the aquaculture sector (Department of Fisheries, 2001). Another major objective outlined within the fisheries policy is the social and economic advancement of fishers and their families. The Fisheries Management Plan, developed through a consultative process with resource users, guides the work program of the Department of Fisheries and outlines specific management plans for major fisheries of Saint Lucia (Department of Fisheries, 2006).

The Department of Fisheries is cognizant of the need to ensure that proper management regimes are in place to guide the management and development of the fisheries sector. In light of such, the Department of Fisheries with technical assistance from the Food and Agricultural Organisation, in 2001, reviewed the existing legislation with the aim of revising the legislation to encompass many of the new fisheries management paradigms. Many consultations and meetings were undertaken with stakeholders resulting in a proposed new Fisheries Act and Fisheries Regulations and at present the legislation is at the Attorney's General Office for review.

4. General Statistics on Fleet Types, Type of Effort and Trends in Fishing Patterns and Practices

The Department of Fisheries has 574 vessels registered in its database (Department of Fisheries, 2008). In 2008, the Department of Fisheries undertook a verification exercise of the registered fishing vessels database. Vessels that were known to no longer be in existence or no longer engaged in the fishery were removed from the database. In 2002, fishing vessels were reclassified under the following categories: canoes; pirogue; transom, shaloop; whaler; longliner and other (Table 1).

Table 1: Categorisation of Saint Lucia Fishing Vessels

Vessel Category	Canoe	Pirogue	Transom	Shaloop	Whaler	Longliner	Other	Total
Total	83	429	31	17	3	7	2	574

(Source: Department of Fisheries, 2008)

On average fishing vessels engaged in the fishery in Saint Lucia are 7m long but range between 5-9 meters and are propelled mainly by 75 horse power outboard engines. Due to the multi-species nature of the fishery in Saint Lucia, fishing vessels are generally equipped with the following gear: trolling lines; flyingfish nets; longlines (palangs); gillnets; handlines; and fishpots (traps). Gillnets and seine nets are less common. Seines and fillets are primarily owned and operated by west coast fishers, but gillnets are operated around the island with the exception of the Soufriere Marine Management Area, where their use has been banned.

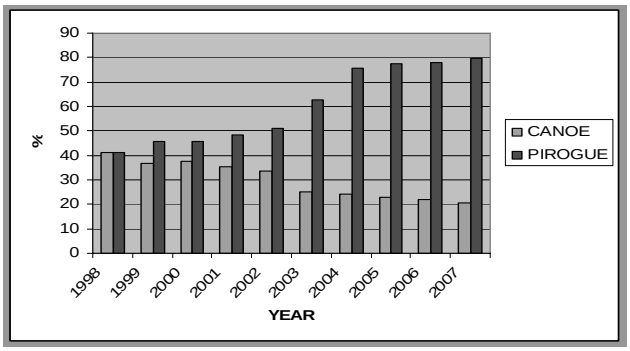


Figure 3: Percentage of registered canoes and pirogues from 1998- 2007

Fishing communities are located both along the Caribbean and Atlantic coast. This, coupled with the fact that the majority of vessels are equipped with outboard engines makes access to the different coast and water bodies (Atlantic and Caribbean) relatively easy. Most fishers fish within 15 miles of the coastline and fishing trips generally do not exceed twelve hours.

Sampling Plan

Current fisheries data collection systems include several components such as gathering of data on catch, effort, registration of fishermen and vessels, SCUBA diving and snorkeling establishments, sports fishing vessels and spear gun fishers, in addition to licensing data of fishers and fishing vessels, dive and snorkel leaders.

The catch and effort data collection plan is based on a stratified random sampling regime of three major strata: primary, secondary and tertiary landing sites, based on the number of vessels

operating, the fishery types and the volume of fish landed. The island fishery operates out of 22 landing sites. However, catch and effort data are collected at nine landings sites based on a random stratified system. The sites presently sampled include: Gros Islet, Castries, Soufriere, Choiseul, Vieux Fort, Micoud, Laborie and Dennery (Figure 4).

At each of the sites being sampled, catch and effort data are collected for every other returning vessel for fifteen days (randomly selected) monthly. Information such as area fished, species caught, gear used, hours fished, and total vessels out, are recorded and submitted monthly to the Data Section. In terms of area fished, the island's coastal waters are divided into two zones; for offshore pelagics, A and B, and three zones for nearshore and bank species C, D and E.

Lobster Fishery

Introduction

Panulirus argus is the most abundant and commercially important of the three *Panulirus* species (*P. argus, P. guttatus* and *P. laevicanda).* However, *P. guttatus* is protected from commercial exploitation since it rarely attains the legal size limit of 95 mm. The majority of Caribbean lobster landings come from traps set in depths in excess of 30 m (Luckhurst & Auil-Marshalleck, 1995). Previously, lobsters were fished with trammels nets that are now banned from the island fishery; however, they are still used illegally on a small scale. Caribbean spiny lobsters are also illegally fished with spearguns by recreational fishers.

The fishery for lobster sustains important artisanal fisheries during the "low" fishing season. It is regulated with a seven-month fishing season, extending from 2nd August to 28th February/ 29th every leap year inclusive.

The Department of Fisheries, recognizing the need to reduce effort in nearshore fishery implemented a limited entry system for the pot fishery (the main gear used to fish for lobsters) in the 2000 pot-fishing period. Funding for implementing this management regime was provided by the European Union as part of the Sustainable Fisheries Development Project. The main objectives for implementation of such a management measure were to address the problem of over-fishing plaguing this fishery, due to the continued use of illegal mesh sizes for fish pots, the open access nature of the fishery, the recurrent problems of theft of gear and catch, incidental ghost fishing and declining catches. A collaborative approach for developing conditions for the management regime was used (Department of Fisheries. 1999).

In 1999, prior to its implementation, consultations funded by the British Department for International Development through the Organization of Eastern Caribbean States – Environmental Sustainable Development Unit (ESDU) formally OECS - Natural Resource Management Unit (OECS-NRMU), were held with resource users, mainly pot fishers (Department of Fisheries, 1999). The benefit of such an approach is that the resource users are directly involved in the identification of a strategy for sustainable use, resulting in greater compliance when implemented. Consequently, this management regime was first implemented in 2000, in the southern half of the island, where the largest pot fishing communities exist and the following year, it was implemented nationally. The following list of requirements and conditions were mandatory in order for fishers to qualify to engage in the fishery:

- Fishing vessels must be registered and licensed.
- Only full time traditional pot fishers would be licensed to engage in this fishery.

- Pots and buoys should be clearly marked with identification tags (that is, PVC tags with vessel identification number on it to allow for effective enforcement. (Funding covered the cost of supplying PVC for the first year only).
- No undersized lobsters should be kept in holding pots.
- All pots should have degradable panels and must not be constructed with mesh smaller than 1 1/4 in.
- Pot fishers should have at least 15 pots

Further, pot fishery licenses must be presented during any sale or trade in lobsters. The Department also adopted a policy of discouraging and denying new entrants to fishing access to pot fishing.

However, due to a number of constraints such as the cost of the tags used on the pots, the continued incidents of pot theft and the limited capacities of the Department of Fisheries and the Marine Police Unit for enforcement and gear authorisation, the limited entry pot fishery system was discontinued.

Trends in catches or landings during 1991- 2008

Table 2 gives an indication of the annual production of *P. argus* between1991 and 2008 giving an average annual production of 17.5t. during this period.

Table 2: Lobster landings (tonnes) from 1991- 2008

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Landings (tonnes)	1038	968	1114	883	981	1315	1311	1461	1860	1860	1967	1607.8	1447	1520	1386	1440	1508.7	1694.6
Lobster Landed (tonnes)	10	21	15	15	13	13	13	32	30	24.9	36.1	9.52	23.37	10.6	15.35	9.36	12.66	11.09

(Source: Department of Fisheries)

Although lobster landings do not contribute significantly to the total landings (Figure 2), in general lobster landings have increased. Recorded lobster landings for 2006 were unusually low. This may be attributed to the pot fishery project where the majority of lobsters were sold directly to hotels and restaurants and not landed at landing sites. The majority of lobster landings occur during the first four months of the fishing period.

The lobster fishery is economically significant to the livelihood of pot fishers of coastal communities, particularly during the low period, since there is not much opportunity for alternative employment.

Collection of catch and effort statistics during 1999-2003

Collection of catch and effort data on lobsters is based on a stratified random sampling regime. Although the island's fishery operates out of 22 landing sites, catch and effort data are only collected at nine landings sites. During 1999-2001 the sampling plan was revised in that River Doree, Anse la Raye and Savannes Bay were removed as sampled sites and replaced with Choiseul and Laborie (Figure 4).

Research Conducted during 1999-2003

From November 1996 to April 1999, as part of a sub-project jointly funded by the Government of Saint Lucia and CARICOM Fisheries Resource Assessment and Management Program (CFRAMP), a total of 6469 Caribbean spiny lobsters, *P. argus* were sampled from commercial Antillean Z-traps deployed off the southwest and southeast coasts of Saint Lucia in areas fished by commercial trap fishers, at depths ranging from 5 m to 50 m, and landings at two sites, River Doree in the southwest and Savannes Bay in the southeast (Joseph, 2000). The project was divided into two components; the first component, which ended in 1998, examined 4128 lobsters landed at the abovementioned landing sites during the open season for this fishery.

The second component of the project, the maturity study, which ended in 1999 involved year-round sampling at sea by fishermen, under regular supervision by staff of the Department of Fisheries, from Savannes Bay and River Doree. Data on carapace length, sex and weight were obtained for all lobsters. However, females were further examined for the presence of eggs (ovigerous) or spermatophoric mass (deposition of spermatophores on the sternum) (Joseph, 2000). Eggs were described as orange (freshly laid) or brown (ready to hatch) and spermatophores were described as intact (pre-fertilization) or eroded (post-fertilization) (Anon, 1996). Caribbean spiny lobsters sampled at sea were tagged by perforation of a hole in the telson to avoid double sampling, particularly during the close season. *P. argus* less than 95 mm were returned after observation however, during the close season, all lobsters were returned. In addition, effort data collected included estimation of depth, number of traps hauled, soak time and estimated total catch (Joseph, 2000). At least four sampling trips were conducted each month and all Caribbean spiny lobsters caught in the traps were sampled. Carapace lengths were measured to the nearest millimeter with steel vernier callipers (Joseph, 2000).

Findings from the maturity study showed a decrease in mean carapace length and an increase in the proportion of undersized lobsters, lobsters with a carapace length less than 95 mm (Joseph, 2000). The presence of berried females in pots although evident at both sites, was found on the south west coast throughout the year, whilst two distinct peaks were observed for lobsters caught on the south east coast (Joseph, 2000).

These findings have serious implications for the management of the spiny lobster fishery in Saint Lucia particularly, in the timing of the close season, as one of the objectives of the managment of the lobster fishery, as outlined in the Fisheries Management Plan, is the protection of breeding adults.

Up to this date no further research has been conducted on the lobster fishery.

Fisheries legislation and regulations

The primary legislation governing management of the lobster fishery are the Fisheries Regulations No. 9 of 1994. Under these regulations, it is illegal to harm or have in one's possession any lobster that is undersized, carrying eggs, or moulting. It is also illegal to spear, hook a lobster, or remove the eggs from a lobster. Lobsters are protected from fishing between 1st March to 1st August in any year. Finally, lobsters smaller than 95mm carapace length are protected within the regulations.

In 2001, the Department of Fisheries with assistance from FAO, embarked on an initiative to review and revise the existing fisheries legislation. The following are proposed amendments regarding lobster management:

I No person shall:

- *Attempt to catch or catch lobster with the use of SCUBA and/or Hookah*
- *Keep any lobster confined to a holding pot during the closed season; and*
- *Disturb, damage, take from the fishery waters, have in his possession, purchase, import, expose for sale, or sell any lobster from the 1st day of January to the 30th day of June in every year, or during a closed season as declared by the Minister by notice published in the Gazette and in a newspaper which is printed or circulated in the State.*

II *All establishments engaged in the sale and trade of lobsters and their products shall declare their lobster stocks to the Department of Fisheries by mid March of every year. All establishments engaged in the sale or trade of lobster shall dispose of all lobsters within one month from the allocated close season.*

Conch Fishery

Introduction

The Queen conch, *Strombus gigas* (Linaeus, 1758) is one of the single species nearshore fisheries of Saint Lucia. Presently, nearshore stocks have been over exploited, resulting in the exploitation at deeper depths with the use of SCUBA gear. Although this species is thought to be distributed around the island, only two significant populations have been identified, one to the north and the other to the south of the island (Nicholas & Jennings-Clark, 1994). Information obtained from a recent survey of vessels targeting conch resources (Walker, 2003) indicated that divers harvest conch regularly from various areas off Cas en Bas, Esperance, Grand Anse, Gros Islet, Mennard and Marisule in the north; Vieux Fort and Caille Bleu in the south; and Dennery on the east coast. Conch vessels target, on average, three areas on a rotational basis. Conch are mainly landed at two landing sites: Gros Islet, located at the north of the island; and Laborie on the south west coast. Conch are more heavily targeted in the north of the island than the south (Walker, 2003).

Conch is exploited commercially all year by over 40 fishers in depths ranging from 11 m to 43 m. Fishers operate mainly out of fiberglass pirogues ranging in length from 7.02 m – 8.45 m, powered by outboard engines of 115 – 250 hp. Walker, (2003), reported that whilst conch are targeted commercially by some fishers throughout the year, other fishers focus their efforts on this resource during the low period for "offshore" pelagic species, for an average of five months. Most conch fishers undertake more than three dives a week and land an average of 300 conch per trip. The number of conch landed per trip is dependent on the number of divers and the number of dives undertaken during a trip, and can range from 100 - 500 conch (Walker 2003). Walker (2003) indicates that two divers enter the water per trip and that each diver undertakes between three to four dives (inclusive of decompression dive). Subsistence exploitation occurs in shallower areas, but the extent is unknown.

Due to the nature of the fishery, the marketing system, and an informal policy of the Department of Fisheries, the majority of Queen conch harvested are landed whole (live) and then sold immediately or stored in wire-meshed cages in shallow areas close to shore until sale is obtained.

Two management objectives have been defined for this resource and are articulated in the *Plan for Managing the Fisheries of Saint Lucia (2001- 2005).* They include rebuilding the near shore stocks and ensuring sustainable use of this resource. Options identified for attaining these objectives include initiating a flared lip thickness restriction, controlling effort through a licensing system, implementing closed areas or seasons and co-management arrangements with resource

users. A Conch Assessment study has recently been completed for Saint Lucia. This assessment covered the density of conch in fished areas and the socio- economic importance of the Conch fishery in Saint Lucia.

Trends in catches or landings during 1993-2003

Landings of Queen Conch have increased steadily in the last few years (Table 3). This increasing trend can be attributed to an increase demand both in the tourist and local markets. Table 3 gives an indication of the annual production of Queen Conch between 1993 and 2008 giving an average annual production of 33 tonnes during that period.

Table 3: Landings of conch from 1993 to 2008

(Source: Department of Fisheries,)

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Landings (Tonnes)	1114	883	981	1315	1311	1461	1718	1860	1967	1608	1447	1520	1386	1440	1509	1695
Conch Landed (tonnes)	13.3	19.8	31.9	26.8	24.5	28.2	33.3	40.3	41.4	60.4	47.5	15.6	42	34.7	18.2	39.8

Although conch does not contribute significantly to the total landings (Figure 3), this fishery is economically significant to the livelihood of fishers, particularly in Gros Islet where the highest landings of conch are recorded.

Collection of catch and effort statistics during 1999-2003

Over the past decade, very little information on major single species fisheries such as conch has been collected on a consistent basis. Prior to 2001, conch landings were only captured for Gros Islet in the north, where the majority of conch is landed.

In 2001, the sampling plan was revised to include two other sites in the southwest, where fishers from one of these sites are also known to target conch. This revision has improved the information base for this species. Analysis of the 2002 data indicated that conch is landed at two landing sites: Gros Islet and Laborie.

Fisheries legislation and regulations

The Fisheries Regulations No. 9 of 1994 provide the mandate for the management of the conch fishery at the national level by prohibiting the harvesting of conch of less than 180 mm total shell length, less than 1 kg total weight and less than 280 g meat weight, not including digestive glands. In addition, these Regulations restrict harvesting of immature conch, defined as individuals without a flared lip. However due to financial and manpower limitations, enforcement focuses on only one of these Regulations - the harvesting of individuals with flared lips due to the ease of implementation in the field. The Fisheries Regulations also make provisions for a closed season but, to date, this management measure has not been implemented.

The Department of Fisheries with assistance from FAO, has embarked on an initiative to review and revise the fisheries legislation. The following are amendments regarding conch in the proposed revised fisheries legislation:

(1) No person shall -

I. take from the fishery waters, sell, purchase, or at any time have in his possession any immature conch; or

II *take from the fishery waters, expose for sale, purchase or at any time have in his possession any conch during the closed season for conch or taken from a closed area for conch as specified by the Minister by notice published in the Gazette and in a newspaper which is printed or circulated in the State*

III. *take from the fishery waters, have on board any fishing vessel or land any conch out of its shell.*

(2) In this Regulation -

- *"conch" includes the whole or any part of any conch;*
- *"immature conch" means a conch with -*
  - *a shell with a lip thickness of less than 5 millimetres;*
  - *a total weight of less than one kilogramme or*
  - *a shell which does not have a flared lip.*

Large Pelagic

Introduction

This fishery, like the other fisheries in Saint Lucia, is primarily conducted from small, open boats, with trolling lines operated by hand. The offshore pelagic fisheries contributed 75% of the annual landings by weight (Department of Fisheries, 2008) which is made up of a number of migratory species including dolphinfish (*Coryphaena hippurus)*; mackerel (*Stromberomorus* spp.*)*; Wahoo (*Acanthocybium solandri)*; blackfin tuna (*Thunnas atlanticus)*; yellowfin tuna (*Thunnus albacares)*; Skipjack tuna (*Katsuwonus pelamis)*; sharks (various families); billfishes (Istiophoridae, Xiphiidae).

The catch is highly seasonal, with the majority of activity and landings occurring between December and June, but peaking between January and April each year. This fishery is active at all landings sites, but is more prominent at Dennery located to the east and Vieux Fort to the south of the island.

The Department of Fisheries, cognizant that many of the nearshore resources are exploited to over exploited for the last few years, has promoted the offshore pelagic fishery through the introduction of new fishing technologies such as Fish Aggregating Device (FADs), and new fishing techniques such as longlining.

Unlike the nearshore fisheries, such as lobster and conch, which are regulated at the national level under the Fisheries Act No.10 of 1984 and the Fisheries Regulations No. 9 of 1994, the pelagic fishery is currently not regulated at the national level. The management objectives for this fishery, as outlined under the Fisheries Management Plan, include:

- The promotion of the sustainable development of the commercial and sport fisheries for large pelagic species;
- Cooperation with other Caribbean States to manage the large pelagic resources;

Trends in catches or landings during 1990-2008

Generally the trend in landings of large pelagics have steadily increased in the last few years (Figure 3) with large pelagics accounting for 75% of the annual landings in 2008.

Table 4: Pelagic Landings (tonnes) from 1990-2008
(Source: Department of Fisheries 2008)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Pelagic Landings (Tonnes)	389	562	616	678	495	594	872	928	870	1227	1277	1082	975	918	1053	844	986	1056	1021

Figure 5 indicates that large pelagics over the last few years made up the largest proportion of the total landings. This increasing trend in pelagic landings may be contributed to the efforts undertaken by the Department of Fisheries to promote the fishery as an alternative to the nearshore fishery.

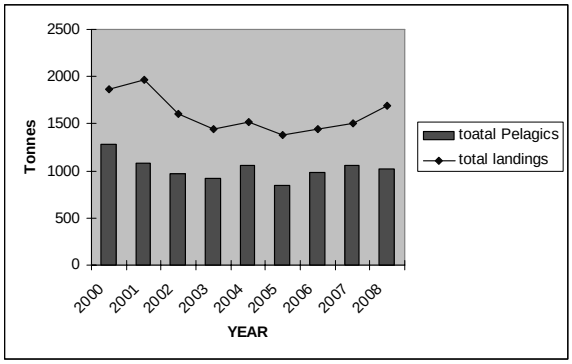


Figure 5: Proportion of large pelagics that contributed to the total landings between 2000-2008

Gear Trends during 1990 – Present

As part of its efforts to encourage more fishers to enter the pelagic fishery, the Department of Fisheries through its Extension Unit has trained many fishers in the use of longline fishing (palang) on the Department's research vessel. However, few fishers have been able to adapt this technique to their open pirogues, and as a result of this, trolling is the predominant fishing method used to target pelagics.

Fishers have also adopted a fishing method from the French islands, known as drift line fishing. Under this method a vertical line between 50 to 100 meters with one or two hooks is attached to a buoy and placed in the water.

Introduction of new fishing technologies

Offshore pelagics remain the major focus for developmental initiatives within the fisheries sector. The Department of Fisheries is actively promoting the deployment of Fish Aggregating Devices (FADs) to assist fishers with their catch. Over the last decade, the Department of Fisheries in collaboration with fishing communities have deployed several FADs in waters adjacent to fishing communities.

In addition, the DOF staff conducted a number of awareness and sensitisation programmes within the major fishing communities to sensitize fishers as to the benefits of FADs and highlight certain practices that they should not engage in while fishing near a FAD.

Collection of catch and effort statistics during 2000- 2008

Landings information on pelagics is collected at the nine landing sites that are presently sampled with Vieux Fort and Dennery accounting for the highest landings of pelagics on the island. Presently, the Department of Fisheries is unable to verify the proportion of pelagics captured near FADs and, as a result, the impact that FADs are having on pelagic catches.

Large pelagics are grouped under the following categories: tunas, dolphinfish, wahoo and shark.

Table 5: Landings of Large Pelagics (tonnes) from 2000-2008

Year	Tunas	Wahoo	Dolphinfish	Shark
2000	473.4	243.1	555.1	4.9
2001	404.4	214.0	427.0	4.5
2002	319.91	242.92	402.17	10.47
2003	456.17	169.3	286.62	5.93
2004	418.7	238.0	375.6	20.3
2005	465.71	168.85	198.33	11.58
2006	409.97	187.10	382.03	6.56
2007	328.11	210.64	511.99	5.30
2008	492.32	179.55	340.88	8.65

(Source: Department of Fisheries)

Fisheries legislation and regulations

Due to the migratory nature of pelagics, there are currently no regulations controlling the harvest of these species for commercial fishing within national waters, as management regimes need to be established at the regional and international scale.

However, under the Fisheries Regulations No. 9 of 1994, the Department of Fisheries regulates sportsfishing, which targets pelagic species. The following rules apply to sportfishing:

(a) *A person shall fish by the traditional method of angling with a hook or lure attached to a line held in the hand or attached to a pole, rod or reel;*

(b) *A person unless otherwise authorised by the relevant licence, shall not use a spear, fish trap, or net other than a cast net or a landing net;*

(c) *The owner or operator of the vessel shall not use more than six rods or reels; unless he is in possession of a licence authorising the use of more rods or reels*

(d) *any migratory fishery resource that is caught shall not consist of more than 18 kingfish, dolphinfish or wahoo per person on the boat, and any resource not intended to be used shall not be injured unnecessarily but shall be returned to the sea alive;*

(e) *no vessel shall have on board any turtle;*

(f) *no vessel shall have on board more than ten conch or six lobsters per person at any time;*

(g) *no owner or operator of the vessel shall catch any demersal piscine resource less than 482.6 millimetres in total length.*

TURKS AND CAIÇOS ISLANDS NATIONAL REPORT

By: Kathy Lockhart
Department of Environment and Coastal Resources
Ministry of Natural Resources

1. Introduction

The Turks and Caicos Islands (TCI) fisheries have been viewed as small in comparison to the Caribbean region. However, the TCI is and remains a strong leader in its collection of fisheries data with regards to both the Spiny Lobster and Queen Conch. Last year, the TCI attempted to assess the scale fish industry with little advancement. Data was limited in quantity. However, the TCI is continuing its work on the scale fish or better referred "fin fish". The Department of Environment and Coastal Resources (DECR) is taking a step to understand the fin fish fishery in all aspects including commercial catch, sport fishing and domestic use.

Fin fish is not a commercially exploited fishery for the purpose of export. However, local consumption through restaurants and hotels is of unknown quantity by the TCI Government. The DECR has made attempts to gather the information, but with limited man-power and funding, financial resources have been allocated to other areas. A research scheme has been drafted to collect information on the fin fish, so as to capture all aspects of the fishery including the commercial, sport fishing and migratory captures.

2. Description of Fisheries and Fleet

The Turks and Caicos Islands base commercial fishing on the shallow water banks, primarily the Caicos Bank and the Turks Bank. The Mouchoir Bank is considered within the territorial water of the TCI, but currently used only for the purpose of capture of fin fish. The vessels most often utilized in the TCI are small retrofitted V-hull boats ranging in length from 18 ft-20 ft with 85-115 hp out board engines. Larger vessels rigged with electronic reels and/or traps are in limited number due to the affects of Hurricane Ike in September 2008.

Commercial fishermen from the TCI often work more than one fishery at a time. Using only free diving methods with no underwater breather apparatus, fishers are found diving in depths ranging from 3 meters to 30 meters. The normal day for a fisher entails leaving the dock between 7:00 and 8:00 a.m. and returning between 4:00 and 5:00 pm, considered 1 boat-day. Commercial fishermen are found to be opportunistic in their catch. During the open season of lobster, fishermen largely capture spiny lobster and land them whole. Until recently, fishers would re-prioritize capture and work the queen conch fishery near the beginning of the next annual year. However, since the Hurricane Ike in September 2008, fishers worked the conch fishery from the start of the season in October 2008. The completion of the quota for conch in one of the islands partially closed the fishery and fishers again re-prioritize capture and have actively been working the fin fishery for the local market.

Within the past ten years, the commercial fisheries have directly employed an average of 377 fishers per year. In 2008/2009 fishing season, the number of commercially licensed persons was at 366. Similarly the number of commercially licensed vessels averaged at 154 licensed vessels but in 2008-2009 there were 175 commercially licensed vessels.

When referring to the catch & effort, effort is measured by the number of days at sea and catch is measured in pounds. The larger individual boats carry between 5-12 men on the vessel each day. Smaller vessels carry between 1-3 people on board.

National Fisheries Policy and Management Objectives

Policy Summary

Although protection of fisheries resources is implicit in the overall development strategy of the TCI, the importance of the fisheries sector in present and future development and the fragility of the resource base warrant the establishment of a specific policy for the industry.

The Fisheries Policy aims to ensure the sustainable use of the living marine resources and ecosystems through increased cooperation and collaboration with all the stakeholders for the improved welfare of the people of the TCI. It is founded on the belief that all natural marine living resources of the TCI, as well as the environment in which they exist and in which mariculture/aquaculture activities may occur, are national assets and the heritage of all the people, and should be managed and developed for the benefit of present and future generations in the country.

The long-term vision of the Government of the TCI includes:

- Pursuance of well-informed strategic, economic and financial policies, which promote sustainable development and a decent standard of living for the people of the TCI.
- Achievement of greater functional and geographical diversification of economic activity, so as to reduce the TCI's economic vulnerability and to spread the benefits of economic growth more widely among its inhabitants.
- Implementation of policies and strategies to protect the interest of the TCI Islanders, thereby empowering them to derive optimum benefits from the development of the TCI.
- Initiation of measures contributing to the fusion of a dignified and confident nation at peace with itself and the world, a nation whose people believe in themselves and who, in their entrepreneurial, professional and other daily pursuits, are energized by dignity and national pride.
- Provision of sound health and educational services, which are available to all.
- To use our natural resources wisely, being fair to present and future generations.

Management Objectives

- Ensure that the catch in any one-year does not exceed the Maximum Sustainable Yield.
- Restore and maintain populations of marine species to sustainable levels.
- Conserve local populations of endangered species and ensure sustainable harvesting and trade.
- Promote and enhance scientific research capabilities in order to obtain relevant information on the fisheries resources such as carrying capacity, stock status, etc.
- Enhance income generation by a factor of 15% by improving and creating market opportunities for fish and fish products at the national, regional and international levels.
- Ensure that the benefits from the exploitation of the fisheries resources are optimised by Belongers.
- Promote diversification in resource exploitation of the TCI fisheries.
- Streamline, monitor and regulate the importation of marine products.
- Establish mechanism to reduce overcapitalisation in the fishing industry.

- Develop and seek opportunities for resource users to obtain financial assistance /credit from credit agencies.
- Achieve environmental and developmental awareness of marine resources in all sectors of society from primary school through adulthood.
- Ensure that post harvest handling, processing and distribution of fish and fishery products is carried out in a manner that maintains quality, nutritional value.
- Develop and implement food processing and handling guidelines/regulations for quality assurance.
- Improve the manpower and resources of the Fisheries Division to ensure effective monitoring, control and surveillance of fishing activities.
- Promote and maintain a "Zero Tolerance" in enforcement of the legislations.
- Develop and Implement strategies to deter and combat Illegal, Unregulated and Unreported (IUU) fishing in the waters of the Turks and Caicos Islands
- Improve stakeholder participation in the management of the marine resources.
- Achieve inter and intra-agency collaboration on the matters that may affect the fisheries resources and associate habitats.
- Improve relationship with other Overseas Territories in the management of the marine resources and the environment.
- Improve TCI's collaboration and participation in regional and international initiatives in the management of the fisheries resources.
- Promote talks to delineate and conclude maritime boundaries discourse between the TCI and The Dominican Republic as well as The Bahamas.
- Develop and implement mariculture/aquaculture guidelines and regulations.
- Promote and encourage mariculture/aquaculture of indigenous species of invertebrates and fish as a means of diversifying income and diet.
- Achieve environmental and developmental awareness of marine resources in all sectors of society from primary school through adulthood.

4. Research

Monitoring Activities

- Catch and effort data for scale fish is being collected at the landing docks and processing facilities. Fish are measured by standard length, fork length and total length and reported with species name. A weight is collected if time allows. Captains are then interviewed for the number of days at sea, number of crew, location, etc.
- Export data for fish is collected for personal export only. Scale fish is not exported on a commercial scale.
- The Department of Environment and Coastal Resources (Fisheries Sub-unit) has collected local consumption data of marine products to determine the seafood consumption rate. The data is available but not completely analyzed.
- Data on large and coastal pelagic species are collected during local fishing tournaments. This data is stored and shared with international monitoring organizations such as ICCAT and the FAO.
- Catch data from confiscated international vessels poaching in the waters of the Turks and Caicos Islands are also monitored. These vessels usually fish on the Mouchoir Bank, and in waters which local fishers do not utilise except in the case of scale fish. By monitoring the catches from these vessels, the Department anticipates the use of these data to assess the status of the fish stocks in these areas.

- The Department is also actively monitoring the number of persons, number and sizes of vessels, sizes of engines, and gear types being used in each fishery through the licensing system so as to determine "effective effort" exerted on the respective fisheries.
- Although the Department has conducted numerous socio-economic surveys in the past, this research approach for the most part has been underutilised. Many of the socio-economic surveys have been in collaboration with individuals and or institutions, looking at the following:
    - Social Capital
    - Resource utilisation
    - Local consumption

5. Legislation and Management Regulations

- Fisheries Protection Ordinance. Cap. 104: This is the main legislation which provides the legal basis and regulations for managing the fishery resources of the Turks and Caicos Islands. (Strongest Legislation based for monitoring, enforcement and surveillance)

Other Fisheries Related Legislation

- Fishery Limit. Cap. 105: Defines the Territorial Waters and Economic Exclusion Zones (EEZ) of the Turks and Caicos Islands.
- National Park Ordinance. Cap. 80: Provides the legal basis for the establishment and management of marine protected areas such as National Parks, Marine Reserves, and Sanctuaries.
- Coastal Protection Ordinance: This legislation combines several pieces of legislations, such as the national parks ordinance, fisheries protection ordinance and others to provide protection for the coastal zone.
- Endangered Species Bill: This legislation is currently in draft form. On completion, it will provide the legal basis for protection of endangered species in the Turks and Caicos Islands. (Will provide the backing for monitoring of exports such as CITES)
- Wild Birds Protection Ordinance. Cap. 84: Allows for the management of ancillary species in order to protect biodiversity
- Mineral (Exploration and Exploitation) Ordinance. Cap. 79: Provides for the protection of the marine habitat from direct mining impacts or from indirect terrestrial mining activities.