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National Reports

Report of Ninth Annual CRFM Scientific Meeting - Kingstown, St. Vincent and the Grenadines 10-14 June 2013

CRFM Secretariat
Belize

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FOREWORD

The Ninth Annual CRFM Scientific Meeting took place during 10 to 14 June 2013 in Kingstown, St Vincent and the Grenadines. During this Meeting, the five CRFM Resource Working Groups met. The CLWG, LPWG and RSWG each reviewed the relevant components of the 2013 Strategic Action Programme (SAP) for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME$^+$), taking into account the need for incorporation of the precautionary approach, ecosystem and global environmental change considerations. Each Resource Working Group also developed an inter-sessional work plan. The CLWG reviewed the regional management options papers prepared and validated under the ACP FISH II Programme and proposed sub-regional regulations for the Queen Conch (*Strombus gigas*) in accordance with the request by the CFMC/OSPESCA/WECAFC/CRFM Working Group on Queen Conch. The LPWG reviewed the regional billfish conservation plan proposed by the WECAFC/OSPESCA/CRFM/CFMC Working Group on Recreational Fisheries and the sub-regional blackfin tuna management plan prepared by the CRFM under the CLME Project and provided guidance and recommendations on the way forward for implementation in the region. The LPWG also identified critical research needs to improve the quality of fisheries resource assessments and management recommendations and discussed data collection and reporting requirements for ICCAT in 2013-2014. The RSWG reviewed the regional lionfish strategy and status of implementation, as well as the performance of Marine Protected Areas in some countries and provided suggestions for the way forward. The RSWG also undertook a preliminary analysis of data on landings, effort and fishing operation costs for the fisheries in Anguilla and it prioritized data collection needs for improved fisheries management advice. The SGWG conducted separate assessments of the seabob (*Xiphopenaeus kroyeri*) fishery for Suriname and Guyana, discussed the proposed new methodological approach and the draft fisheries management plans for Guyana, Suriname and Trinidad and Tobago being developed under the ACP Fish II Programme. The SCPWG, together with the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean, provided guidance on the implementation, monitoring and evaluation of the sub-regional management plan and agreed management actions for the Eastern Caribbean Flyingfish and reviewed the related Draft Resolution of the respective Ministerial Sub-Committee. In addition to review of Working Group reports, the plenary session received updates on several ongoing and planned regional activities: (1) the status of the CLME SAP endorsement by countries and development of the PIF for CLME+; (2) the Caribbean Regional Strategic Program for Climate Resilience being led by CCCCC; (3) the Sanitary and Phytosanitary Project in the Fisheries Post Harvest Sector being executed in collaboration with IICA; (4) two queen conch projects supported by the ACP Fish II Programme and focused on strengthening scientific capacity; and (5) a subset follow-up project to the Study on the Formulation of a Master Plan on the Sustainable Use of Fisheries Resources for Coastal Community Development in the Caribbean completed in collaboration with JICA.

The Report of the Ninth Annual Scientific Meeting is published in one volume instead of the usual two volumes published for such meetings. This volume (Volume 1) contains the report of the plenary sessions and the full reports of the CRFM Conch and Lobster, Large Pelagic Fish, Reef and Slope Fish and Shrimp and Groundfish Resource Working Groups for 2013. Nine national reports were submitted and these are published as Supplement 1 to Volume 1. The report of the inter-sessional meeting of the Shrimp and Groundfish Working Group, which was convened in February 2013 in Georgetown, Guyana, is published as Supplement 2 to Volume 1. The report of the combined meeting of the SCPWG, and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean is published as Supplement 3 to Volume 1. Volume 2 usually contains part A (Overview), and the fishery management advisory summaries of individual fishery reports comprising part B of each Working Group report. However, only one detailed assessment was conducted in 2013, and hence there was insufficient material to warrant publication of a separate Volume 2.

The covers for this volume were designed and prepared by Mr. Shaun Young, while the photographs were provided by Mr. Junior Jarvis, Mr. Derrick Theophille, Mr. David Ramjohn and Dr. Susan Singh-Renton. These contributions are gratefully acknowledged.

CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

ACP	African, Caribbean and Pacific states
ASDU	Agriculture Support Development Unit
BRD	By-catch Reduction Device
CARICOM	Caribbean Community
CARIFICO	Caribbean Fisheries Co-Management project
CARIFIS	Caribbean Fisheries Information System
CCCCC	Caribbean Community Climate Change Centre
CEO	Chief Executive Officer
CFMC	Caribbean Fishery Management Council
CFO	Chief Fisheries Officer
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLME	Caribbean Large Marine Ecosystem
CLWG	Conch and Lobster Resource Working Group
CRFM	Caribbean Regional Fisheries Mechanism
DOF	Department of Fisheries
DVRP	Disaster Vulnerability Reduction Project
EAF	Ecosystem Approach to Fisheries
EEZ	Exclusive Economic Zone
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
FIC	Fishing Industry Census
FLO	Fisheries Liaison Officer
FMP	Fisheries Management Plan
FRP	Fibre-Reinforced Plastic
GATOSP	Guyana Association of Trawlers Owners and Seafood Processors
GDP	Gross Domestic Product
GPS	Global Positioning System
ICCAT	International Commission for the Conservation of Atlantic Tunas
IFREMER	Institut Français de Recherche pour l'Exploitation de la Mer (French Research Institute for Exploitation of the Sea)
IICA	Inter-American Institute for Cooperation on Agriculture
IJAPP	Improving Jamaica's Agricultural Productivity Project
IUU	Illegal, Unregulated and Unreported fishing
JICA	Japan International Cooperation Agency
LMP	Lobster Management Plan
LPWG	Large Pelagic Fish Resource Working Group
MAGDELESA	Moored fish AGregating DEvice in the LESser Antilles
MCS	Monitoring, Control and Surveillance
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MTRA	Modified Threat Reduction Assessment
NAFCOOP	National Association of Fisherfolk Cooperatives
NKFM	New Kingstown Fish Market
NGO	Non Governmental Organization
OECS-ESDU	Organization of Eastern Caribbean States – Environmental Sustainable Development Unit.
OECS-NRMU	Organization of Eastern Caribbean States – Natural Resources Management Unit.

OSPESCA	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (Central American Fisheries and Aquaculture Organization)
PIF	Project Identification Form
PSFA	Prasline Seamoss Farmers' Association
RSWG	Reef and Slope Fish Resource Working Group
SAP	Strategic Action Programme
SCPWG	Small Coastal Pelagic Fish Resource Working Group
SFCA	Special Fishery Conservation Area
SFO	Senior Fisheries Officer
SGWG	Shrimp and Groundfish Resource Working Group
SVG	St. Vincent and the Grenadines
TAC	Total Allowable Catch
TED	Turtle Excluder Device
TNC	The Nature Conservancy
UNCLOS	United Nation Convention on the Law of the Sea
UWI-CERMES	University of the West Indies – Centre for Resource Management and Environmental Studies
VMS	Vessel Monitoring System
WECAFC	Western Central Atlantic Fishery Commission

NATIONAL REPORT OF THE BAHAMAS

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1.0 FISHERY AND FLEET DESCRIPTIONS

The lobster (*Panulirus argus*) fishery is the main commercial fishery in The Bahamas with 2,833 tonnes of tails landed in 2011 while the queen conch (*Strombus gigas*) fishery varies between the second and third most important commercial fishery in terms of weight (750 tonnes-2011) of landings year to year. Both fisheries take place primarily on the Little Bahama Bank and Great Bahama Bank with occasional forays to Cay Sal Bank.

Within these areas, fishing for conch is primarily carried out by free diving with hand collection or with the aid of an air compressor outside of the summer. Lobsters are primarily caught with the aid of compressors, casitas (a.k.a. condos) and lobster hooks. Wooden lathe Florida style traps are also used in the lobster fishery but to a much smaller extent than casitas.

A fisheries census conducted in 1995 showed that there were approximately 9,300 fulltime fishers and over 4,000 small boats and vessels. Of these fishers, the vast majority target spiny lobster but the exact proportion of fishers that target conch is not known. However, seasonality in fishing effort for conch and conch landings are evident as it is typical for over 60% of conch landings (by weight) to take place during the four summer months (April-July) that the lobster fishery is closed.

Among conch fishers that do not focus on lobster, small vessels (<20 ft in length) are typically used. These typically make single day trips. In some instances these small vessels work in conjunction with a larger "mothership" vessel that stays at sea for up to 6 weeks collecting conch secondarily to lobster. Day vessels tend to land conch in the shell while vessels that make longer trips tend to land frozen conch meat only.

Most fishing for lobster is conducted by boats between 20 and 100ft, with boats rarely being 100ft in length. Larger vessels tend to be 'motherships' as described for conch. Fishing effort is seasonal and affected by lobster abundance in the wild. Catch per unit effort is highest in August-September and decreases as the season progresses with a minor rise in January. Likewise, effort is highest during August-September.

2.0 STATISTICS AND SAMPLING

Catch and effort data are collected by interviewing fishers and by inspection of landings. However, collection of landings statistics in this manner for the entire Bahamas is constrained by having few data collectors and multiple landing sites on multiple islands. Accuracy of effort data in relation to conch is further constrained by the tendency of fishers to collect conch only incidentally during most of the year. Therefore, most of the fishing effort attributed to a given trip, on which conch was caught, is not actually directed towards conch.

Catch statistics are supplemented by purchase reports submitted by processing plants. Islands with major fishing communities also have processing plants that purchase a large portion of the fishery products landed on those islands. Access to these reports allows the Department to improve estimates of the total

weight of fishery product landed, the total weight exported, the local value of landings, the value of exports, landings by major-island and exports by island. Purchase reports also reflect the weight of exports per year per commercial size category per processing plant for spiny lobsters and thus reflect annual cohort size classes to a limited extent.

Since 2010 The Bahamas has also implemented a catch certificate system in compliance with European Union import requirements. This has resulted in a marked increase in the quality and quantity of catch per unit effort and total catch data particularly for the lobster fishery. Nevertheless, there is still much room for improvement in data collection as the total catch and total effort for the lobster and conch fisheries remain unknown with conch being the worst of the two due to its widespread consumption across The Bahamas and resulting myriad of undocumented landing opportunities compared to lobster which is typically channelled through processing plants. The incompleteness of statistics is also compounded by poaching.

3.0 NATIONAL FISHERIES POLICY AND MANAGEMENT OBJECTIVES

There is a five year (2010-2014) sector strategic plan as well as a draft fisheries management plan that apply to multiple species. Current policy allows only Bahamian citizens to take part in commercial fishing unless the individual is in possession of a spousal permit or a work permit that specifically allows fishing. However, there are avenues for foreign participation in the processing sector.

4.0 RESEARCH

Spiny lobster research is currently being undertaken with the purpose of elucidating much of the unknowns about the effect of casitas on lobster biology and fishery sustainability in The Bahamas. Three specific objectives contribute towards this overall purpose and include:

Objective 1: Investigate the effect of casitas compared to fishing traps and natural shelters on the size-specific mortality, growth, and susceptibility to disease of lobsters in nursery and non-nursery areas in The Bahamas.

Objective 2: Evaluate casitas as a fishing gear in terms of lobster-size selectivity and the bycatch mortality of undersized lobster and other taxa as compared to traps.

Objective 3: Estimate the current distribution and density of casitas in the Bahamas and, if possible, changes in those metrics over the past few decades, using remote-sensing technology.

Other research activities included the completion of the most comprehensive spiny lobster fishery stock assessment to date in 2012. This stock assessment was validated through an objective and external peer review process. The stock assessment and subsequent peer review showed that there were ways to further improve the stock assessment, however, it was concluded that the lobster fishery is not overfished nor is overfishing occurring. Nevertheless illegal fishing remains a major concern for the fishery especially with regards to foreign poaching. The stock assessment also shows that the fishery should not be expanded due to uncertainties related to illegal fishing.

A number of conch research or assessment activities have taken place since 2009 by the non-profit group Community Conch with lead scientist Allan Stoner. These activities took place with varying amounts of resources supplied year to year chiefly by Community Conch, in addition to the Bahamian Government, the Bahamas National Trust and The Nature Conservancy. Activities included visual surveys of conch

fishing grounds in the Berry Islands, Eastern through Southern Andros, a portion of the Exuma Cays Land and Sea Park, Lee Stocking Island and south-western Abaco. Survey results for the Berry Islands showed that there was a major decline in juvenile densities compared to a 1987 study. In addition there were conch present in a newly created MPA within the study zone; however, at the time of the survey adult densities were not conducive to reproduction taking place. There were also higher densities of less desirable "samba" conch (Stoner *et al* 2009). In Andros conch densities were 118/ha thus allowing a minimum amount of reproduction to take place. However, these densities were only in a small portion of the areas studied. These few areas of higher densities were also dominated by "samba" conch (Stoner and Davis 2010).

During June 2012, Community Conch conducted a queen conch visual survey in the Bight of Abaco in addition to furthering studies on conch reproduction. The results showed that only 3 pairs of conch were observed to be mating during the height of reproductive season. In addition, conch density was extremely low. These results indicate that reproductive activity is far below what is needed for the conch populations in the area to perpetuate (Stoner *et al* 2012a). The inadequate densities in the Bight of Abaco add to the mounting evidence that the management of this fishery needs to be revamped. Very low or greatly decreased densities of desirable (non-samba) conch have now been observed in the Berry Islands, South Andros, Lee Stocking Island, Warderick Wells (in the Exuma Cays Land and Sea Park) and the Bight of Abaco since 2009 (Stoner *et al* 2009, Stoner and Davis 2010, Stoner *et al* 2011, Stoner *et al* 2012a). While these are only a fraction of the conch fishing grounds in The Bahamas, they still indicate that revamping of management practices is needed.

Reproductive studies that took place in conjunction with some of the aforementioned surveys showed that conchs do not reach sexual maturity at adequate (but not necessarily ideal) levels until they have a 15mm lip thickness. Although the flare of the lip ensures that conch are near sexual maturity, it does not guarantee that conch have reached sexual maturity before being harvested. Lip thickness is a much better indicator of conch maturity (Stoner *et al* 2012b).

5.0 LEGISLATION AND MANAGEMENT REGULATIONS

Bahamian legislation governing conch fisheries include the Fishery Resources (Jurisdiction and Conservation) Act 1977, the resulting Fisheries Resources (Jurisdiction and Conservation) Regulations 1986, the Wildlife Conservation and Trade Act 2004 which incorporates CITES into Bahamian law, and the Archipelagic Waters and Maritime Jurisdiction Act 1993.

With regards to the Fishery Resources (Jurisdiction and Conservation) Act 1977 and the Wildlife Conservation and Trade Act, enforcement is the responsibility of the Department of Marine Resources, The Royal Bahamas Defence Force, The Royal Bahamas Police Force and The Customs Department. In addition, Agricultural officers are empowered to conduct enforcement according to The Wildlife Conservation and Trade Act 2004. The Department of Marine Resources is the scientific authority in relation to CITES whereas the Department of Agriculture is the Management Authority.

Specific management measures in place include a ban on the use of SCUBA for commercial fishing, limitations on the use of compressed air for all fisheries, the presence of an expanding network of marine protected areas aimed at protecting multiple habitats and species and a conch export quota. In addition, the possession of berried lobsters is illegal and there is a lobster closed season from April 1st - July 31st.

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NATIONAL REPORT OF THE COMMONWEALTH OF DOMINICA

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1.0 ABOUT THE COMMONWEALTH OF DOMINICA

The Commonwealth of Dominica, known to the world as the "Nature Island of the Caribbean" and the indigenous Kalinago as "Wai'tu kubuli", is one of the small island nations of the Lesser Antilles within the Caribbean Archipelago. Some details about Dominica are presented below.

Location	15°25' N, 61°20' W
Area	751 km²
Coastline	148 km
Maritime Claims	
Contiguous Zone	24 nm (UNCLOS)
EEZ	200 nm (UNCLOS)
Territorial sea	12 nm (UNCLOS)
Shelf	900 km² (majority of shelf area is situated on east of island)
Climate	Marine tropical; moderated by Northeast trade winds; heavy rainfall. Average daytime temperatures range from 75 to 85 degrees Fahrenheit. There are two seasons, the dry season (January to April) and the rainy season (May to December). Dominica's location makes it vulnerable to the annual migration of the North Atlantic Subtropical High, the spreading of the Tropical Atlantic warm pool, the Easterly Trade Winds, tropical waves, depressions, storms and hurricanes.
Terrain/Topography	Rugged mountains of volcanic origin, covered with lush rainforests. Mountains extend deep into the sea (particularly on the west coast), hence there are steep drop-offs and very deep waters near shore. The highest point is Morne Diablotin at 1447 metres. There are numerous rivers, streams and waterfalls. There are also a few fresh water lakes and one boiling lake (2nd largest such lake in the world). The volcanic nature of the island lends to the formation of hot springs both on land and on the coast. The island is 29 miles long and 16 miles wide.
Natural Resources	Timber (forests), water, sand and stone, hydropower (rivers).
Environment	Flash floods are a constant hazard (heavy rainfall). Rainforests cover more than 60% of the island. Erosion is common after heavy rains as well as landslides.
Population	73,286 (July 2013 estimate) Black 86.8%, mixed 8.9%, Carib Amerindian 2.9%, white 0.8%, other 0.7% (2001 census)
Language	English is the official language. Creole (French Patois) is widely spoken.
Major Cities/Towns	Roseau (capital), Portsmouth (second largest town), Marigot
Government and Executive	Full independence (since 3rd November 1978) with republican status within the British Commonwealth. Now formally known as

	the Commonwealth of Dominica. Chief of State: President Eluid Williams (since 17 September 2012) Head of Government: Prime Minister Roosevelt Skerritt (since 8th January 2004, Dominica Labour Party)
Political System	Parliamentary representative democratic republic.
International disputes	None
International Conventions and Agreements Dominica is Party to	Biodiversity, Biosafety, Climate Change (Kyoto Protocol), Desertification, Endangered Species (CITES), Environmental Modification, Hazardous Wastes, Law of the Sea (UNCLOS), Ozone Layer Protection, Ship Pollution (MARPOL), Whaling (International Whaling Commission) (currently abstains from voting)

2.0 THE FISHERIES DIVISION

The Fisheries Division is an arm of the Government of the Commonwealth of Dominica (currently under the Ministry of Environment, Natural Resources, Physical Planning and Fisheries). This department is tasked with the management of the marine resources for the benefit of the people of Dominica, including sustainable use and development of fisheries, coastal and offshore resources. Management is based on the recognition that the marine resources are significant to national development, the sustenance of livelihoods, the generation of employment and food and nutrition security.

2.1 The Mandate

The overall goal of the Fisheries Division is: "Sustainable development of the living marine resources to meet human nutritional needs as well as contribute to national social, economic, and development goals, taking into account traditional knowledge and interests of local communities, small scale/artisanal fisheries and indigenous people."[1]

The Mission Statement reads: "To create an enabling environment for employment, enhance food security, reduce poverty and contribute to economic diversification in Dominica."

The Vision Statement reads: "To be recognized as an efficiently managed government agency by fishermen, related institutions and the public at large, delivering high quality support, research, development and regulatory services to the fisheries sector."

2.2 Institutional Structure

The Ministry of Environment, Natural Resources, Physical Planning and Fisheries is the fisheries management authority in Dominica. The Fisheries Division is responsible for all aspects of fisheries development and management. The organizational structure is illustrated in the Figure 1 provided.

[1] *Fisheries Management Plan 2008*

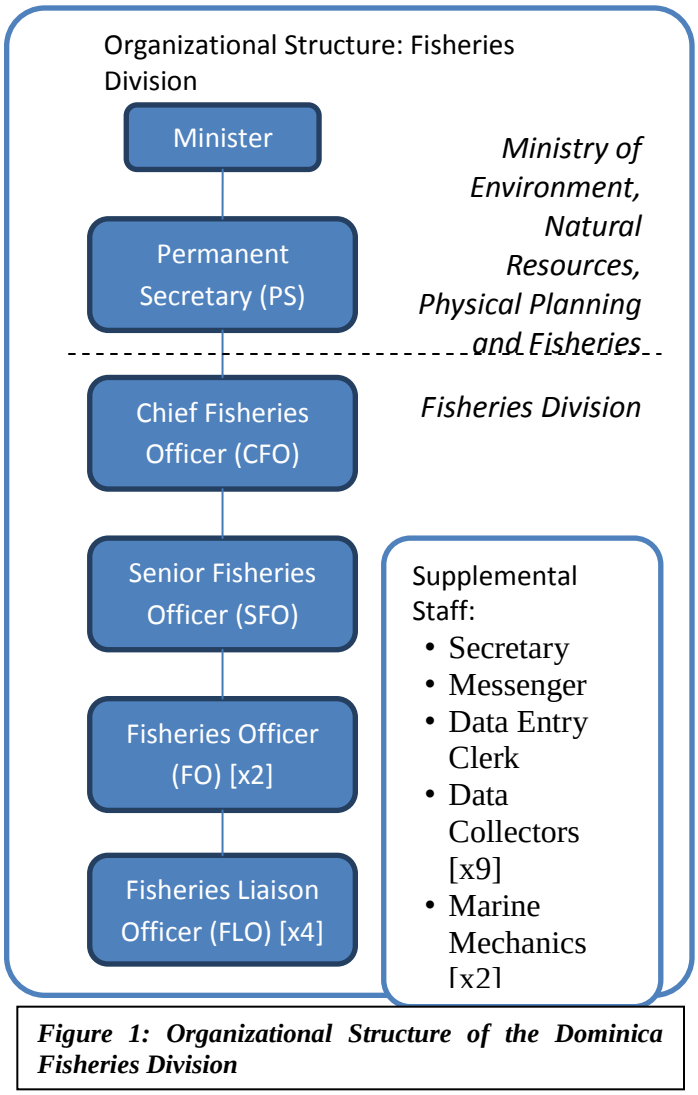

Figure 1: Organizational Structure of the Dominica Fisheries Division

The Minister (in most cases, an elected official/politician) is the head of the departments falling within his/her ministry, this includes the Fisheries Division. Below the Minister is the Permanent Secretary, who holds the highest ranking public office role for career civil servants who are not politicians. The Chief Fisheries Officer (CFO) heads the department, with the Senior Fisheries Officer (SFO) being a second-in-command. There are two Fisheries Officers (FO) below the SFO, who in turn oversee the four Fisheries Liaison (Extension) Officers (FLO). The FOs may be focused on heading research and extension. The FLOs are divided by officers responsible for extension, resource assessment/data/information, research and monitoring duties.

2.3 Main Facilities

The Fisheries Division is responsible for a number of facilities around Dominica. The main facilities include the Roseau Fisheries Complex (main office), the Marigot Fishing Port Facility and the newly constructed Portsmouth Fisheries Complex. Each of these was constructed with Japanese official assistance. These structures typically include fisher lockers, moorings slip way, market and fish storage features.

3.0 DESCRIPTION OF THE FISHERY AND FLEET

The local fisheries industry is comprised of about 800 fisherfolk (both men and women; there may be many more persons operating who are undocumented or unregistered) operating from fishing communities around the island, fishing from small open vessels, typically in an artisanal fashion. There are about 32 landing sites scattered along the coastline, the majority of which are on the west coast or Caribbean Sea side. The East Coast is far more difficult to operate from due to the harsh Atlantic Ocean, however, a few sheltered bays (both natural and man-made) allow for fishing communities to exist and even thrive, as in the case of Saint Sauveur and Marigot.

A typical fisherfolk can be described as an un-married 40 to 50-something year old male with a primary school education level. Fisherfolk may be fishers, boat owners, fish vendors, gear or boat builders, outboard engine mechanics or any combination of these roles. This report focuses primarily on the activities of the fishers and the boat owners.

Fisheries here are multi-species focussed. Fishers may have a particular fish they target, but often times plan to catch more than one type of fish on any particular fishing trip. The gear used allows for catching multiple types of fish, except for specific situations.

3.1 Characteristics of the Fishing Boats

434 boats were reported during the 2011 Dominica Fisheries Industry Census (Table 1). Keel-type boats were by far the most common, making up about half of the boats found in the industry. It should be noted the proportion of keel boats has dropped from 66% in 2008 to 52% in 2011. FRP (fibre-reinforced plastic) or pirogue boats have been gaining significance in the local fleet for several years now. Only 50 FRP vessels were reported in 2008. That number has more than doubled in 2011.

Table 1: Boats by type and number. 2011 Fisheries Industry Census.

	2008		2011	
Type	**Count**	**Percent**	**Count**	**Percent**
Canoe	95	21.4%	91	21.0%
Keel	292	65.8%	224	51.6%
FRP	50	11.3%	119	27.4%
Other	7	1.5%	0	0.0%
Grand Total	**444**	**100.0%**	**434**	**100.0%**

Characteristics of the three types of fishing boats in the national fleet are provided in Table 2. All fishing boats in Dominica operate for a few hours a day (day-trips). Fishers usually leave shore in the morning and return between midday and sunset. Fishing trips tend to be about 6 to 8 hours from time of departure to return, but trips can be far shorter in duration. Canoe trips tend to be shorter in most cases as they operate closer to shore. The time of departure varies by coast (east or west), fishing community (with its local social customs), and type of fish targeted or weather conditions. Time of return depends primarily on the amount of fish caught and the usual time of vending at the various communities, weather and fuel reserves. Boats tend to operate for 3 to 4 days a week, making fishing largely a part-time activity.

Table 2: This table shows the characteristics of the types of fishing boats found locally.

	Canoe	**Keel**	**FRP/Pirogue**
Length range	Typically under 20 ft in length. Usually 10 to 20 ft in length	Usually 15-25 ft in length	Usually 20-25 ft in length
Construction/ Description	Made of dug-out gommier trunk	Wooden planked open vessel on a skeleton frame with a keel	Fully fibre glassed open vessel
Propulsion methods	Mostly un-powered. Oars are used for propulsion. In cases where outboard engines are used, they are 15 HP or smaller	Powered by outboard engines (mainly 30-85 HP). Some boats carry two outboards. Oars are carried as a backup in some cases	Powered by outboard engines (mainly 30-85 HP). Some boats carry two outboards. Oars are carried as a backup in some cases. Some of the larger FRP vessels can carry dual 150 HP four stroke outboards
Gear used	Mainly uses net-type gear such as beach seines. Fish pots are also used	Hook and line gear is most popular, although the boats are known to carry fish pots as well	Hook and line, fish pots and even nets can be used off these boats. However, hook and line gear is most popular, especially when used for handling operations around FADs
Species fished	Small coastal pelagic such as ballyhoo, jacks and sardines. Reef fish such as parrot fish,	Migratory pelagics such as tunas, dolphin fish, marlin, flying fish and wahoo among	Migratory pelagics such as tunas, dolphin fish, marlin, flying fish and wahoo among

	groupers and snappers	others. Reef species include snappers and groupers	others. Reef species include snappers and groupers
Fishing distance	Canoes usually operate within one mile from shore	Can travel to over 20 miles off-shore, but usually operate within 10 miles	Can travel to over 20 miles off-shore, but usually operates within 10 miles

3.2 Fishing Gear

Fishing gear used locally comes in the form of hook and line types, net types and fish pot/trap types. Of these, almost 70% of all gear used is the hook and line variety. Pots make up about 20% of all gear and nets only make up 9% of all gear.

3.2.1 Hook and Line Gear

Although hook and line type gear can be and is modified to target demersals, over 66% of this type of gear is used for hand lining or trolling for pelagics. About 60% of the local fishers utilize hook and line type gear as part of their operations.

The trolling fishing method was utilized the most in recent years, but with the increasing popularity of FADs, fishers have reverted to hand lining near and around FADs for catching large migratory pelagics. This has saved considerably on fuel costs; where in the past fishers would troll over many more miles of water before coming upon a catch, they could now almost guarantee a catch off of the FAD. Fish typically caught from off-shore trips are dolphinfish (*Coryphaena hippurus*), yellowfin tuna (*Thunnus albacares*) and blue marlin (*Makaira nigricans*).

Other line type gear used locally include surface, vertical and bottom long lines. These, however are not the typical long line operations found in more developed countries with large scale fisheries operations, but an artisanal scale operation, consisting of a specially made gear that can be set moored or adrift or simply held by the fisher off the side of the boat. This gear is fitted with multiple hooks. Some of these long lines can be used to target reef species such as snappers (*Lutjanidae spp.*). Though they are used all over, line type gear is most popular in the South Western communities.

3.2.2 Net Gear

According to the 2011 FIC results, there are about 617 net-type gear utilized locally, the most common of which is the flying fish net followed by the gill net, cast net and dip net. These nets are used to surround schooling fish and can be either pulled back into the boat or unto the shore after the fish is trapped. Species normally caught with these gears include small pelagics such as flying fish, ballyhoo, mackerels, jacks and small tuna. Nets tend to have a mesh size of 1.5 inches, as per the national fishery regulations. Nets are most common on the east of the island.

3.2.3 Fish Pots

This type of gear is a box-shaped structure constructed with wire mesh on a wooden frame. Fish pots can be set on the sea floor for days at a time. An entrance allows fish to enter but not escape the trap. Box (rectangular-shaped) and Z-type pots are the most popular found locally. A wide variety of fish can be caught using trap type gear, from demersals, such as snappers and groupers to lobsters and eels.

On average, fish pots soak for about 6 days at which point they are hauled (usually by hand) and the fish is removed. The pot is sometimes reset or brought to shore.

Pots also use a mesh size of 1.5 inches, conforming to the local regulations. Fish pots are most common in the communities of the North West.

3.3 Fish Aggregating Devices (FADs)

FADs are structures set in the open sea for gathering fish. They are very popular here, being utilized by almost half of the fishing population at least once per week. FAD fishing is least common in the communities of the south and most popular in the east.

Traditionally, fishers have been responsible for building and setting their own FADs, as their own personal fishing gear and property within the waters of Dominica. However, the Fisheries Division is partnering with the National Association of Fisherfolk Cooperatives (NAFCOOP) to manage the use of FADs locally. Under this arrangement, NAFCOOP will be the sole body responsible for setting and maintaining FADs in Dominica and no individual fisher can claim to be the owner of any FAD in Dominican waters.

The most common problem encountered with FAD use is local piracy, where one fisher fishes off the FAD of another fisher without his consent. The second most common issue is the presence of foreign (French) fishing vessels fishing off of local FADs.

3.4 Species Targeted

Off-shore pelagics are most commonly targeted, followed by coastal or small pelagics and then lastly demersals. Following the 2011 FIC, however, it was observed that one in two fishers said that they targeted snappers. A similar number said they target dolphin fish and also tuna. One in three target blue marlin and one in five mentioned jacks as the target fish.

The most popular species are:

- Off-shore pelagics
    - Dolphinfish *(Coryphaena hippurus)*
    - Yellowfin tuna *(Thunnus albacares)*
    - Flyingfish *(Exocoetidae)*
    - Blue marlin *(Makaira nigricans)*
    - Skipjack tuna *(Katsuwonus pelamis)*
    - Wahoo *(Acanthocybium solandri)*
- Coastal pelagics
    - Ballyhoo *(Hemiramphus brasiliensis)*
    - Jacks *(Carangidae)*
    - Mackerels *(Scombridae)*
- Demersals/reef
    - Queen Snapper *(Etelis oculatus)*
    - Red snapper *(Lutjanus campechanus)*
    - Groupers *(Epinephelus, Mycteroperca)*
    - Ocean Triggerfish *(Canthidermis sufflamen)*
    - Queen Triggerfish *(Balistes vetula)*

Fish Prices

Fish price varies around the island by community and species of fish. Small fish such as ballyhoo can sell for as low as one dollar a pound, while lobster can go for fifteen dollars a pound locally. Small coastal

pelagics tend to stay below six dollars, while large pelagics range from five dollars for marlin to nine dollars for dolphinfish. Demersals can hover at this same range but are often times pricier, sometimes going for more than ten dollars a pound. Flyingfish tends to go for three to five dollars a pound.

4.0 NATIONAL FISHERIES MANAGEMENT: POLICY, LEGISLATION & REGULATIONS

4.1 Policy and Management

The national policy for fisheries continues to be promoting sustainable fisheries for all Dominican fishers. The mission statement of the Fisheries Division is:

To optimize the contribution of the fisheries sub-sector to the Dominican economy through its sustainable management and development by creating an enabling environment for sustained employment, enhanced food and nutrition security, reduction of poverty and for enhancing the contribution of fisheries to the economic diversification of food production in Dominica.

Recently, the Fisheries Division, under the African, Caribbean, and Pacific (ACP) Fish II programme, held consultations at major communities around the island (Roseau, Portsmouth and Marigot) on much needed reform to the current policies governing the local fisheries (Table 3). The aspirations of the stakeholders were documented as well as the challenges that impede the development of the industry. This European Union project aims to strengthen fisheries management in ACP countries.

Table 3: Overview of the fisheries managed (Fisheries Management Plan)

Fishery Managed	Fishing Methods	Area Fished	Resource Status
Shallow shelf reef fisheries	Fish traps, set nets, spear guns	Coastal coral reefs and insular shelf area	Most shallow reef fish resources are considered to be fully exploited
Coastal pelagic fisheries	Hand lines, floating gillnets, cast nets, troll lines	Near /coastal areas	Unknown.
Deep slope fisheries	Fish traps, hand lines, vertical long lines	Deep sloping edges of the insular shelf, offshore banks	Although unknown some areas yield landings that suggest a potential for increased fishing
Large (offshore) pelagic fisheries	Troll lines, Long lines (vertical and mid-water)	Oceanic EEZ	Although ICCAT and others suggest caution recent yields from FAD fishing suggest a potential for increase

4.2 Legislation and Regulations

The Fisheries Act No. 11 of 1987 and the Territorial Sea and Contiguous Zone, Exclusive Economic and Fishery Zone Act No. 26 of 1981 provides the Fisheries Division of the Government of the Commonwealth of Dominica with the legal authority to manage the affairs of the marine capture fisheries and aquaculture in Dominica. This legal authority also extends to coordinating the discharge of national obligations to legally binding international fisheries agreements and instruments such as the UN Convention of the Law of the Sea (Part V), Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) and the International Commission on the Conservation of Atlantic Tuna (ICCAT).

There are specific regulations pertaining to:

- Designated berthing areas (landing sites) for fishing vessels

- Protection of fisher landing sites
- Management of fisher locker-room facilities (collection of rental fees)
- Establishment and management of the Soufriere/Scott's Head Marine Reserve
- Registration of fishers and fishing vessels (including vessel registration markings and fisher registration cards)
- Conservation measures for sea turtles, conch and lobsters
    - Close and open seasons
    - Size limits
    - Turtles and lobsters with eggs
    - Protection of nesting turtles
- Gear mesh sizes (fish pots and nets)
- Safety-at-sea
- Erection and use of FADs for fishing
- Territorial Sea, Contiguous Zone and Exclusive Economic Zone

As the Fisheries Regulations are not yet gazetted and thus unenforceable, the Fisheries Division has encouraged and educated fishers on the best practices for ensuring the sustainability of the fisheries sector and promoted voluntary self-regulation and policing. The Fisheries Rules (1939) still apply legally until the new regulations have been promulgated but as a matter of policy the draft Regulations (2010) have been adopted.

Jurisdiction is also an issue, especially concerning sea turtles, which while at sea are covered by Fisheries Regulations, but while on the shore, are covered by Forestry and Wildlife Regulations.

Concerning flyingfish, there are no specific management policies. However, there are regulations governing mesh sized for nets used for harvesting at juvenile stage (0.75 inch mesh) and at adult stage (1.5 inch mesh).

4.3 NAFCOOP

The National Association of Fisherfolk Cooperatives (NAFCOOP) is the umbrella organization for fishing co-operatives in Dominica. It has ten co-operative affiliates with a combined total membership of about 400 persons. NAFCOOP is governed by a committee made up of nine board members, persons belonging to the various affiliate co-operatives. Activities include:

- Advocacy for fisherfolk, representing the interests of fishers across the island
- Operating a fuel station for fishers at the Roseau Fisheries Complex
- Management of FADs within the waters of Dominica
- Participating in the Diamondback Squid research program

NAFCOOP is a key player in the management of the local fisheries industry, taking on key projects such as research to fisheries policy formulation.

5.0 RESEARCH

5.1 Diamondback Squid

Currently, the Fisheries Division is conducting exploratory research into Diamondback Squid (*Thysanoteuthis rhombus*) in the waters off the West Coast. A new gear, the squid jig, is used to fish at about 500 meters depth for the squid. Diamondback squid is a high value product. A recipe book (with tasting sessions) and a brochure were prepared to help generate public interest and promote development

of the fishery. Fishing trips are done by the Fisheries Division in conjunction with interested fishers. This is a JICA supported project.

5.2 Queen Snapper Fishery Assessment

This is a special research initiative conducted by Japan Cooperation Overseas Volunteer, Mr. Tetsuya Miyahara. The research involves collecting data from fishing trips of one fisher in the community of Fond Cole. The trip details are recorded, including gear and method utilized. Fish length is recorded as well as gonad details (weight and maturity).

5.3 Ghost Fishing

This is another JICA project. The Ghost Fishing Research Program started in 2007 with the deployment of 10 fish pots into the waters off the west coast of the island. Two staff members have monitored the capture and kill rate along with the life span of these traps since then. Some promising results were obtained that could help promote more sustainable trap fishing practices.

A regional program on the use of biodegradable materials in fish pots was conducted, training fisheries officials from around the region last year.

5.4 Improved Fish Catch and Effort System

Under the Moored Fish Aggregating Devices in the Lesser Antilles (MAGDELESA) project, the Fisheries Division intends to carry out a pilot project to test proposals for improving the current fish catch and effort data collection system. This project includes the development of a revised data collection form, improved collection methodology and data collection at new sites. Data collectors will also be equipped to capture some biological information on blackfin tuna *(Thunnus atlanticus)*.

5.5 FADs

There are a number of projects ongoing concerning FADs. These are:

- The JICA Master Plan Project: this looked at developing policy for the improved management of FADs and also capacity building for fisherfolk and co-operatives for managing FADs.
- University of Florida FAD Project: this is primarily focused on data collection activities surrounding the use of FADs in the local industry. Data is collected at a few sites, looking at how FADs are used and managed by fisherfolk. FAD use is also a focus of the study, determining the optimal number of boats per FAD.
- University of Texas A&M FAD Study: This project involves the tracking of fishing activity and effort through the use of GPS technology as well as FAD location and fishing effort around FADs.
- MAGDELESA/IFREMER Project: This is a study to test new FAD technology, constructed with new materials. So far two FADs were deployed off the West Coast of Dominica. This is a two-year pilot project conducted in Martinique, Guadeloupe, Dominica, St. Kitts and Nevis, St. Vincent and the Grenadines and Haiti. Data will be collected to study the fishing activity and species caught off FADs.

5.6 Other Projects

- FAO Disaster Risk Management: This is a project about improved vertical long line fisheries for increasing catches and helping to promote national food security. Fishing equipment is already acquired and will soon be distributed to fishers. Data will be collected to study the usefulness of the improved gear technology.
- Lion Fish: This invasive alien species is now in Dominican waters. As a means of managing the impact of this new species, the Fisheries Division in collaboration with the dive operators and fishers keep a database on sightings and capture of the fish. A recipe book may be produced soon in an effort to encourage the capture and consumption of the fish.
- Fisheries Industry Census (FIC) 2011: As a follow-up to the 2008 FIC, a second census was held in 2011. A report of the results is nearing completion and will afterward be printed for distribution. The survey involved interviewing over 800 persons who operate in the industry. Target groups were fishers (current and retired), fish vendors, boat owners, gear and boat builders/repairers and equipment suppliers. The survey was run during the latter half of 2011. This project was funded by the Japan International Cooperation Agency (JICA). A critical baseline dataset giving an overview of the current state of the fishing industry was obtained.

6.0 FISHERIES STATISTICS AND SAMPLING PROGRAMS

6.1 Fish Catch and Effort

There is only one regular sampling program, this is the fish catch and effort sampling program. Data is collected by 9 data collectors (part-time employees attached to the Fisheries Division) at 13 landing sites around the island (Figure 2). Random sampling is performed at all sites except for Marigot (after the completion of the new fisheries facility in 2004) which captures all data for all boats landed. Generally, more than 50% of the day's catch is sampled randomly by the data collector. Collection is done for at least 4 days weekly.

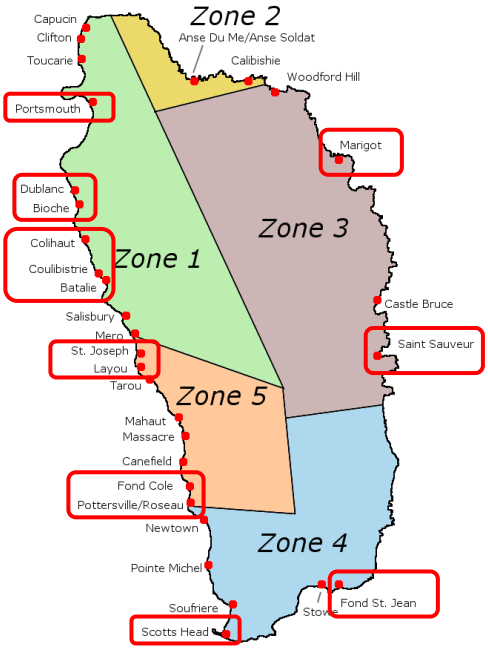

Figure 2: Landing sites at which data are collected in Dominica.

A data book is issued to data collectors monthly for the purpose of collecting the data. Datasets of interest are: date of catch, landing site name, number of boats sampled and total of boats fished at that date, boat registration number or other identification (usually owner or captain name), name of species caught, weight of species caught, gear used, fishing location (name of location), time spent at sea and number of crew members.

Data collectors are supervised by Fisheries Officers on field visits. However, there were incidences in reduced data quality over the year, resulting in replacing the offending collector(s). The Fisheries Division endeavours to maintain and improve the quality of information collected by hosting data collectors meetings, bringing every collector to the main office to discuss matters pertaining to the job, including data collection issues and results of data analyses.

6.2 Registration of Fishers and Fishing Vessels

This program is simply a register of persons and vessels which operate within the industry. Registration is not yet mandatory in Dominica for a person to fish; however, the Fisheries Division has tied registration to benefits for fishers (such as duty free on fishery item imports, assistance for recovery after natural disasters). This encourages persons to get registered and make sure that their records are kept up to date.

6.3 Fisheries Industry Census

The Fisheries Division has carried out two Fisheries Industry Censuses to date, one in 2008 and the second in 2011. These studies have helped to fill knowledge gaps for the industry. A full report of both studies is available and contains more details on the state of the fishery at that point.

These studies have helped to define the composition of the fishing industry (Figure 3). Roles within the industry include fishers, boat owners, boat builders/repairers, gear builders/repairers, vendors, outboard engine mechanics and fishing equipment suppliers.

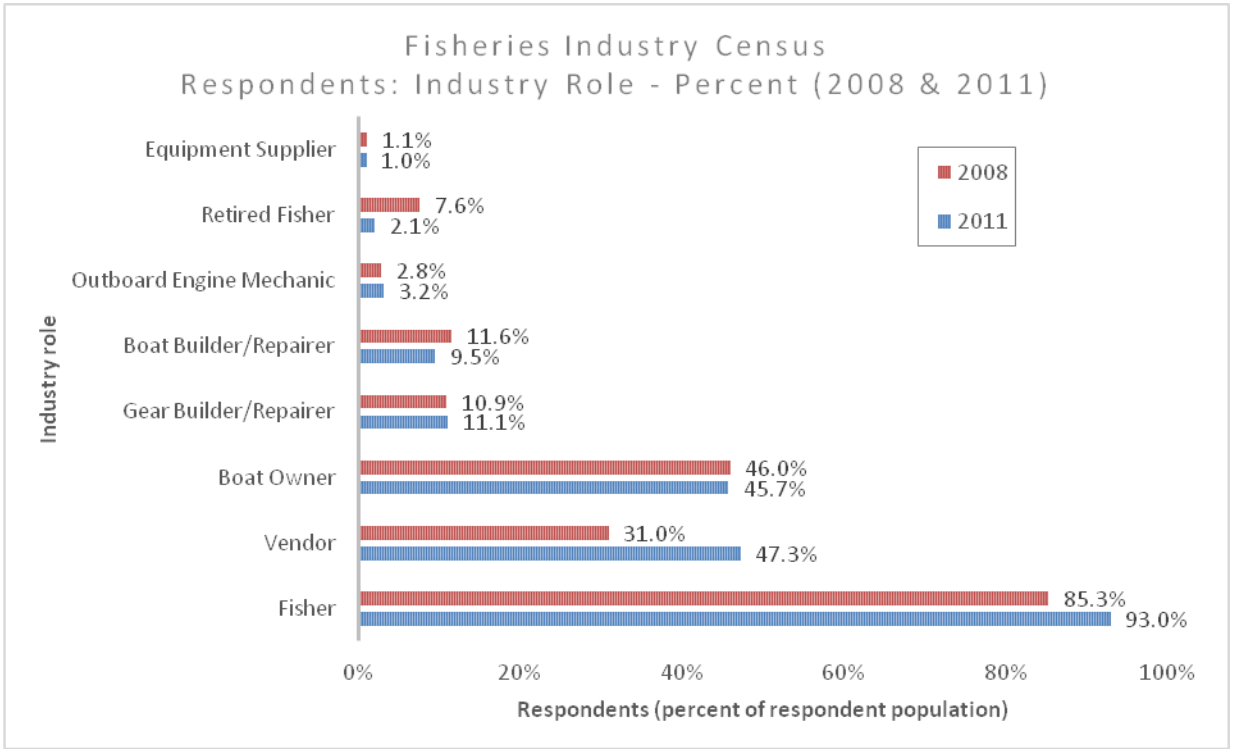

Figure 3: Composition of roles within the fishing industry in Dominica.

6.4 National Fish Production

Figure 4 and Table 4 show the annual and monthly national fish production trends respectively, for Dominica over ten years (2001 to 2011). It appears that fish production has remained fairly stable (though showing a slight decrease) for the past few years. It should be noted that over the time period in question the fishery encountered a considerable shift in operation, moving from a largely coastal-based fishery, targeting small coastal pelagics such as ballyhoo and jacks to an offshore, FAD-based fishery targeting larger pelagic species such as tunas, dolphinfish and marlin. Also, there were a few major hurricanes that had significant impact on the coastal environment and fisheries, such as Dean in 2007 and Omar in 2008.

Both of these storms caused the loss of fishing gear, damage to fishing vessels and some destruction of the coastal ecosystem.

Dominica's small fishing fleet and fishing practices do not allow for large scale extraction of fish, hence the low catch rates. Most fishers tend to fish only day trips (typically 2 to 6 hours), as previously mentioned.

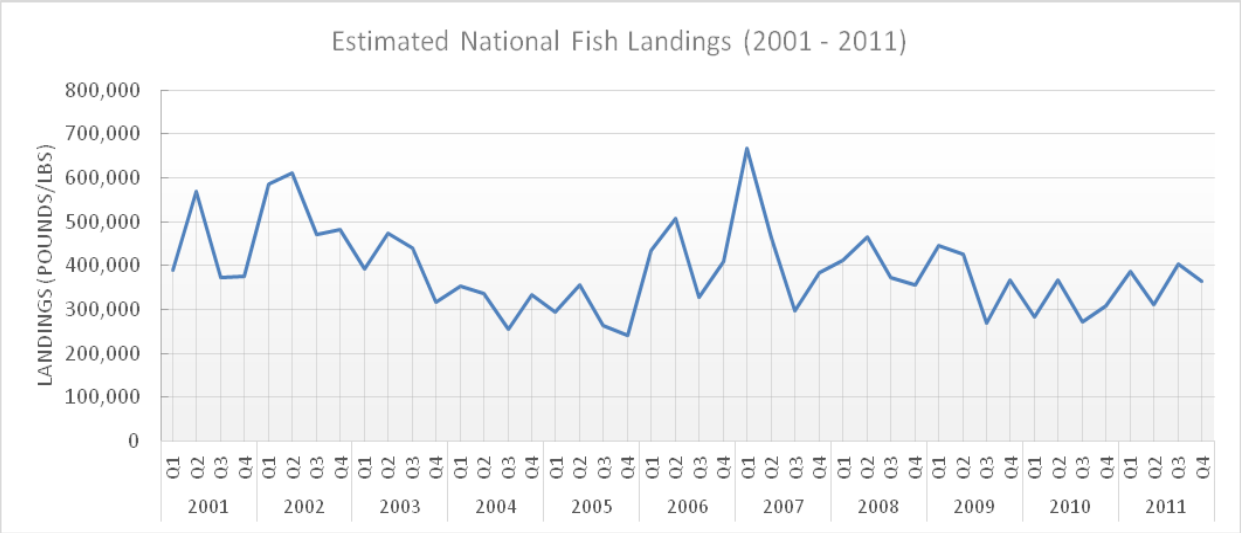

Figure 4:Estimated National Fish Landings (2001 to 2011) in Dominica.

Table 4: Estimated Fish Landings (2001-2011). Values in pounds (Lbs).

Month	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Jan	65,638	198,288	133,318	95,635	116,172	122,040	204,916	136,314	114,207	84,308	103,915
Feb	92,807	194,495	111,510	116,929	79,689	134,555	175,536	141,064	121,154	91,876	111,832
Mar	229,713	193,005	146,809	141,213	98,678	176,779	287,343	135,503	209,255	106,702	169,630
Apr	161,271	261,047	162,707	120,053	105,536	205,587	175,784	148,341	154,039	134,728	134,589
May	250,088	164,951	179,702	107,114	94,568	155,610	170,284	180,042	149,640	127,847	94,137
Jun	156,873	184,578	132,213	107,902	155,390	147,375	116,930	138,178	123,245	105,501	82,865
Jul	132,488	145,695	162,460	75,919	109,047	110,204	92,168	136,463	77,771	97,195	115,483
Aug	134,789	167,805	144,505	102,601	64,438	135,697	86,599	125,001	90,365	92,115	164,547
Sep	106,465	156,993	133,289	76,334	90,177	81,028	117,640	111,372	101,104	83,154	124,475
Oct	116,416	195,864	131,447	71,267	86,022	117,894	112,377	114,830	108,801	110,841	141,136
Nov	103,020	168,893	78,885	146,147	78,776	121,702	124,264	118,129	165,523	99,285	126,602
Dec	156,037	118,108	105,551	116,928	74,878	168,079	148,105	124,105	93,540	99,289	96,464
Grand Total (lbs)	**1,705,605**	**2,149,722**	**1,622,395**	**1,278,042**	**1,153,372**	**1,676,549**	**1,811,946**	**1,609,343**	**1,508,643**	**1,232,842**	**1,465,676**

NATIONAL REPORT OF GRENADA

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1.0 OVERVIEW

The Grenada fishing industry is characterized as a multi-gear and multi-species capture fishery[2]. Fishing gears range from different types of hook- and- line gear, nets and traps to free and scuba diving. Species harvested include large pelagics, small coastal pelagics, demersals and shellfish. Small quantities of edible sea moss are harvested in the wild as well as cultured by individual small farmers.

The registry of the Fishery Division reports a total of 2729 fishers and approximately 700 boats[3] . There are currently 36 operating landing sites which are categorized as follows:

- **Primary landing sites** – where there are land-based fisheries infrastructure, staff and Data collection – 9
- **Secondary landing sites** – where there are no facilities (beaches) - 23
- **Tertiary landing site** – where fish processors and exporters operate - 4

According to the Draft Fisheries Management Plan (2008) Grenada has an Exclusive Economic Zone of 7700Km² of which 1300Km² represents the continental shelf area.

By way of quick summary, Table 1 illustrates landings of the three main broad groups of fisheries (pelagics, demersals and shellfish) by both weight in kilograms and value in United States Dollars for the period from 2008 to 2011.

Table 1: Landings for the 3 broad categories of fisheries from 2008 to 2011 in Grenada. (Note that the upper row for each year represents the quantity in Kg while the lower row shows USD.)

	PELAGICS	DEMERSALS	SHELLFISH
2008	**1,863,265.3**	**508,104.3**	**14,184.1**
	8,867,265.9	**2,532,086.3**	**131,813.7**
2009	**2,104,945.1**	**458,343.2**	**28,809.5**
	8,614,425.6	**2,377,627.4**	**228,066.3**
2010	**1,967,668.9**	**463,317.0**	**21,268.6**
	9,094,438.5	**2,456,059.3**	**193,706.7**

[2] *Aquaculture in the form of sea moss mariculture occurs on a small scale*
[3] *This information is currently being updated since the Data Unit reports that the data is not current. In addition the register of recreational boats is incomplete.*

	PELAGICS	DEMERSALS	SHELLFISH
2011	**1,942,438**	**341,814.5**	**36,288.0**
	9,164,479.6	**1,816,300.0**	**188,985.9**

Finally all levels of fishing activity are represented in the Grenada fisheries. Namely these are:

- Occasional fisheries (engaged in for personal satisfaction or sport)
- Subsistence
- Artisanal
- Commercial

2.0 FLEET DESCRIPTION

The commercial fishing fleet consists of 5 main types of vessels as follows:

1) **Surface longline vessels –** of which there are 3 categories
2) **Open wooden and fiberglass pirogues –** Most of these vessels are engaged in trolling and demersal fishing (including dive boats engaged in the lobster and conch fishery and those used for towing seine boats). They are all day boats.
3) **Double enders** – used for carrying and deploying beach seines in the small coastal pelagics fishery
4) **Fishing sloops (some employing only sail)** – there are a few of these and they are engaged in the demersal fishery especially to supply the export trade to the French islands.
5) **Trading vessels** – These are not strictly fishing vessels (although they could be utilized for such) but are mainly engaged with the trade with the French islands.

Of the above, only types 1, 2 and 3 make up the bulk of the commercial fishing fleet. Table 2 summarizes the main types of vessels.

Although of a lesser category, boats involved in artisanal and subsistence fishing cannot be ignored because they have an impact on stocks especially when they exist in significant numbers as they do in Grenada. Each fishing district has an unspecified number[4] of small oar powered (or very small outboard motors) boats engaged in hand-lining, trolling, pot fishing, spear fishing, gillnet fishing and using turtle nets – all for subsistence or recreational fishing. These boats neither land their catches at primary landing sites nor report their catches.

Another important category is that of the recreational fishing boats. There is some debate as to whether such boats should be labelled as commercial fishers since they are engaged in the taking out of visitors for deep sea sport fishing for money.[5] This category of fishing has been recognized as significant by CRFM and Grenada has started the process of registering and licensing them although they do not as yet appear in Table 2.

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[4] Because they are not involved in commercial fishing they escape the licensing and registration system and they neither seek nor are awarded concessions. Their exact numbers are unknown but should not be difficult to determine if there is a desire to do so.

[5] In fact during the tourist season this activity is oftentimes more lucrative than straight commercial fishing. In addition such boats are generally more expensive and more luxuriously appointed.

It is important to mention the relationship that exists between the longline fleet and the small coastal pelagic fishery. The former has become largely dependent on the latter for its source of bait (especially live scads) and it often happens that the entire beach seine catches go to the longline fleet as bait. This creates a conflict between the longline captains (both foreign and local) and the public wishing to access the same scads as a cheap source of fish as was traditionally the case. The Fisheries Division has had to institute special management measures to attempt to resolve this conflict.

A small number of Fish Aggregating Devices (FADs) have been deployed. These are targeted mainly by the troll boats. However, a recent FAD project has been launched under JICA (referred to as the Caribbean Fisheries Co-Management – CARIFICO Project) that would allow for a more scientific assessment of this fishery.

Table 2: Showing the main categories of boats comprising the commercial fishing fleet and operational information.

CRAFT TYPE	LENGTH	DESCRIPTION	NUMBER*
Type I	4.5m - 7.0m	Small indigenous longliner. Wooden open pirogue. Operate < 4 miles. Outboard motor offshore. Day boat. Light palang (approx. 50 hooks)	210
Type II	7.3m – 8.8m	Longliner. Fiberglas pirogue with small cabin for shelter. Outboard motor Overnighter. Icebox. (>200 hooks)	120
Type III	9.7m – 16.6	Large fully equipped longliner. Full cabin. Distance up to 100 miles offshore. Inboard diesel. (>400 hooks)	75
Trolling	5.7m – 7.7m	Open wooden pirogue. Outboard motor. Day fisher. This type also used as dive boats and toeing double- enders	250
Beach seine	6.1m – 7.6m	Wooden double-enders used in the deployment of beach seines.	15

*Please note that the information in this column is currently being revised (see footnote [3]) and that the table does not show information on the recreational fleet

3.0 STATISTICS & SAMPLING

This important part of a robust MCS regime continues to be a weak area. The data collection programme focuses only on primary and tertiary landing sites where catches are recorded by market clerks (or data clerks in the case of the case tertiary landing sites) who are not trained as data collectors. Consequently the data, which are recorded in a Trip interview form, would sometime show errors, gaps and other inconsistencies. In some instances fishers, although landing at a primary site, choose to by-pass the weighing process and so data is lost. There is no coverage of secondary landing sites where most shellfish and a significant quantity of demersals are landed. Consequently it is difficult to estimate total catches although a raising factor of 1.75 for shell fish and demersals and 1.4 for large pelagics are applied. There are no sampling programmes.

At the primary and tertiary landing sites it is expected that a census of landings is captured for all species landed. At the primary sites a trip interview form (called a Daily Log) is used and allows for the capturing of the following information:

- Boat number and area fished

- Name of captain and number of crew
- Catches landed by weight by species
- Effort (hours fished)
- Gear by type and number
- Wholesale price (i.e. price received by the fisher)

4.0 NATIONAL FISHERIES POLICY & MANAGEMENT OBJECTIVES

In 2012 Grenada developed a Draft Fisheries and Aquaculture Policy and Action Plan. This activity was part of regional project funded under ACP FISH II programme and was undertaken by the consulting firm SOFRECO. The policy covered 5 thematic areas of the industry for development. These are:

1) Enhancing the status and capability of fishers
2) Sustainable stewardship and conservation of aquatic resources
3) Realizing the development potential inherent within the fisheries sector
4) Maintaining the sector's role in sustaining livelihoods of the poor
5) Generating a positive interaction with Grenada's wider economic community

The accompanying Action Plan provides guidance on the prioritization of specific activities to be undertaken in the short, medium and long terms.

Grenada Draft Fisheries Management Plan (2008) for each fishery type remains in Draft form. The established procedure[6], although initiated, was never followed through to completion. The length (in terms of time) for the process to complete its cycle is dependent on the capacity of the Division. Not all fisheries require the same levels of consultations.

5.0 RESEARCH

Most of the research activities have been centred on Marine Protected Areas. There have been no direct fishery research projects. Research activities undertaken were:

- Reef health (ReefChecK) with Molinere/Beausejour MPA, 2012
- SocioEconomic Assessment (SocMon) on alternative occupations (Molinere/Beausejour MPA. In collaboration with UWI-CERMES),2013
- Modified Threat Reduction Assessment (MTRA) – MPAs (Erin Loughney of Central European University
- Impact of Management Measures on the Coral Reef Ecosystem at Molinere/Beausejour MPA, Methodist University of Wisconsin (annual), 2013
- Research on nesting Leatherback Turtles within Levera National Park, Fisheries Division/Ocean Spirits Inc (annual), 2013.

6.0 LEGISLATION

Laws and regulations currently in force that affect the industry are as follows:

- ***Fisheries Act No. 15 of 1986***
- ***Grenada Fisheries (Amendment) Act, 1999, PART VI*** (regulating storage, processing, etc of fishery products) ***and PART III*** (Marine Protected Areas)

[6] *This procedure starts with 1. Internal review by technical staff, 2. Island-wide consultations with the fishing community, 3. Review and consultations with regional experts, 4. Re-drafting and second round of consultations with the fishing community, 5. Final Draft for comments, 6. Submission of final documents to Cabinet.*

- ***Fisheries (Amendment) Regulations, SRO 24***, 1996 (Conservation measures)
- ***Fisheries (Amendment) Regulations, SRO 2,*** 2001 (Conservation regulations)
- ***Fisheries (Fishing Vessel Safety)Regulations, SRO 3, 1990***
- ***Fish and Fishery Products Regulations, SRO 17, 1999***
- ***Fisheries (Marine Protected Area) Regulations, SRO 78, 2001***
- ***Fisheries (Levera Beach Closed Area) Regulations, SRO 15, 2010***

Monitoring, Control and Surveillance

As noted under Section 3, monitoring of fishing activities remain weak. Control measures have not been evaluated therefore their effectiveness remains uncertain. Lack of resources prevents an effective surveillance programme. However, the Fisheries Division has made an internal appointment of an MCS officer[7]. As is common in such agencies there continues to be a perception that MCS concerns only enforcement.

[7] This person has been mainly engaged in monitoring levels of compliance to regulations.

NATIONAL REPORT OF GUYANA

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1.0 GENERAL OUTLINE AND BACKGROUND OF THE FISHERY AND FLEET DESCRIPTION

a. Industrial
- i. Penaeid (prawns) Trawl Fishery
- ii. Sea Bob Fishery

b. Semi-Industrial
- i. Red Snapper Fishery
  1. Hook and Line
  2. Traps

c. Inshore Artisanal
- i. Chinese Seine Fishery
- ii. Cadell Line Fishery
- iii. Gillnet Fishery
  1. Gillnet polyethylene, outboard engine
  2. Gillnet polyethylene, inboard engine
  3. Gillnet nylon, outboard engine
  4. Circle seine (modified gillnet nylon, outboard engine)
  5. Tangle seine (modified gillnet nylon, outboard engine)
- iv. Pin Seine Fishery

d. Inland Fishery
- i. Subsistence Fishery
- ii. Ornamental Fishery

e. Aquaculture
- i. Freshwater Culture
- ii. Brackish Water Culture

2.0 DESCRIPTION OF THE NATIONAL INDUSTRY

The fisheries sub-sector is divided into three components:

Marine Fishery	Aquaculture	Inland Fishery
▪ The Offshore Industrial (Trawl) Fishery ▪ The Semi-industrial Fishery ▪ The Inshore Artisanal Fishery	▪ Brackish-water Culture ▪ Fresh-water Culture	▪ Subsistence Fishery ▪ Ornamental Fishery

The Offshore Industrial fishery consists of one hundred and nineteen (119) trawlers, eight (8) large fish/shrimp processing plants and numerous wharves and dry docking facilities. Thirty-one (31) trawlers are licensed to catch penaeid shrimp while eighty-eight (88) are licensed to catch seabob. Ice and freezing facilities servicing this fishery are owned and operated by participants within and outside the fishery sub-sector.

Thirty-one (31) trawlers are exploiting mainly penaeid shrimp *(P. brasiliensis, P. notialis, P. schmitti, and P. subtilis)* with finfish and small amounts of squid (*Loligo spp.*) and lobster (*Panulirus spp.*) as by-catch. Eighty-eight (88) mainly exploit seabob (*Xiphopenaeus kroyeri*) and various fin-fish species (*Macrodon ancylodon, Micropogonias furnieri, Nebris microps, Arius spp., Cynoscion spp.*), with small quantities of penaeid shrimp as by-catch. The Turtle Excluder Devices (TEDs) are mandatory for the entire shrimp trawl fleet.

In the semi industrial fishery there are three Guyanese companies with sixty (60) agreements to rent Venezuelan vessels to operate in Guyana's waters. Also, there are forty-three (43) local vessels licensed to operate traps.

The Inshore Artisanal Fishery consists of 1234 vessels ranging from 6 – 18 meters propelled by sail, outboard or inboard engines. All boats are manufactured locally. The fishing gears in use include Chinese seine/fyke nets, gillnets, cadell lines "demersal longlines" and pin seine.

The Inshore Artisanal Fishery is mainly demersal. The species caught include Seabob and Whitebelly shrimp, Gillbacker, Bangamary, Sea Trout, Grey Snapper and Red Snapper.

The Inland Subsistence Fishery involves catching of fish in rivers, lakes, canals, flood plains by subsistence and part-time fishers for their own consumption or for sale.

There is a small but active inland fishery for ornamental fish. Live fish are caught in the rivers by collectors and sold to exporters of ornamental fish. The Guyana Wildlife Authority has responsible for aquarium fish.

3.0 STATISTICS, RESEARCH AND RESOURCE ASSESSMENT

The department will be conducting a survey to determine the number of persons involved in fishing activities in the sector.

The Inter-Sessional Shrimp and Groundfish Working Group meeting between (Guyana and Suriname) was in February 2013. It is expected that at the Ninth CRFM scientific meeting, a full assessment will be done on the seabob data sets for ten (10) years.

3.1 Policy and Legislation

In 2012 Guyana received technical assistance from FAO to develop the policies for Inland and Aquaculture Fisheries. The policy is being finalized and would be implemented later in the year.

The department will be updating the marine regulations and creating regulations for the aquaculture sector. By June 2013 it will be mandatory for all seabob vessels to be equipped with Vessel Monitor Surveillance (VMS) and By-catch Reduction Device (BRD). This is part of the requirement for achieving Marine Stewardship Council certification.

The updated Fisheries Management Plan (2013-2017) is scheduled to be completed by July 2013. The updated FMP is funded by the EU-ACP Fish II Project.

3.2 Development Activities

The ministry and the department provided technical assistance to aquaculture farmers. Large and medium scale farmers benefited from loans and grants under the Agriculture Support Development Unit (ASDU) project to expand their operations.

Three aquaculture projects were identified to the sum of G$15,000,000.00. Two projects will be executed in Region # 1 and one in Region # 9 (Figure 1.) Technical assistance will be provided by the Department of Fisheries.

Figure 1: Map showing the Regions of Guyana.

There are plans to conduct research in Guyana's waters and to limit / phase out the use of pin seine gear. The Ministry of Health and Ministry of Public Works are examining the port / artisanal facilities and infrastructure with the aim of upgrading and improving the standards and quality of seafood landed. Three industrial companies are EU certified.

4.0 FISHERIES MANAGEMENT AND CONSERVATION ACTIVITIES

In CRFM 2007 report on *Xiphopenaeus kroyeri* (seabob) stock assessment it was suggested that the trawl fleet size be reduced by fifty percent. The Department of Fisheries and Guyana Association of Trawlers Owners and Seafood Processors (GATOSP) agreed on a twenty percent (20 %) reduction. By the end of 2013 the total seabob fleet will be reduced to eighty vessels.

Seabob vessels make trips that vary from 3-4 days at the peak of the season (~Dec.-Feb.) to 8-10 days when fishing is poorer. There is a 6 week closed season sometime between August and October (decided according to the drop-off in catch rate). The seabob are landed fresh on ice. Prawn vessels operate in a similar way to the seabob vessels except that they are equipped with freezers and make longer trips – up to 30-35 days. There is no formal closed season for prawn, but the fishing companies operate a voluntary closed period when catch rates are low.

The Department of Fisheries, Ministry of Health - Veterinary Public Health Unit and the Guyana Trawler Operators and Seafood Processors (GTOSP) meet regularly to discuss the way forward on Illegal, Unreported, Unregulated (IUU) and Marine Stewardship Council (MSC). By the end of June 2013 the vessels will be equipped with VMS and BRD.

Guyana has had Co-operating Party status with ICCAT from 2004 to 2012, and has been submitting reports every year. However, it should be noted that the fishery is artisanal and does not harvest any of the major species on ICCAT list, with the exception of Spanish mackerel, King mackerel and sharks which are landed dressed (no fins, heads, etc). Since sharks are landed dressed the Data Collectors are unable to identify the species being caught.

Annex

Table 1: Fisheries Sub-sector Production for the period 2012-2010

	Annual Production (mt)		
	2012	**2011**	**2010**
Prawns (whole weight)	512	368	931
Prawns (tail weight)	320	231	582
Seabob industrial (whole weight)	24,362	19,433	19,679
Seabob artisanal (whole weight)	521	196	686
Whitebelly (whole weight)	603	830	526
Total Shrimp (whole weight)	**25,999**	**20,827**	**21,781**
Finfish (industrial)	1950	1,890	1,314
Finfish (artisanal)	24,192	20,889	22,969
Red Snapper	952	758	1,037
Total Finfish	**27,094**	**23,537**	**25,320**
Overall Production	**53,093**	**44,364**	**47,101**

Source: Department of Fisheries

Table 2: Annual Export for the period 2012-2010

	2012		**2011**		**2010**	
Item	mt	Value G$	mt	Value G$	mt	Value G$
Prawns	280	488,877,378	294	527,473,285	641	1,120,241,485
Seabob/Whitebelly	12509	6,082,969,915	9,114	4,480,899,264	8,773	4,455,589,157
Frozen fish	8786	4,163,318,252	7,560	3,407,472,658	6,246	2,844,542,376
Dried Shrimp	16	11,465,602	2	2,138,768	10	8,954,667
Salted/Smoked Fish	192	136,078,226	339	242,184,524	194	116,846,418
Glue/Fins	164	465,730,708	224	689,100,654	126	431,501,477
Crabs/ crabmeat/shells	22	12,387,595	15	8,268,478	20	11,729,585
Ornamental	2	790,380	.1	5,447,141	4	5,072,815
Fish eggs	39	13,524,116	32	3,940,869	14	4,255,940
Squid	-	-	.10	81,600	10	6,541,600
Total	**22,010**	**11,375,142,172**	**17,581**	**9,367,007,241**	**16,038**	**9,005,275,520**

Source: Department of Fisheries

Table 3: Characteristics of the Artisanal Fishing Fleet of Guyana

No. of Vessels		Method of Propulsion	Length of Vessels (m/ft)	Gear Type	Trip length	Catch Composition	Crew Size	Preservation method	Principal Fishing Area
Frame Survey	2011 Vessel Count Exercise								
558	64	Inboard diesel Lister, Perkins 210 hp	12-15/40-50	Gillnet polyethylene (inboard)	12-18 days	Grey snapper, sea-trout, gillbacker, tarpon, Spanish-mackerel, croaker, snook, shark spp.	4-6	Ice	Area between 10 and 20 fathoms.
	296	Outboard engine 48 hp	8-11/35	Gillnet polyethylene (cabin-cruiser)	6-12 days	Grey snapper, sea trout, pagee, tarpon, croaker, gillbacker, Spanish mackerel.	4-6	Ice	Area between 10 and 20 fathoms
	448	Outboard engine 25 hp	30m	Gillnet nylon	1-2 day	Bangamary, sea-trout, butterfish.	4-6	Ice	Area between 10 and 15 fathoms
253	307	Sail, outboard engine 6 - 9 hp	6.40-12.19 m (21-40ft.)	Chinese seine	6 - 12h	Whitebelly, seabob, immature fish, bangamary, butterfish, catfish	2-4	Fresh	Estuaries, river mouths and banks on the coast.
79	87	Outboard engine 6 - 9 hp	6 - 9/15 -30	Cadell	12h	Catfishes, sharks spp.	2-4	Fresh	Areas between 5 and 10 fathoms.
46	32	Sail, outboard engine	6 - 9/15 -30	Pin Seine	12h	Mullet, snook, queriman, catfish, croaker, bangamary.	2	Fresh	Intertidal zones

Source: Department of Fisheries

NATIONAL REPORT OF HAITI

Wilner Romain
Fisheries Division, Ministry of Agriculture, Natural Resources and Rural Development
Damien, Haití

1.0 FISHERY AND FLEET DESCRIPTION

The fisheries in Haiti are made up of three components: marine fishery, inland fishery, and aquaculture. In the following paragraphs details will be provided for each of these components.

1.1 Marine Fishery

Exclusive Economic Zone

Haiti has a coastline of 1,535 km and a continental shelf area of 5,000 km^2. The area of the Exclusive Economic Zone (EEZ) measures approximately 161x103 km^2. The main living resources exploited within the EEZ are the demersal fishery resources and a limited quantity of pelagic fish resources either over the continental shelf or offshore.

Small Scale Fishery

The fishing fleet of the small-scale fishery is composed of 24,550 small artisanal fishing boats that operate mainly within the coastal waters. Many fishermen operate from small wooden artisanal boats, which are propelled by oars or sails. More than 60% of the fishing boats operate from beaches on the west and southeastern parts of the country. Haitian fishers use mainly traps (Antillean "Z" type) made almost entirely of bamboo, nets (gillnet, trammel net, cast net, bottom net), and different kinds of fishing lines (surface line, long line, bottom vertical line, beach seine), free diving and hookah diving (see Table 1). There are about 50,000 small-scale fishermen. Approximately 40% of these are full time fishers and 60% are part time fishers.

Table 1: Showing different types of fishing gears

Fishing gears	Types
Traps	Antillean "Z"
Nets	Gillnets, trammel net, cast net, bottom net
Fishing lines	Surface line, long line, bottom vertical line, beach seine
Diving	Free diving and hookah diving
Fishing by feet	Mainly lines

The small-scale fishery provides the greatest part of Haiti exported marine products. The Table 2 below shows the amount of the main exported marine products.

Table 2: Showing the Haiti's main exported marine products

Exported marine products	Amounts (in kg)
Lobster	200,000
Conch	200,000
Shrimp	4,926.0
Sea cucumber	20,404.0

1.2 Inland Fishery

This fishery involves the catching of fish in rivers, lakes, canal, and flood plains by subsistence or part time fishermen for their own consumption or sale (see Table 3). Activity tends to be influenced by the seasons and the down periods in the agricultural sector (particularly in dry season) and other activities. Catch from this fishery account for 7 % of the country's total catch.

Table 3: Showing main places of inland fisheries

Lake	Surface in hectares	Numbers of fishers	Production T/year
Saumâtre	11,300	232	23.2
Peligre	4,800	466	?
Miragoâne	1,800	169	220
Trou Caiman	700	?	?

1.3 Aquaculture

Culture in Artificial lakes

Tilapia and carpes are the main species cultured in artificial lakes in Haiti. The two major places where these cultures are taking place are Pandiassou in the Plateau Central region and Ka Rouk in the Nippes region. The contribution of these cultures to the national production is unknown.

2.0 STATISTICS AND SAMPLING

In Haiti, there is no system in place to collect data on a regular basis. Data are only collected from registration of the amount of marine products to be exported. This type of data collection showed severe weaknesses:

1. The information provided by the exporters was not verified.
2. Data were stored in folders without being analyzed.
3. Information on boats, gears, and effort could not be recorded.

3.0 NATIONAL FISHERIES POLICY AND MANAGEMENT OBJECTIVES

The Fisheries Policy in Haiti 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 Haiti's people. The policy also seeks to ensure that conch is harvested in a sustainable manner which is not detrimental for the species.

4.0 RESEARCH

In order to enhance the situation, CRFM supported a data collection programme on fisheries. The general objectives of this data collection programme were: to collect information (on fleet type, type of effort, and trends in fishing patterns and practices) to assist in the formulation of a comprehensive sampling program for Haiti, as well as to facilitate decisions regarding fisheries development and management.

Data were collected in three phases:

Phase I
A form was used to collect basic data on the populations of fishers and fishing units at each landing site. These data were used to classify fishers and fishing units into categories (according to type of fishing – vessel type and/or gear type and/or type of fishing targeted), and to develop a random stratified and hence representative sample for conducting part III of the survey.

Phase II
A questionnaire was used to collect social, economic, and technical data on all fishing units.

Phase III
A representative sample of fishing units was selected at random from stratified data collected during Phase I, and the fishers concerned were interviewed in order to examine fishing trends. These data should be analyzed using descriptive statistics (means, frequency…).

In addition, some work is planned in collaboration with CRFM aimed at collecting biological information to assist in evaluating the species caught in Haiti. With regard to the degradation of the inshore marine environment, the establishment of Marine Protected Areas in order to protect degraded habitats and facilitate fish replenishment is being planned. The Fisheries Division in Haiti is endeavouring to develop aquaculture in order to reduce pressure on marine resources (fish).

If planned activities are successfully implemented, the Haiti Fisheries Department would be able to provide all the information requested for the annual scientific meeting. This information will also allow the Fisheries Department to make informed decisions for the improvement of the fishing industry in Haiti.

5.0 LEGISLATION AND MANAGEMENT REGULATIONS

The fisheries law of 1978 requires the registration of all fishermen operating in Haiti as well as the registration of fishing vessels. There are also resource management regulations designed to protect and conserve the fishery resources including closed seasons for lobster and conch from April 1st - September 30th; and minimum mesh sizes for certain types of fishing nets. However, there is generally no monitoring, surveillance or enforcement of fisheries regulations due to lack of resources and equipment, and low level of political attention to the fishery sector even though it is recognized that there is a need for management.

The improvement of the system requires substantial efforts from the Government and support from regional and international organizations. Such support will assist the Fisheries Department to develop and implement a regular data collection programme through sample-based survey and monitoring system; and to strengthen community education and participation.

NATIONAL REPORT OF JAMAICA

Fisheries Division, Ministry of Agriculture and Fisheries
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1.0 FISHERY AND FLEET DESCRIPTIONS

The Jamaican fishery consists of two (2) fleets: an artisanal fleet and an industrial fleet. The artisanal fleet number approximately 9,000 boats (5,971 registered boats as of March 2012) operated by some 21,000 fishers (21,400 registered fishers as at September 2012). Artisanal vessels are usually 4 to 9 metres in length powered by either outboard motors or wooden oars. The main fish group targeted is reef and slope fish both in inshore areas and also on offshore banks which are then marketed locally. Depending on the target species and propulsion being used fishing gear may vary from fish pots (Antillean Z traps) and diving methods for reef fish, various types of net for nearshore and ground species, to longlines and handlines for deepslope and pelagics.

The industrial fleet consists of approximately 87 larger decked vessels (on register as of May 2013) many of which are believed to be not in operation or operate infrequently. These vessels measure over 25 metres in length and are powered by inboard engines of up to 500 hp. Industrial vessels are licensed to operate in offshore areas only where they fish for spiny lobster, conch, and to a smaller extent, finfish. Vessels targeting spiny lobster are licensed to use Florida lobster traps only, conch vessels utilize diving methods including the use of hookah/compressor and scuba, while finfish is caught using mainly traps and lines. The industrial sector markets its catch mainly on the export market, particularly conch and lobster to the United States and the European Union (EU). Much of the finfish is however sold locally but to a smaller extent.

2.0 STATISTICS AND SAMPLING

Jamaica is divided into two statistical areas, the north coast as area 1 and the south coast as area 2. During 1995, a survey was conducted in both areas at about 90% of the known landing sites to determine the number of vessels at each site and classify them by gear type, fishing ground and target fishery. As a result the beaches on the north coast were divided into six categories based on beach size (i.e. number of boats) and gear type while the south coast has three categories based on beach size. The categories are used as sampling strata and it is assumed that, within a stratum the gears, vessels and fishing grounds are homogeneous throughout the area. This means fishermen at all beaches within a category have access to fisheries of similar productivity. Once all the beaches were classified into strata, one or more beaches were selected to be sampled in each stratum (See figure 1).

Each sample beach is visited two days per month and the data collected from vessels landing that day. The data includes vessel identification, fishing effort (amount of gear, number of crew, hours fished), fishing ground, species landed by weight and price. Other data collected includes total number of vessels that went to sea that day, the number of fishing days for the month and descriptive comments on the weather and beach conditions.

Biological data such as weight, length, sex and maturity of select species are also collected monthly. These species include the Atlantic thread herring, Caribbean spiny lobster, shrimp, dolphinfish, skipjack tuna and conch. In conjunction with the catch and effort data, the biological data is used for stock assessment and for detecting trends etc., which are necessary for proper decision making.

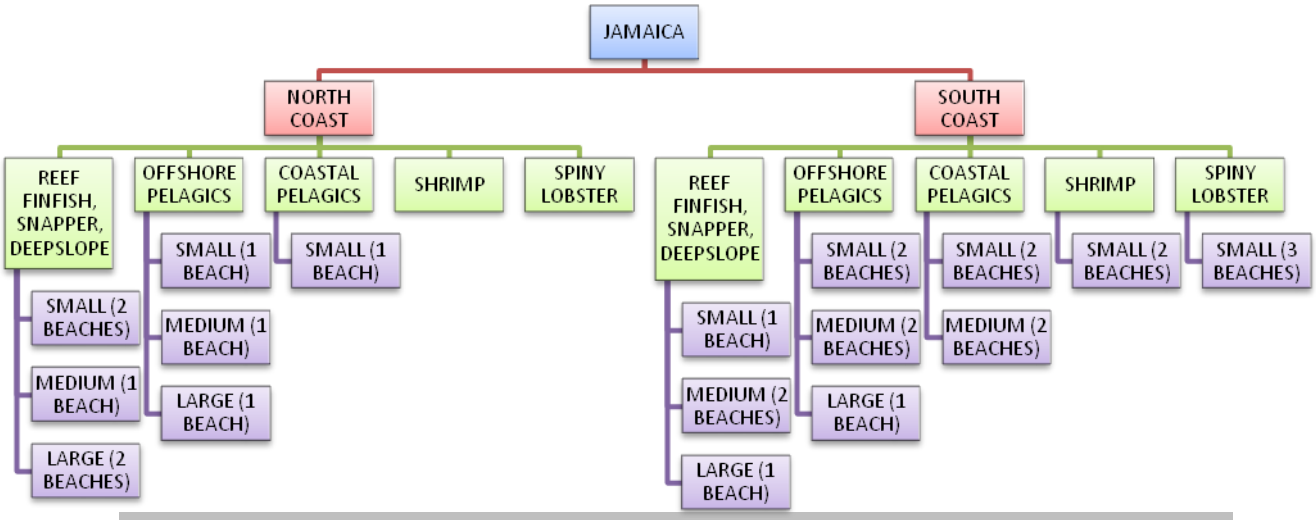

Figure 1: Overview of the sampling plan for the artisanal fishery of Jamaica

Production Estimates

Annual production for both marine and aquaculture in Jamaica for the period 2000 to 2012 are shown in table 1 below.

Table 1: Jamaica fish production trend 2000-2010 (MT)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Artisanal (Finfish)	4348.57	7,000.00	4594.92	8811.03	7158.39	12329.85	**11,048.24**	9475.01	12544.43	11,389.85	14,208.28	9,463.50
Conch	946	946	504.25	550	640	650	640	400	400	440	400	550
Lobster (Industry)	943.39	358.67	300	134.49	362	97.98	150	150	150	200	250	300
Shrimp[1]	38.5	37.54	37	-	875.04	476.1	-	-	105	283.9	45	62.9
Others[1]	51.38	144	456	-	-	-	-	-	5.6		4	-
Total Marine Fish Production	6,327.84	8342.21	5436.17	9495.5	9035.43	13067.83	11,838.24	10,025.01	13,205.03	12,313.75	14,208.28	10,376.40
Total Tilapia Production	5,000.00	5995.44	2968.5	4200	4795	7,543.35	5,600	5,800	5,030	3,900	1,100	581.6
TOTAL Fish Production MT	**11,327.84**	**14,337.65**	**8,404.67**	**13,695.52**	**13,830.43**	**21,087.28**	**17,438.24**	**15,825.01**	**18,235.03**	**16,213.75**	**15,308.28**	**10,958.05**

3.0 NATIONAL FISHERIES POLICY AND MANAGEMENT OBJECTIVES

The Draft National Fisheries Policy (2008) provides a framework for the formulation of management strategies designed to address the important issues, challenges and opportunities facing the industry including; globalization, trade expansion, economic efficiency, industry structure and governance, and food safety and quality. The main goals of the National Fisheries Policy are:

(1) Improve contribution to economic growth and reduction of poverty
(2) Improve contribution to sustainable livelihood of Jamaicans through employment in fisheries and responsible fisheries management
(3) Improve fisheries contribution to National 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 within fisheries sector
(4) Improve systems and procedures for the management of the fishing and aquaculture industry
(5) Develop both existing and new/under-utilized fisheries through sound research, technical co-operation and capacity building
(6) 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
(7) 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 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 the continued drive to establish functional Special Fisheries Conservation Areas (Fish Sanctuaries) will help to improve fish populations. 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 preferably on a regional basis, and a regional management plan developed.

e) Lobster

Objective: to restore/rehabilitate the fishery through conservation, sound management and research.

There is already legislation in place to prevent the taking of berried and juvenile (below 76mm carapace length) lobsters and to prohibit the landing of lobsters during the close season. There is need for greater gear restrictions, effort reduction and co-management arrangements.

f) Conch

Objectives: To ensure optimum sustainable yields and efficient utilization of the resource through sound research and management.

Jamaica has been recognised as a major conch producer regionally (Chakallal and Cochrane 1996) and continues to do so with exports averaging just over 500MT annually for the last decade (Fisheries Division database, 2013). Both the industrial and artisanal fisheries are based on the Pedro Bank. The fishery is managed utilizing an individual non-transferable quota system and the National Total Allowable Catch (TAC) which are determined by annual assessments and 3 to 5 year abundance surveys on the Pedro Bank.

g) Shrimp

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

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

4.0 RESEARCH

The Fisheries Division and its partners, including private and public bodies both local and international, conduct a number of research and development projects/programmes from time to time geared at addressing various industry-related issues. These studies are conducted with the national policy direction as previously outlined. Current research projects/programmes along with resources necessary for their completion are listed below.

4.1 Lobster Management Programme (LMP)

The LMP focuses on the three main lifecycle stages of the Spiny Lobster, namely; the adult stage, juvenile stage and the pueruli/post larval stage. The programme seeks to conduct research on these main lifecycle stages to determine: a) seasonality; b) estimate of stock size; and c) rate and origin of pueruli settlement. The type of data collected here is fishery dependent catch and effort data on adults and fishery independent data on pueruli and juveniles.

4.2 Habitat Enhancement

Improving Jamaica's Agricultural Productivity Project (IJAPP) Fisheries Component is an initiative to enhance fish habitat across Jamaica through the development and deployment of appropriate artificial reef structures. The project looks at conducting habitat assessments in order to give priority to areas that are not too degraded yet under enough threat to warrant enhancement. An additional aspect of the project is the establishment of a coral garden which will be used to transplant corals unto suitable reefs and artificial enhancement structures with an aim to improve their functionality.

4.3 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 resources, lobster and conch, coastal pelagic resources, shrimp and groundfish. The programme however faces a number of challenges related to the size and location of each fishery versus the available human resources.

4.4 Special Fishery Conservation Areas (SFCA)

The Fisheries Division currently manages 14 Special Fishery Conservation Areas (SFCA) (fish sanctuaries) across the island. Each site was selected based on criteria including; ecological potential, socio-economic importance, buy-in of primary stakeholders, and general fishery importance. The management of the SFCA's is a collaborative effort between government and local community organizations, particularly fisher organizations and non-governmental organizations (NGOs).

Baseline and monitoring studies are underway across the SFCA's in order to develop a means for measuring the progress of each.

4.5 Queen Conch

Preliminary data collection and background work has begun to update Jamaica's conch conversion factor used to convert processed weight to nominal weight.

4.6 Aquaculture

Investigations are also being done on growth and survival of the mangrove oyster *Crassostrea rhizophorea*. Plans are afoot to improve and increase the marketability of oyster through product development initiatives along with the country's main product research institute.

There are also planned investigations to look at growth of Tilapia and other food fish under various conditions and to conduct feed trials to determine, among other things, feed conversion ratios.

5.0 LEGISLATION AND MANAGEMENT REGULATIONS

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) was ratified by Jamaica on 21 March 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 Fisheries, and the Aquaculture, Inland, Marine Products and By Products (inspection, licensing and export) Act 1999 administered by the Veterinary Division. As part of the modernization of the public sector the Fisheries Division is currently undergoing transformation into an executive agency. This will result in a semi-autonomous agency with greatly improved efficiency. As part of the modernization process a Chief Executive Officer (CEO) is in place to drive the transformation into an executive agency. The transformation process is on-going but has experienced delays.

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.

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NATIONAL REPORT OF ST. LUCIA

Department of Fisheries,
Ministry of Agriculture, Food Production, Fisheries and Rural Development
Pointe Seraphine, Castries, St. Lucia

1.0 FISHERY MANAGEMENT OBJECTIVES

The Goals for fisheries management are:

- To contribute to the attainment of self-sufficiency and food security.
- To sustainably optimise the net incomes of the fishers and the communities involved in fisheries, and related economic activities.
- To sustainably optimise employment opportunities for those dependent on fisheries and aquaculture for their livelihoods.
- To maintain or restore populations of marine and freshwater species at levels that can produce optimum sustainable yields.
- To preserve rare or fragile ecosystems, as well as habitats and other ecologically sensitive areas, especially mangrove forests, seagrass beds, reefs and other spawning and nursery areas.
- To sustainably optimise the amount of fish protein available for domestic consumption.
- To improve on fisheries infrastructure and promote the use of appropriate fishing technologies with a view to sustainably optimise catch.

2.0 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).

The offshore pelagic fishery contributed just over 60% of the annual landings by weight (Department of Fisheries, 2013) which is made up of a number of migratory species including dolphinfish (*Coryphaena hippurus)*; mackerel (*Scomberomorus* spp.*)*; Wahoo (*Acanthocybium solandri)*; blackfin tuna (*Thunnus atlanticus)*; yellowfin tuna (*Thunnus albacares)*; Skipjack tuna (*Katsuwonus pelamis)*; sharks (various families); billfishes (Istiophoridae, Xiphiidae) and flyingfish (*Hirundichthys affinis)* (Figure 1).

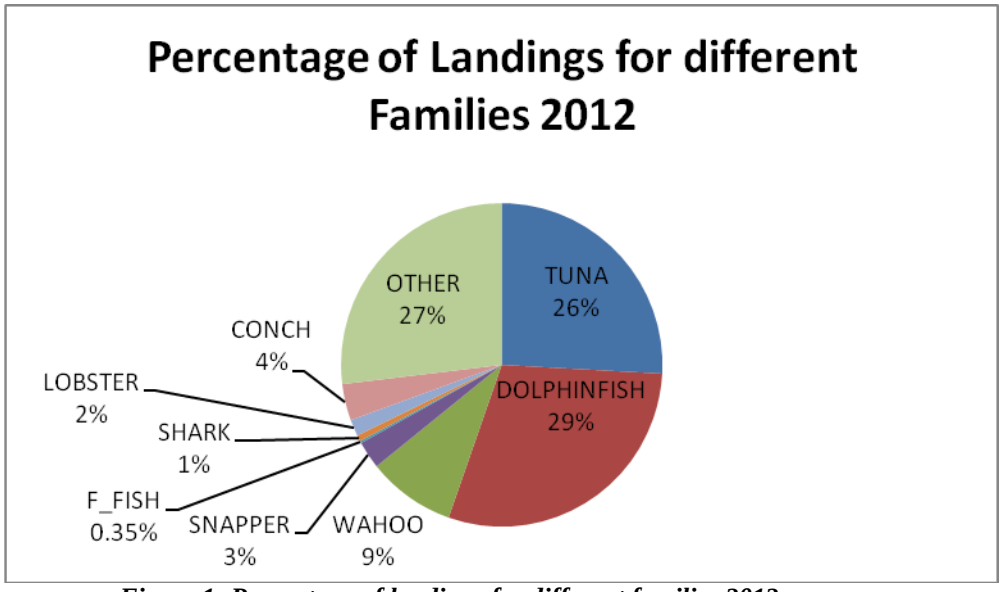

Figure 1: Percentage of landings for different families 2012.

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

Whilst the demersal fishery lands the most highly priced and valuable species for the local, tourism and export sectors including: snappers (family - Lutjanidae); groupers (family - Serranidae); Caribbean spiny lobster (*Panulirus argus)*; and Caribbean queen conch (*Strombus gigas);* the contribution of this fishery to the total annual landings has steadily increased. This increasing landings trend observed in the demersal fishery can be attributed to the increase in demand and price of the fishery during this period.

3.0 POLICY AND REGULATIONS

The primary legislation governing management of the island's marine resources is the Fisheries Act and Regulation Cap 7.15. The Fisheries Regulation specify conservation measures such as gear restrictions, fishing method restrictions, closed seasons and establishment of marine reserves.

The Department of Fisheries is cognisant 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.

A list of relevant fisheries related legal instruments is given in Annex 1. 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. Through a consultative process with resource users, a technical Report was completed as part of the project "Support to Develop a Fisheries Policy for Saint Lucia" that was completed as part of the EU ACP FISH II work programme. It is envisaged that the Plan will serve as an effective tool to formulate a

coherent approach to activities in the "fisheries sector", replacing the strictly resource based guidance provided by the old Fisheries Management Plan (FMP) and the Department of Fisheries focused Strategic Plan.

This National Fisheries Plan is the response of St. Lucia to the challenge of ensuring the sustainable use of its natural resources in the context of ecosystem based management and support for the long term interest of fishery dependent people through the development of activities that optimises sustainable economic, financial and social benefits. It defines the objectives of National Fisheries Policy together with a Vision and Mission, before going on to address the National Fisheries Strategy that presents a road map on the implementation of the policy. It also identifies the results to be achieved and the broad actions to be undertaken within the period of the Plan. Subsequently, the Department of Fisheries will drive co-operative efforts by all stakeholders to follow the road map provided by the strategy with the drawing-up of detailed actions in multi-annual National Operational Plan that identify prioritised and sequenced projects on the basis of the available financial and human resources.

4.0 GENERAL STATISTICS ON FLEET TYPES, TYPE OF EFFORT AND TRENDS IN FISHING PATTERNS AND PRACTICES

The fishing fleet for the sector comprises of 700 registered commercial fishing vessels operated by 2556 registered fishers (Department of Fisheries 2012). The fishing fleet consists of seven (7) vessel classes but it is dominated by open fibreglass pirogues (78%) and the traditional dug-out canoes (10%), (Figure 2.). The vessels in the fishing sector range from 3 to 25 m and are powered mainly by engines ranging from 5 to 350 horsepower. On average, vessels engaged in the fishery are 7-8 m long and are mainly propelled by 75 horse power outboard engines. Due to the multi-species nature of the fishery, most vessels are generally equipped with multiple fishing gears which include: trolling lines; flyingfish nets; longlines (palangres); gillnets; handlines and fishpots (traps). Fishing trips are usually one day trips ranging from 3-8 hour durations.

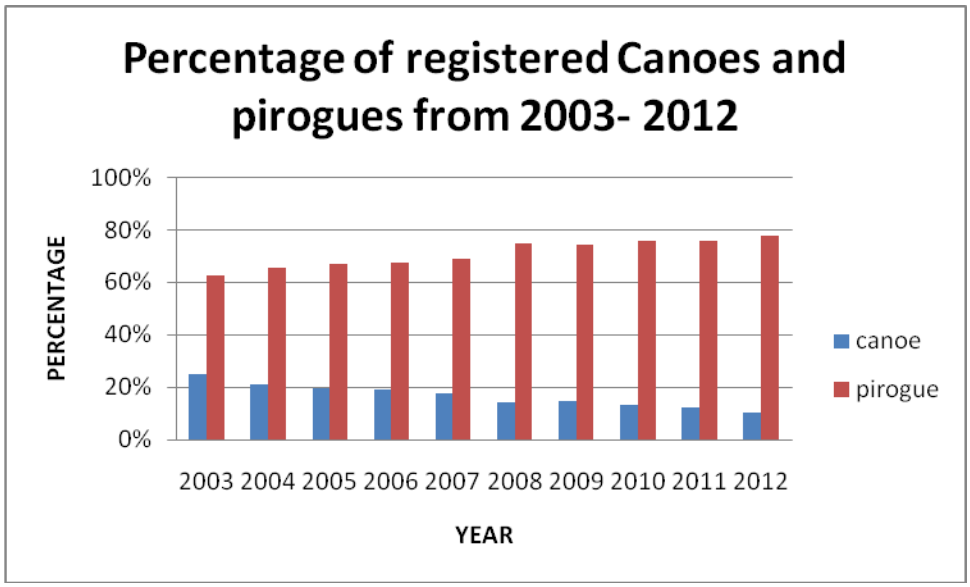

Figure 2: Percentage of registered canoes and pirogues from 2003- 2012

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 Fleet

Vessel Category	Canoe	Pirogue	Transom	Shaloop	Whaler	Longliner	Other	Total
Total	72	544	45	23	5	9	2	700

(Source: Department of Fisheries, 2012)

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.

Fishing communities are located both along the Caribbean and Atlantic coast. This distribution of fishing communities, 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 snorkelling 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 ten landings sites based on a random stratified system. The sites presently sampled include: Anse La Raye, Banannes, Gros Islet, Castries, Soufriere, Choiseul, Vieux Fort, Micoud, Laborie and Dennery (Table 2).

Table 2: Fish landing sites and category

Site	Category	Site	Category
Anse la Raye	S	Marigot	NS
Banannes	NS	Marisule	NS
Canaries	NS	Micoud	S
Castries	S	Monchy	NS
Choiseul	S	Praslin	NS
Cul De Sac	NS	River Doree	NS
Dennery	S	Roseau	NS
Gros Islet	S	Savannes Bay	NS
Laborie	S	Soufriere	S
Other minor sites in Vieux Fort area	NS	Vieux Fort	S

S = Sample site NS = Non sample site

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 the 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 1¼ inch.
- 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 access of new entrants to the pot fishery.

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 2003-2012

Table 3 gives a comparison of the annual total landings with that of the lobster landings (*P. argus)* from 2003 to 2012. Lobster recorded an average annual production of 16.5 ton.

Table 3: Lobster landings (tonnes) from 2003- 2012

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Landings (tonnes)	1447	1520	1386	1440	1508.7	1809.92	1856.90	1800.58	1692.65	1708.89
Lobster Landed (tonnes)	23.37	10.6	15.35	9.36	12.66	12.64	9.63	19.2	24.08	28.15

(Source: Department of Fisheries)

Collection of catch and effort statistics during 2003-2012

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.

Planned and Ongoing Research

Fisheries Sector Census

- To design, implement, monitor and evaluate any programme for further improvement in Fisheries Sector, the basic data on the fishery, its activities and the various species it targets are required. The aim of Fisheries Census is to collect detailed information on the Fisheries Sector so as to best inform sector development and management.

The specific objectives of the 2012 fisheries sector census are to:

i. review and evaluate the existing data and information system concerned with fisheries landings, fishing effort, processing and marketing of fish) which is pertinent to the administration and development of the fisheries in St. Lucia;
ii. conduct a field based assessment of the fisheries sector operators (fishers, vessels, gears, vendors, processors, etc) to verify the scope and nature of the current fishing fleet and operations as a basis of understanding the current status of the sector and updating the current fisheries data collection systems used to estimate fish catch and fishing effort estimations;
iii. propose improvements to the current data collection and analysis system giving special emphasis to sampling techniques and ensuring the an appropriate means of transitioning from the data and information provided by the current system and the revised system respectively;
iv. advise on the design of sample surveys or other feasible means to provide appropriate biological data, etc., for better fisheries stock assessment.

Enhancing Coral Reef Recovery

- The Government of Saint Lucia has collaborated with the World Bank to develop a Disaster Vulnerability Reduction Project (DVRP) which aims to measurably reduce vulnerability to natural

hazards and the adverse impacts of climate change in St. Lucia. The west and south east coasts of St. Lucia have extensive reef systems that have been declared Marine Reserves; understanding the general links between land use, sedimentation marine protection and coral health is fundamental to the management of these Marine Reserves. As such, this project will provide the information necessary to establish coral health baselines, collect information that can advise policy makers on the benefits of the interventions on land to reduce sediment, monitor global warming and climate change impacts, and provide alternative options to resource users.

Fisher Development Programme

- Development of Fish Quality Standards – development of quality standards and guidelines, develop training material in fish handling and quality standards, conduct research on current fish quality when landed and at point of sale.
- Consultation with conch fishers of Gros Islet following increased concern about incidents of decompression sickness and its potential on the social and economic impacts on the sector. This will include formal training of conch divers in Advance SCUBA techniques and First Response; and provision of first response equipment to selected certified, trained conch SCUBA divers.
- Development and Management of Fish Aggregating Devices – Deployment of FADS at various locations around the island in collaboration with fishers and fisher's co-operatives.
- Boat Master Training will provide the technical skills. (Outstanding is fishing techniques and fisheries management issues).

Enhancing Business Opportunities in Marine Aquaculture

Saint Lucia has focused on the growing of marine algae (commonly called 'seamoss') on ropes in Praslin, Bois Chadon, Canelle and Laborie. The scope for expansion and diversification within this sector is significant. The agriculture and fisheries sectors remain important to the development of the island's economy and continue to provide important sources of income-generation and employment, particularly in rural areas and communities.

The key priorities of the Government's development strategy are to halt any further decline in the agricultural sector and encourage agriculture, fisheries and wider economic diversification; to provide the enabling environment to foster a private sector-led growth, to boost tourism linkages with other sectors such as agriculture, to improve education and human resource development, to support the emerging informatics industry and financial services sector, and also encourage the adoption of appropriate technology as a means for achieving greater efficiency.

Activities under this project include: converting local seamoss production into a more commercially viable strain for the export market; capacity building and other aspects of business and organizational support; organizational assessment of the Praslin Seamoss Farmers Association (PSFA) and a critical analysis of the potential to develop and establish an appropriate representative body; business skills training and development of seamoss farmers.

Fisheries legislation and regulations

The primary legislation governing management of the island's marine resources is the Fisheries Act and Regulation Cap 7.15. The Fisheries Regulation specify conservation measures such as gear restrictions, fishing method restrictions, closed seasons and establishment of marine reserves.

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. Finally, lobsters smaller than 95mm carapace length are protected within the regulations.

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). Conch is mainly landed at two landing sites: Gros Islet located at the north of the island; and Laborie on the south west coast. Conch is 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 to 8.45 m, powered by outboard engines of 115 to 250 hp. Walker, (2003), reported that whilst conch is 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 conchs 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 to 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 2003- 2012

Table 4 gives an indication of the annual production of Queen Conch between 2003 and 2009 giving an average annual production of 39.25 tons during that period.

Table 4: Landings of conch from 2003to 2012 (Source: Department of Fisheries)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Landings (tons)	1447	1520	1386	1440	1509	1809	1856	1800.58	1692.65	1708.89
Conch Landed (tons)	47.5	45.6	42	34.7	18.2	39.8	34.39	28.29	39.41	62.59

Although conch does not contribute significantly to the total landings (Table 4), 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 2003- 2012
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 legislation provides 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.

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 to just over 60% of the annual landings by weight (Department of Fisheries, 2012) which is made up of a number of migratory species including dolphinfish (*Coryphaena hippurus)*; mackerel (*Scomberomorus* spp.*)*; Wahoo (*Acanthocybium solandri)*; blackfin tuna (*Thunnus 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.

Unlike the nearshore fisheries, such as lobster and conch, which are regulated at the national level under the Fisheries Legislation, 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 2003- 2012
Table 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 and the increased use of Fish Aggregating Devices (FADs).

Table 5: Pelagic Landings (tons) from 2003-2012

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Landings (tonnes)	1447	1520	1386	1440	1509	1809	1856	1800.58	1692.65	1708.89
Pelagic Landings (tonnes)	918	1053	844	986	1056	1021	1145	1164	1215	1097

(Source: Department of Fisheries 2012)

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 continues to train many fishers in the use of longline fishing (palang). 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.

Continued efforts in the development 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 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 2003- 2012

Pelagic Landings are collected from 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 6 below provides the landings of large pelagics in these groups for the period 2000-2012.

Table 6: Landings of Large Pelagics (tons) from 2000-2012

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
2009	485.76	195.21	464.61	8.72
2010	612.85	199.03	351.77	8.51

2011	541.25	196.57	472.72	2.70
2012	441.93	151.15	503.85	10.65

(Source: Department of Fisheries)

F*isheries 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 Legislation, the Department of Fisheries regulates sportfishing, 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.

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Annex 1

Primary Fisheries Legislation of Saint Lucia:

- The first official legislation in Saint Lucia was the Turtle and Fish Protection Ordinance Cap. 45 of 1911, which was replaced by the Turtle, Lobster and Fish Protection Act No. 13 of 1971. The latter was in turn replaced by the *Fisheries Act No. 10 of 1984.* The Fisheries (Turtle, Lobster and Fish Protection) Regulations No. 67 of 1987 were then established, which were replaced by the *Fisheries Regulations No. 9 of 1994*
- *Fisheries Act (No. 10 of* 1984) *and Regulations (No. 9 of 1994),* which are based on the OECS harmonized legislation, cover the establishment of a fisheries advisory committee, fisheries access agreements, local and foreign fishing licensing, fish processing establishments, fisheries research, fisheries enforcement and the registration of fishing vessels. This Act also specifies conservation measures such as prohibiting the use of any explosive, poison or other noxious substance for the purpose of killing, stunning, disabling, or catching fish; close seasons, gear restrictions and creation of marine reserves. It gives the Minister responsible for fisheries the authority to create new regulations for the management of fisheries as and when necessary.
- In 2001, technical assistance was provided by the United Nations Food and Agricultural Organisation to review the existing legislation. It takes into account more recent international fisheries agreements and the national requirements for fisheries management and development.
- A number of consultations were held with stakeholders and a proposed new Fisheries Act and Fisheries Regulations were developed. The draft Act and Regulations are in their final stages and have been submitted for finalisation by the Attorney General.

Other fisheries-related legislation:

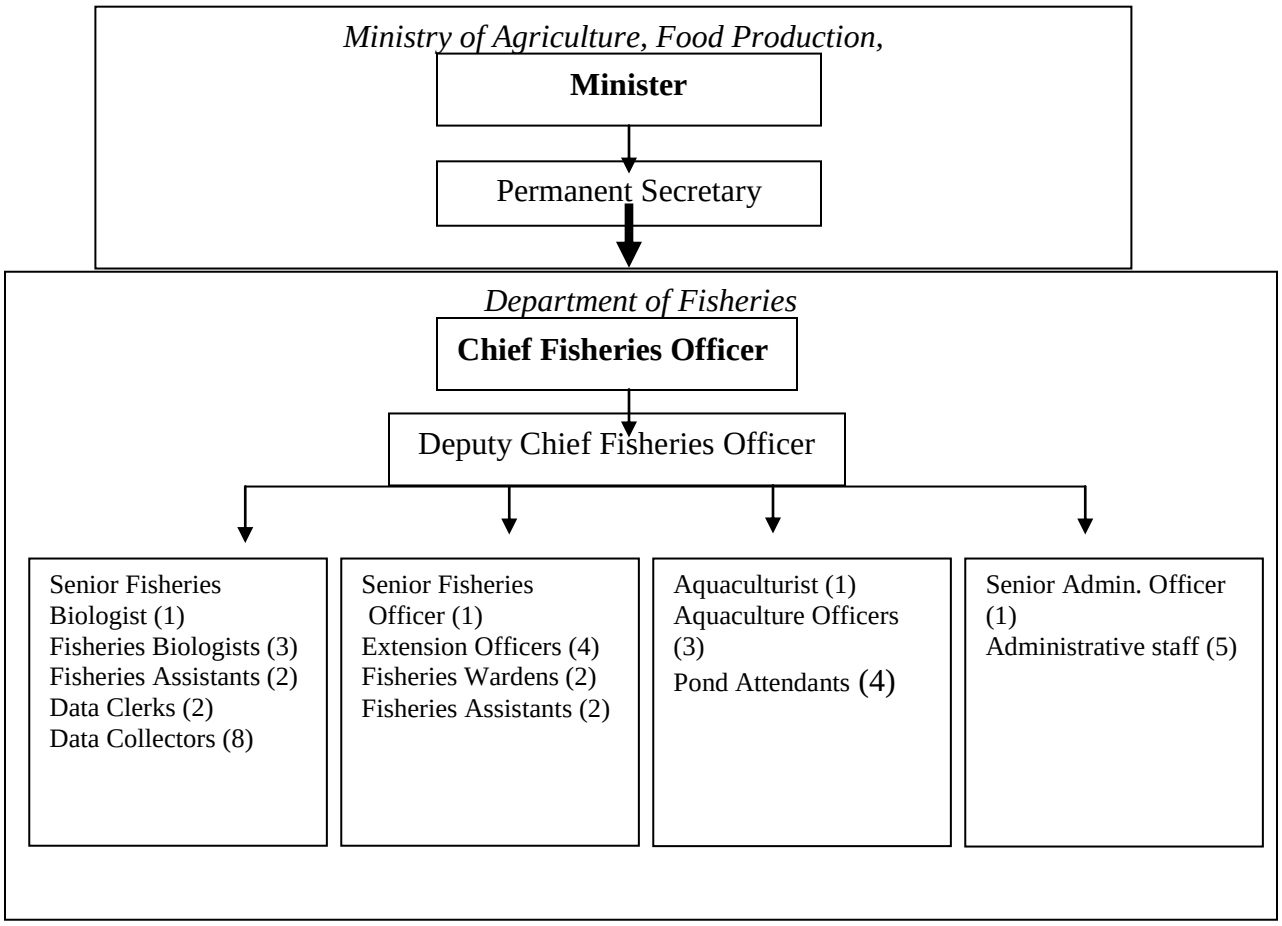
- *Forest, Soil and Water Conservation Ordinance* (1945): controls use of mangroves.
- *Crown Lands Ordinance* (1946): established the Crown Land Committee to review and make recommendations on the allocations/use of crown lands.
- *The Minerals Vesting Act* (1966): deals with the exploitation of minerals.
- *Land Development (Interim) Control Act* (1971): established a Development Control Authority to review and determine development plans.
- *Fishing Industry (Assistance) Act No. 33 of 1972 and Fishing Industry (Assistance) Regulations No. 25 of 1973:* provides for the granting of assistance to the fishing industry.
- *Pesticides Control Act* (1975): controls use of pesticides.
- *Public Health Act* (1975) *and Regulations:* provides regulatory oversight for sewage, industrial and solid waste disposal.
- *Saint Lucia National Trust Act of 1975:* deals with the preservation of areas of natural beauty/ historic interest, including submarine areas.
- *Wildlife Conservation Act* (1980): deals with the control of protected species.
- *Tourism Industry Development Act* (1981): promotes tourism development.
- *Water and Sewage Authority Act* (1984): regulates sewage treatment and disposal.
- *The Maritimes Areas Act No. 6 of* 1984: addresses some aspects of marine pollution.
- *Solid Waste Management Authority Act* (1996): makes provision for a Solid Waste Management Authority and details their function.
- *National Conservation Act (*1999): controls, maintains and develops beaches and protected areas.
- *Oil in Navigable Water Act* (cap 91): covers some aspects of oil pollution within the marine environment.
- *Fisheries (Snorkelling Licence) Regulations No. 223 of 2000:* regulates commercialised snorkelling activities.

Governmental agencies (with key involvements in fisheries and marine related areas):

- *Ministry of Agriculture, Lands, Forestry and Fisheries* is the lead governmental agency responsible for fisheries development and management. The *fisheries management (administration) unit* within the Ministry is the *Department of Fisheries*.
  Key Administrators are:
  Minister: Honourable Ezekiel Joseph
  Permanent Secretary: Mr Hubert Emmanuel
  Chief Fisheries Officer: Mr. Rufus George

  The Department of Fisheries has a staff complement of approximately 40, including 8 data collectors. Staff members have expertise in the fields of fisheries extension, stock assessment, marine and fisheries biology, coastal zone management, fishing gear technology, fisheries management, marine protected areas and public education. The Department is equipped with a number of vessels which are used for enforcement, research and experimental fishing. Many staff members are trained as SCUBA divers.

  The following figure illustrates the structure of The Department of Fisheries:



NATIONAL REPORT OF ST. KITTS AND NEVIS

Shawn Isles
Department of Fisheries, Prospect Estate, St. John's, Nevis, St. Kitts & Nevis

1.0 DESCRIPTION OF NATIONAL FISHING INDUSTRY

Over the years, the fishing industry of St. Kitts and Nevis has been managed by major fish species. This gave rise to five major fisheries management objectives using each major fish species/family as a separate category. These are Queen Conch (*Strombus gigas*), Caribbean Spiny Lobster (*Panulirus argus*), small coastal pelagic, large or ocean pelagic and reef/bank and slope fisheries.

The Department of Fisheries in Nevis has maintained the same method of data collection and analysis which is based upon the CARICOM region data system CARIFIS. In Nevis, data collection is done on a systematic census schedule. Information from all vessels landing at the selected sites is captured and stored in a Microsoft Excel file due to the difficulties experienced using CARIFIS. Quarterly reports on estimates of landings are produced. Data is submitted to the Ministry and the Department of Statistics.

The mission of the Department of Fisheries is to assess, regulate and promote sustainable use of the fisheries resources in Nevis, and to manage the harvesting of stocks, to ensure food security, to promote aquaculture and to encourage conservation practices. The department encourages the collaboration of all stakeholders with regards to marine management. It provides technical support to the Fishermen's Cooperative Society and also seeks sources for the training of the management and staff of the Fishermen's Cooperative in the area of quality control and management operations.

2.0 COUNTRY PROFILE

Legend

1… Basseterre East	5… Dieppe Bay	9… Jones Bay
2… Basseterre West	6… Charlestown	10… New Castle
3… Old Road	7… Jessups	11… Long Haul
4… Sandy Point	8… Cotton Ground	12… Indian Castle

Landing sites: 11 on St. Kitts and 7 on Nevis

There are three (3) major sites which account for over 75% of the total vessels in Nevis.

The landing site with the most vessels is Charlestown (CH), which is north-west of the Charlestown Fisheries Complex. There are approximately 45 registered vessels and over 90 fishers operating from that site.

On St. Kitts there are five (5) major sites which account for nearly 70% of the total vessels on St. Kitts. There are approximately 679 fishers on St. Kitts (about 30% full-time); and 250 fisheries on Nevis (about 70% full-time).

Fisher Organizations

The Department of Fisheries in St. Kitts and in Nevis work very closely with the four (4) established fisher organizations. They are:

1. Sandy Point Fishermen Cooperative Society (St. Kitts)
2. Old Road Fishermen Marketing Supplies Cooperative Society (St. Kitts)
3. Dieppe Bay Fishermen Cooperative Society (St. Kitts)
4. Nevis Fishermen's Marketing and Supplies Cooperative Society (Nevis)

3.0 MARINE RESOURCE MANAGEMENT

The Department of Fisheries is guided by a primary legislation, which is the Fisheries Act (1984) and the Fisheries Regulations (1985). The Regulations cover: The establishment of a Fisheries Advisory Committee, fisheries access agreements, local and foreign fishing licensing, fish processing establishments, fisheries research, fisheries enforcement and the registration of fishing vessels, amongst other activities.

The Department also works with other Agencies (JICA, TNC, CRFM, etc.) for the management of the marine resources.

Data collection and analysis is based upon the CARICOM Region Data System, CARIFIS.

3.1 Fish Landings

Fish landings are collected and reported according to species (Demersal or Reef, Coastal Pelagic and Ocean Pelagic).

The reef species are fished with traps and hand lines at various depths throughout the sea shelf area.

The ocean (large) pelagic fishery target species are highly migratory, so catches are seasonal and are harvested by commercial and sport fishermen.

The coastal pelagic fishery is mainly fished near shore areas and mostly caught by seines used on the beach or offshore in a purse fashion.

Table 1 below shows the total landing by species over the period 2008-2012 in Nevis and 2004-2010 in St. Kitts.

Table 1: Annual landings by species in Nevis

Species	2008	2009	2010	2011	2012	Total
Demersal Species	214,110	223,160	209,023	227,382	22,359	896,034
Ocean Pelagic	129,000	78,839	61,655	225,735	43,310	538,539
Coastal Pelagic	35,005	8,237	9,603	48,956	16,018	117,909
Conch	149,070	157,202	76,131	88,385	8,564	479,352
Lobster	38,100	52472	25,926	61,696	3,435	181,629
Total Estimated	**565,285**	**520,000**	**382,338**	**652,154**	**93,686**	**2,213,463**

Annual landings by species in St. Kitts

Species	2004	2005	2006	2007	2008	2009	2010	Total
Demersal Species	381,690	355,987	249,710	290,430	384,150	366,760	299,280	2,709,697
Ocean Pelagic	136,760	263,320	120,230	131,380	153,810	107,970	147,390	1,060,770
Coastal Pelagic	75,370	107,376	49,170	65,770	125,050	51,380	29,150	503,266
Conch	320,060	229,063	192,800	203,420	197,260	176,060	137,390	1,456,053
Total Estimated	**913,790**	**955,746**	**611,910**	**691,000**	**860,270**	**702,170**	**613,210**	**5,348,096**

3.2 Fisheries Management and Conservation Activities

3.2.1 Large (Ocean) Pelagic Fishery

Objective: Promote the positive aspects of the traditional nature of this fishery and encourage new entrants.

Catches of Pelagic are seasonal and often target the dolphinfish (*Coryphaena hippurus*) and tunas (Scombridae). Large Pelagics are harvested by commercial and sport fishermen mainly by trolling. The commercial fishery is conducted by about 25 fishers using fifteen vessels, outfitted with trolling hooks and lines. Most vessels have a crew of 2-3 persons, including the captain. Trolling lines are normally 80-100 lbs test with a single hook. Artificial lures are sometimes used especially for the tuna and mackerel. Fishers prefer to use ballyhoo or flyingfish to catch dolphinfish. Some fishers have been using Fish Aggregating Devices (FADs) in conjunction with long lines to catch yellowfin tuna.

3.2.2 Small (Coastal) Pelagic Fishery

Objective: Promote the positive aspects of the traditional nature of this fishery and encourage new entrants.

Fish are mostly caught by seine nets. Seining is often done close to beaches. Beach seining, where nets are hauled onto the beach is discouraged as large numbers of juvenile fish are often taken and discarded. Gill nets (fixed or drifting) are used sometimes for catching jacks. Cast nets are also used along the beach to catch fry. Fish are sold fresh at the landing sites by fishermen or vendors. Market demand may limit catches at certain times. Inshore pelagics are also used as bait in long line, trolling and trap fisheries.

Five vessels using seine nets are involved in this fishery and approximately 30 persons are employed in this fishery on a regular basis.

3.2.3 Reef Fishery

Objective: Promote stock recovery.

The species targeted by the fishery are those demersals that live within the ecosystem of coral reefs and are taken with traps, hand lines, gill nets and spear guns; and are fished at various depths throughout the extensive shelf area. The quality of the catch ranges from miscellaneous reef fish (more commonly taken in shallow areas) to snappers and groupers (more commonly taken in deeper areas). The high local demand for reef fish of any size causes the fishery to be susceptible to overfishing.

3.2.4 Lobster Fishery

Objective: promote stock recovery.

The lobster is part of the reef fishery, but has been separated by management due to its importance to the economy and very long life cycle. Lobsters are taken in the same traps that catch reef fish and to a lesser extent, by divers. Lobsters are usually caught in small numbers and stored in holding cages until they are sold. Most of the catch is exported but sales to local restaurants and hotels are increasing.

3.2.5 Conch Fishery

Objective: Promote stock recovery.

This fishery is carried out by SCUBA and free divers usually over sea grass beds and coral rubble, with some fishers operating without permits and others being uncertified divers. The majority of their fishing is undertaken from small wooden open fishing boats with an average length of 5 m, with motors ranging from 25 to 40 HP. Each boat fishes with approximately three persons. Conch populations are considered to be heavily exploited within the Federation, especially on the leeward side of the islands. However, conch are beginning to reappear in near shore areas in response to the concentration of fishing effort in deeper waters and the slowdown in exports to EU markets. This is the major export marine product for St. Kitts and Nevis. There is a licensing system in place for conch fishers and exporters.

3.3 Development Activities

The Department of Marine Resources sees the vision of EAF for the Federation as one to promote an industry capable of meeting the present demands for marine resources and be able to sustain equilibrium between economic and environmental concerns for the foreseeable future, while minimizing food security uncertainties and enhancing environmental benefits in St. Kitts and Nevis.

The new vision sees greater emphasis being placed on habitat management and protection rather than actual activities to increase landings. The premise is that the primary source of production is protected and enhanced; this will increase secondary production thus increasing landings. Similarly, all other stakeholders should be given sufficient opportunity to contribute to the new ecosystem management process.

NATIONAL REPORT OF ST. VINCENT AND THE GRENADINES

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Fisheries Division
Bay Street, Kingstown, St. Vincent & the Grenadines

1.0 FISHERY AND FLEET DESCRIPTION

The Fishing industry of St. Vincent and the Grenadines is small-scale and artisanal, using traditional gear, methods and vessels. The fishing vessels are open and powered by outboard engines. These vessels exploit both oceanic and inshore pelagics as well as the shelf and deep slope demersals. Fishermen are daily operators, who go out to sea in the early morning and return to land in the late afternoon or evening.

St. Vincent and the Grenadines also have a high seas fishing fleet which are foreign-owned vessels, registered in St. Vincent and the Grenadines. The high seas fishing fleet is of an industrial nature, harvesting tuna and tuna-like species. There are thirty-two (32) such vessels fishing in the Atlantic.

Table 1: Description of fishery in SVG. Source: Fisheries Division Data Unit 2007 -2011

GROUP	DESCRIPTION
Offshore Pelagics	These are fast swimming, migratory fish that inhabit the deep sea. Species include tuna, billfish, dolphin and kingfish. These species contribute approximately 20.5% of the total estimate of fish landed over the five year period (0.4 million pounds annually), realizing annual value of 3.2 million EC dollars.
Inshore Pelagics	These are nearshore fish found in mid-water or surface water in sheltered bays. They are generally smaller than offshore pelagics, e.g. jacks, robin and dodger. On average these species contribute approximately 45% of the landings to the local market (0.83 million pounds annually), realizing an annual value of 2.9 million dollars.
Demersals	These are fish dwelling at the sea bottom, e.g rock hind, blem (queen snapper), groupers and parrotfish. These species contribute approximately 18% (0.34 million pounds annually) to the local market, realizing an annual value of 2.9 million dollars.
Shellfish	Shellfish are marine species usually living at the sea bottom and protected by a shell. E.g lobster, conch. Average annual contribution to landings is 3.5% (0.064 million pounds) with an average value of 0.7 million dollars. However, shell fish contribute an estimated 24% to average annual exports.
Sharks	Sharks are fast swimming migratory fish that inhabit the deep sea and have a cartilaginous skeletal structure. Sharks are not particularly targeted in the fishery, however, by catch could be significant especially in the longline fishery. Estimate annual landing for shark is less than 18,000 pounds contributing about 1% of landings to the local market.
Turtles	Turtles are reptiles that spend the majority of their lives at sea; however, the females come on land to lay their eggs. Marine sea turtles are taken mostly opportunistically by fishers. Estimated annual landings are 20,000 pounds. Poaching and catches out of season would probably contribute to this figure being higher.
Whales & Porpoises	These marine mammals are migratory, or pelagic in the case of porpoises. They give suckle to their young e.g humpback whales and blackfish. There is a traditional significance with respect to the harvesting of marine mammals in St. Vincent and the Grenadines. Humpback whales are targeted in Bequia while the pilot whale and other porpoises are targeted in Barrouallie and by some Kingstown Fishers.

Table 2: Description of the local fishing fleet, Source: Fisheries Division, CARIFIS 2011

Vessel Types	Description	No. of Vessels
Flat Transoms (Bow & Sterns	These are commonly called bow and stern or dories. They are open boats of 3 – 6 m (11- 27ft) in length. They are constructed from wood or marine plywood which in many cases are covered by epoxy or fiberglass, which provides a waterproof covering. They are often powered by one or two outboard gasoline engines ranging from 14 – 115 horsepower. Oars maybe the only form of propulsion on rare occasions. These vessels are used mainly in the lobster and conch fishery in the Grenadines.	230
Pirogues	These are open boats with a pointed bow and flat transom, however, the bow is much higher that of the flat transom boats and they tend to be slightly larger, ranging from 7 – 10 m (19 – 30 ft) in length. They are constructed from fiberglass and powered by one or two outboard gasoline engines ranging from 40-85 horsepower. These vessels are predominantly used in the trolling and demersal fisheries.	390
Double enders	Double enders or "two bows" are open wooden boats ranging from 3 – 9 m (10 – 29 ft) in length. Both ends of the boat are shaped like the bow of a boat. In most cases the only means of propulsion are oars, but occasionally, they may be powered by a small outboard gasoline engine specially rigged at one end of the boat. These engines range from 6 – 48 horsepower. These vessels are used mainly in the beach seine fishery.	69
Multipurpose	In SVG these vessels range from 34.7 ft – 48.5 ft in length. The main type of longliner is a Yanmar type made of glass reinforced plastic (GRP) powered by inboard diesel engines ranging from 90 – 190 hp. They are multi-purpose in nature and designed to operate up to 150 nautical miles from the islands with a 3 to 5 day stay at sea. These vessels are used primarily for tuna longline fishing, but may be utilized for trolling, bottom longline fishing, pot fishing and angling.	30
Others	These includes, canoes, rowboats etc.	18

**The CPUE for most of the vessels and fishery type is calculated using the gear, the number of trips per year and the sample weight in lbs per year.*

2.0 STATISTICS AND SAMPLING

Table3: Quick Facts

Per Capita Consumption	16.7 lbs annually (Average fish landings 2007-2011*).
Socio-Economic	1.7 % contribution to GDP 2,500 full and Part time fishermen 500 vendors, traders, gutters etc. 750 registered fishing vessels (CARIFIS Jul 2011) Average cost of fishing vessel with gear: $15,000.00 Estimated investment in the fisher: $10 million
Fish Landings and Export	Approximately 1.8 million lbs of fish landed annually (2007-2011*) Approximately 0.2 million lbs of fish exported annually (2007-2011*)
Physical Characteristics	Land area—345 square kilometers EEZ—27,500 square kilometers Shelf area—7,800 square kilometers

*Source: Fisheries Data unit

The level of infra-structural development at the various landing sites throughout the state has improved significantly over the last two decades. In 1992 the New Kingstown Fish Market (NKFM) was the only landing site with marketing facilities such as, vending stalls, ice machines, chillers, etcetera. Today, similar facilities now exist in Paget Farm, Bequia; Britannia Bay, Mustique; Friendship, Canouan; Clifton, Union Island; Calliaqua, Barrouallie, Chateaubelair and Owia, St. Vincent.

The landing sites are zoned and categorized (stratified). There are seven zones and thirty six (36) landing sites. Categorically, a site is designated as either primary, secondary or tertiary. The assignment into any one of these categories is based on three main variables, i.e. the number of fishing boats that regularly land fish at the site; the amount of fish landed; and the level of infra-structural development. There are two (2) primary sites (Kingstown and Barrouallie); fourteen (14) secondary and twenty (20) tertiary sites. In addition to these on-shore landing sites, several trading vessels take fish directly from the fishermen and they are also classified as landing sites.

The catch and effort data follows a stratified sampling methodology. In this approach the sampling frame (which is all the identified fish landing sites within the country) is first partitioned into groups or strata, and the sampling is then performed separately within each stratum. This method combines the conceptual simplicity of simple random sampling with potentially significant gains in reliability.

The sampling units (landing sites) are stratified prior to sampling into three groups (primary, secondary and tertiary) based on the variables mentioned above. The technique of simple random sampling is then used to select the days of the month each landing site is sampled. Sampling is not carried out on Saturdays, Sundays and major holidays, nevertheless, every day is considered as a potential fishing day.

This simplifies data analysis and does not seem to be a great source of error since fishermen fish whenever they can regardless of what day it is.

An estimate of the amount of fish landed in the country is obtained by summing the totals of all the estimates for the individual landing sites.

The high seas tuna fishing vessels flagged by St. Vincent and the Grenadines, and operating within the ICCAT Convention Area, generally land and trans-ship their catches at two major trans-shipment ports in Trinidad and Tobago. While there is ongoing collaboration and good communication with ship owners for obtaining fishery statistics, St. Vincent and the Grenadines sees the need to establish an independent port sampling programme to verify landings and trans-shipping activities at these ports. For this purpose, St. Vincent and the Grenadines have submitted a proposal to ICCAT to establish a 12-month sampling programme at Trinidad and Tobago's trans-shipment ports.

Table 4: Summary of the St. Vincent High Seas fleets. (Source: Fisheries Division)

Type of data & information	
Numbers of vessels	32 (2011)
Number of vessels > 24 m LOA	14 (2011)
General fishing areas	Two main areas: i) Between 5-20^{o} N and 30-60^{o}W (ii) Between 20-30^{o} S and 30-45^{o}W
species landed 2000-2010	Yellowfin tuna, Albacore, Big Eye tuna, Skipjacks, Sail fish, Kingfish, Dolphin fish (Mahi mahi), Spear Fish, Sword fish.
Average annual catches (MT) of major tuna species 2000-2010	3,404
Key landing/ trans-shipment locations	Port of Spain and Chaguaramas (Trinidad and Tobago)

3.0 NATIONAL FISHERIES POLICY AND MANAGEMENT OBJECTIVES

The overall policy for the fisheries sector is the sustainable use of all fisheries resources to maximize benefits to all Vincentians in the present and future. The strategies and policies concerning fisheries management and development will be under continuous review with the involvement of all stakeholders. Management regimes will serve to enhance the opportunities for fisheries to play a greater role in national food supply, thereby helping to alleviate under-nutrition and contribute to national food security. Emphasis will continue to be placed on the protection of the marine environment, in an effort to maintain and enhance its carrying capacity. Fisheries development goals and strategies will ensure the betterment of the socio-economic conditions of all stakeholders/beneficiaries within the Vincentian population. Fisheries development and management will take full account of the present and potential contributions from marine fisheries. Essential factors of production such as fishing boats, gear and technology, skilled personnel and research capability will be considered.

3.1 Fisheries Management Objectives

- Develop and increase the potential of living marine resources to meet human nutritional needs, as well as social, economic and development goals of the sector.

- Ensure that the fishing industry is integrated into the policy and decision-making process concerning fisheries and coastal zone management.

- Take into account traditional knowledge and interests of local communities, small-scale artisanal fisheries and indigenous people in development and management programmes.

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

- Promote the development and use of selective fishing gear and practices that minimize waste in the catch of target species and minimize by-catch of non-target species.

- Ensure effective monitoring and enforcement with respect to fishing activities

- Protect and restore endangered marine species

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

- Promote scientific research with respect to fisheries resources

- Cooperate with other nations in the management of shared or highly migratory stocks.

3.2 Management Objective by Fishery

Table 5: Fishery Types and Management Objectives

FISHERY	TARGET SPECIES	OBJECTIVES
Shallow Reef Fishes	Hinds, parrotfishes, squirrelfishes, grunts, surgeonfishes, triggerfishes	To promote stock recovery by • encouraging fishers to fish further off-shore • continue to enforce the fisheries laws as it relates to destructive fishing practices • not increasing the current effort of harvest
Deep Slope Fishes	Snapper, groupers	Maximize catches within the limits of the potential yield
Coastal Pelagics	Jacks, herrings, silversides, anchovies, ballyhoo, robins, small tunas	Encourage co-management of the fishery Maintain artisanal nature of the fishery
Large Pelagics	Tunas, billfishes, dolphinfish, wahoo, sharks, swordfish, whales, porpoises	Cooperate with member of ICCAT particularly Caribbean states to assess, protect and conserve the large pelagic resources

		Promote development of the commercial and sport fisheries.
Lobster	Spiny lobster	Rebuild stocks in depleted areas by continuing to observe • the Closed season. • Conservation areas • Size limits • Restrictions on moulting • Berried lobsters • Certain harvesting practices ("Scrubbing")
Conch	Queen conch	Rebuild stocks in depleted areas by continuing to observe • Minimum size limit • Closed areas

4.0 RESEARCH

The National Sea Turtle Conservation Programme aims to conserve the present nesting and foraging populations of the sea turtle in SVG.

In August 2013 the division will be embarking on an abundance and distribution survey of conch fishing areas next to Union Island (one of the Grenadine Islands). This will be done as part of the training workshop in underwater survey methods for evaluating the status of *Strombus gigas* (Queen conch) stocks funded by the ACP Fish II project. Also monitoring and data gathering will be done on two artificial reefs which are located in the Grenadines. One of the artificial reefs is located in Bequia and the other in Mustique.

The re-introduction of the FAD Programme will see five Fish Aggregating Devices deployed in the waters of St. Vincent and the Grenadines in an effort to reduce the fuel consumption and search times of fishers as well as increase their fishing effort while allowing them the ability to land fresher fish.

5.0 LEGISLATION AND MANAGEMENT REGULATIONS

The Fisheries of St. Vincent and the Grenadines has the following legislation to assist with the management and development of the sector.

- The Maritime Areas Act (1983) – Act No. 15 of 1983, declares and establishes the marine area of St. Vincent and the Grenadines. This enables the State to define the following areas (1) Internal waters (2) Archipelagic waters (3) Territorial sea. (4) Contiguous Zone (5) Exclusive Economic Zone (EEZ) (6) Continental Shelf (7) Territorial Extent and (8) Safety Zones.

- The Fisheries Act (1986) and Regulation (1987), which form part of the OECS harmonized legislation, covers, Fisheries access agreements, local and foreign fishing licensing, fish processing establishments, fisheries research, fisheries enforcement and the registration of fishing vessels. The legislation also specifies conservation measures such as prohibiting the use of any explosive, poison and other noxious substance for the purpose of killing, stunning, disabling, or catching fish; closed seasons, gear restriction, creation of marine reserves. The legislation gives the Minister responsible for fisheries, the authority to create new regulations for the management of fisheries when necessary.

- Fish Processing Regulations of 2001 drafted in response to international pressure for monitoring and controlling the quality of fish and fish products leaving and entering SVG. The legislation makes provisions for the control of marketing, handling, transporting and storage of fish and the operation of fish processing establishments.

- The High Seas Fishing Act of 2001, which provides the legal basis for the regulations of St. Vincent and the Grenadines registered vessels fishing on the High Seas. The act provides for constant monitoring of these fishing vessels in an effort to produce accurate information, which under provisions of the act is mandatory in order to be compliant to the International Convention for the Conservation of Atlantic Tunas (ICCAT).

- Other Fisheries Related Legislation – Town and Country Planning Act (1992) – Coastal Zone Management, Forestry Act (1945) – Mangrove Protection, Mustique Conservation Act (1989) - Management of the conservation areas on and around Mustique.