EUROPEAN UNION

The Effects of Liberalization and Trade Related Policies on Fisheries and Measures Required for their Sustainable Development in the CARIFORUM / CARICOM Region

PART B
COUNTRY PROFILES

Project Commissioned

by the

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PART B

Annex

Country Profiles

Overview

Much of the data and other information on the fishery sector collected at the national level were collated, analyzed and presented as an annex to the main report.

In the profiles we provide the following:

- Some general background information in the context of fishery resource
- Trade policies
- Legislation and regulations
- Fishery management systems
- Fishery trade statistics, mainly exports and imports as well as trends
- Pattern of resource exploitation
- Approaches to quality assurance and food safety
- Processing and marketing

These descriptions include a list of persons consulted during the conduct of field investigations. As can be expected, the scope, depth and rigour of the coverage of the profiles vary considerably. This no doubt reflect the quality and accuracy of the information generally available and accessible through published reports and extracted from interviews with fishery technicians, administrators and policy makers. Further, given the brevity of the field visits, we were unable to undertake widespread consultation and research required for an exercise of this nature. Nevertheless, we accept responsibility for any misrepresentation of the information contained in these profiles. Translation difficulties were minimal. Fishery data for the Caribbean seem to be migratory as the commodity in its natural habitat.

We begin this section with a brief profile of the fishery sector in Jamaica, followed by Guyana, Belize, The Bahamas and Suriname. The profiles written in this section draw heavily from

documents and notes submitted to the consultants by various countries. We remain thankful for the submissions and cooperation given by staff of the fisheries departments visited during the field investigations.

Chapter 8

Profile of the Fishing Industry in Jamaica

8.1 Background

Jamaica has a maritime space of 274,000 sq km, approximately 25 times larger than its land area. The island's coastline is approximately 1,022 km in length, with harbors, bays, beaches, estuaries, mangrove swamps, rocky shores, cays, coral reefs and lagoons. It has a tropical maritime climate impacted by the northeast trade winds. The country's 1999 GDP was USD 6,328.34 mn; agriculture GDP was 14.6% and fisheries contribution to agricultural GDP estimated at 4.04%.

The fishing industry comprises the following areas: (a) the Inshore (coastal) fishery (b) the Offshore (deep-sea) fishery, (c) the Cays (keys) fishery and (d) the Pond Fish Culture. Commercial marine harvests comprise of industrial (conch, lobster, deep slope fish and reef fish) artisanal (pelagics, reef fish, shrimp, conch, lobster) and sport (pelagics and reef fish).

8.2 Participation in International Trade Negotiations

Jamaica participates actively in CARICOM and at the level of the World Trade Organisation (WTO) in international trade negotiations. However, stakeholders are often not enlightened about the technical workings of trade agreements and their impact on the further development of the fishing industry.

8.3 Legislation and Regulation

The following legislation relates to/or impact on the fishing industry of Jamaica:

(i) The Fishing Industry Act (1975)
(ii) The Fishing Industry Regulations, 1976
(iii) The Natural Resources Conservation Authority Act (1995)
(iv) The Morant and Pedro Cay Act
(v) The Maritime Area Act (1996)
(vi) The Exclusive Economic Zone (EEZ) Act (1991)

(vii) The Wildlife Protection Act (1951)

(viii) The Beach Control Act (1956)

(ix) The Fishing Industry (Conservation of Conch {Genus Strombus}) Regulations, 2000

(x) Aquaculture, Inland and Marine Products and By-products Act (1999).

(xi) The Fishing Industry [Conservation of Conch (*Genus Strombus*)] Regulations 2000.

The Fishing Industry Act guides the general administration of the fishing industry and makes provision for fishery protection. Currently, there are close seasons for conch (July 31 - January 5) and lobster (April 1 - June 30), designated fish sanctuaries (Bogue Lagoon); size / maturity (harvesting juvenile fish and conch is prohibited) and reproductive catch (harvesting 'berried' lobster is prohibited) restrictions. The Wildlife Protection Act also protects the industry through prohibition of destructive fishing methods and discourages capture of immature fish. The Natural Resources Conservation Authority Act provides for the establishment of marine parks and protected areas – Montego Bay Marine Park, Portland Bight Protected Area, Port Royal Protected Area, Negril Marine Park and Ocho Rios Marine Park.

The Aquaculture, Inland and Marine Products and By-products Act (1999) addresses the health and safety aspects of industry products. It focuses on the health and safety requirements of the EU market. In practice there are a number of systems and programmes designed to ensure compliance with EU directives. These include the following:

(i) The Environmental and Residue Monitoring Programme - designed to ensure compliance with European Council Directive 91/492/EEC and other international food and safety requirements for marine products[1].

(ii) The national residue-monitoring programme – designed to ensure compliance with European Union directives 91/492/EC and 91/493/EC for export of fishery products to the EU markets. The plan permits random testing of imported and domestic products and by-products for residues defined in EU council directive 96/23/EC.

(iii) The Targeted Testing Scheme (Tilapia Testing Scheme, and the Conch Testing Scheme), designed to ensure compliance with EU Safety Directives 91/492/EC and 91/493/EC for the export of fishery products to the EU.

[1] Source: Harvest and Post Harvest Handling in the Jamaican Fishery Sector

(iv) The Conch Testing Scheme involves monitoring / testing live conch and seawater for dinoflagellate and heavy metals.

8.4 Fishery Management Systems

The Jamaican fishery has been described as "coral reef fishery"; most of the species harvested being demersal and deep slope reef finfish.

The following management objectives have been set for the Jamaican fisheries:

(i) To rehabilitate shallow shelf and reef fisheries to sustainable levels within the context of coastal zone management and conservation-oriented fishing practices;
(ii) To prohibit fishing effort on spawning aggregations and protected areas for the deep-sea fishery where these species normally inhabit during early life stages;
(iii) To ensure the viability / sustainability of coastal pelagics through maintaining and enhancing habitats and protecting nursery areas;
(iv) Sustainable development of the large pelagic fishery and cooperation with other Caribbean states to assess, protect and conserve the fishery resource;
(v) To restore/rehabilitate lobster fishery through protection of lobsters as well as protection and enhancement of their habitat;
(vi) To ensure optimum sustainable yield of conch and develop the fishery in other areas; and
(vii) To ensure sustainability and full efficient use of the shrimp fishery.

8.5 Status of Fishery Resource

The Fisheries Division had 14,756 fishermen and 4,324 boats on register at April 2004.

8.6 Trade Statistics

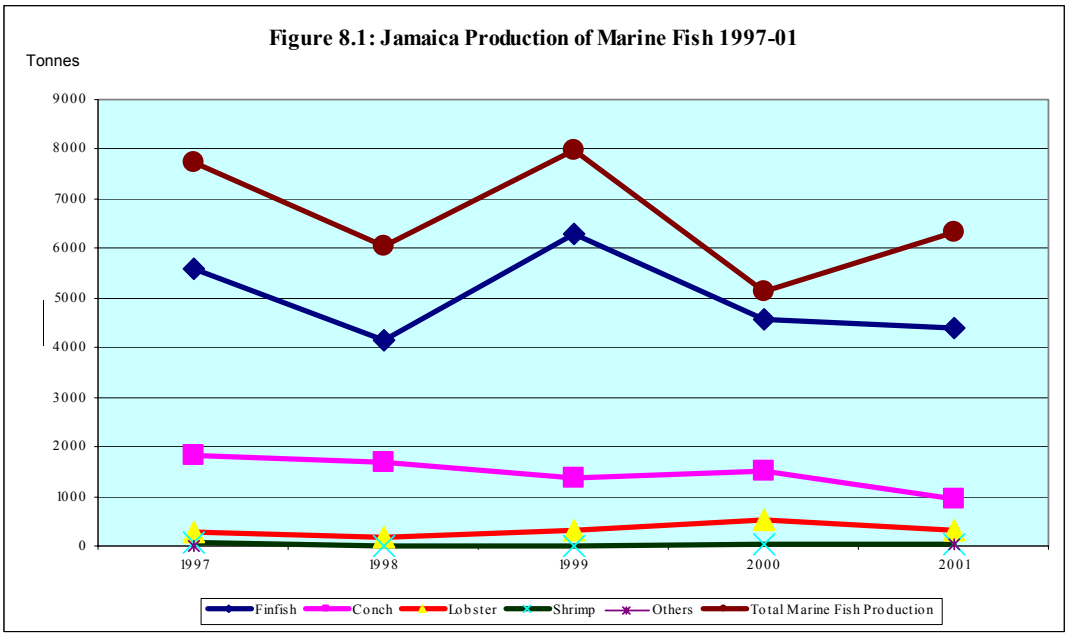
The total fish production was estimated at 7282.63 tonnes in 2002 and 6020.36 tonnes in 2003. Disaggregated production data for the period 1996 to 2001 showed a declining trend: total marine fish production declined from 7746.87 tonnes in 1997 to 6327.84 tonnes in 2001 as seen in Figure 8.1 and Table 8.1. Finfish production declined from 5,578 tonnes in 1997 to 4,399 in 2001;

however lobster showed a marginal increase from 269.63 tonnes in 1997 to 308.92 tonnes in 2001.

Data from the Ministry of Agriculture show that volume of exports also declined from 3,180.57 tonnes in 1997 to 956.0 tonnes in 2001 (Table 8.2). The average total fishery exports over the period 1998 – 2000 was valued at USD 13.1 mn, the majority comprising of HS 0306 Crustaceans (USD 6.8 mn) of which 92% was shipped to the USA and HS 0304 Fish Fillet valued at USD 2.3 mn to the EU (Table 8.3).

Data on fishery imports show that Jamaica imported an average of USD 40.7 mn or 15,198 tonnes per annum over the period 1998 – 2000. More than 50% of total imports was comprised of HS 0305 Salted and Smoked Fish valued at USD 22.5 mn, followed by HS 0303 Frozen Fish valued at 12.1 mn or 7,228 tonnes (Table 8.4). Imports of fishery products in 2001 were estimated at USD 59.1 mn while exports were estimated at USD 11.7 mn.

Figure 8.1: Jamaica Production of Marine Fish 1997-01



Source: Ministry of Agriculture Jamaica

Table 8.1: Jamaica Marine Capture Fishery Production 1997 – 2001 (tonnes)

	1996	1997	1998	1999	2000	2001
Finfish	12477.72	5578.75	4160.98	6283.74	4585.55	4399.95
Conch	1432.00	1821.20	1700.00	1366.00		946
Lobster	394.14	269.63	169.66	329.90	517.3	308.92
Shrimp	180.91	67.04	14.54	4.49	36.67	38.5
Others		10.25				51.38
Tilapia		4200.00	4300.00	4500.00	4500.00	5000.00
Total Marine Fish Production	14484.77	7746.87	6045.18	7984.13	5139.52	6327.84
Total Tilapia Production		4200.00	4300.00	4500.00	4500.00	5000.00
Total Fish Production		11946.87	10345.18	12484.13	9639.52	11327.84

Source: Ministry of Agriculture Jamaica

Table 8.2: Jamaica Export of Marine Fish Products (1997 – 2001)

	Quantity (kg)	Value ($J)
1997	3,180,477	547,390,847
1998	2,536,716	538,817,647
1999	1,936,580	572,603,213
2000	840,459	427,254,801
2001	956,013	437,912,645

Source: Ministry of Agriculture Jamaica

Table 8.3: Jamaica Export of Marine Fish Products and Major Destinations (1998 – 2000 Av)

Item / Product		Average		Export Destinations (%)						
		Value ('000 US $)	Volume (Kg)	USA	EU	Canada	Latin America	Asia	CARICOM	Other
0301	Live fish.	**52.3**	**10231.3**	96	2				2	
0302	Fish, fresh or chilled, excluding fish fillets	**1399.7**	**336557.0**	26	65	2			5	2
0303	Fish, frozen, excluding fish fillets	**170.3**	**64059.0**	10	85	2			2	1
0304	Fish fillets and other fish meat	**2254.7**	**297895.3**	54	34	12				0
0305	Fish, dried, salted or in brine; smoked fish,	**4.3**	**971.3**	69		8			15	8
0306	Crustaceans, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine;	**6,815.0**	**574,937.3**	92	2	4	1	1		0
0307	Molluscs, whether in shell or not, live, fresh, chilled, frozen, dried, salted or in brine;	**2,397**	**483,080**	92	4	2	2			0
	Total	**13093.3**	**1767731.2**							

Source: Hemispheric Database

Table 8.4: Jamaica Imports of Marine Fish Products and Major Sources (1998-2000 Av)

HS Code	Item / Product	Values ('000 US $)	Volume Kg	Source of Imports (%)						
				USA	EU	Canada	Latin America	Asia	CARICOM	Other
0301	Live Fish.	2.33	251.33	2				98		
0302	Fish, Fresh Or Chilled, Excluding Fish Fillets	134	68611	52	12	4	8		24	100
0303	Fish, Frozen, Excluding Fish Fillets	12168	7228223	50	18	0	7	22	3	100
0304	Fish Fillets And Other Fish Meat	2106	720603	66	27		1	5	1	100
0305	Fish, Dried, Salted Or In Brine; Smoked Fish,	22497	6637707	50	14	1	32	1	1	1
0306	Crustaceans, Whether In Shell Or Not, Live, Fresh, Chilled, Frozen, Dried, Salted Or In Brine;.	3310	431567	50	8		11	1	30	0
0307	Molluscs, Whether In Shell Or Not, Live, Fresh, Chilled, Frozen, Dried, Salted Or In Brine;	477	111445	50	0	1		1	48	0
	Total	**40696**	**15198408**							

Source: Hemispheric Database

8.7 Market Intelligence

Information and export market prospects are available from Jamaica Export Promotion (JAMPRO). JAMPRO provides interested persons with a list of buyers / traders in the USA, Canada and the European Union extracted from the 2000 edition of the International Directory of Importers of the European Union. Information on prices, trends, regulations and special requirements was not available at the time of our visit. However, it is likely that the fish processing and marketing firms have better sources of information and more current information.

8.8 Appreciation of Issues

Officials at the Fisheries Division have a good appreciation of the relevant issues in areas of legislation, conservation, globalization and regulations. However implementation of conservation measures, for example seems to be constrained by socio-economic factors such as resource-poor fishers, stakeholders' low level of education and limited financial resources.

8.9 Pattern of Resource Exploitation

Jamaica's 274,000 sq km sea space is made up of continental shelves and proximal banks extending to a maximum of 64 km from the mainland. The country has seven proximal banks, and two off-shore banks, the Morant and Pedro banks, the two largest in Jamaica. The Morant Bank is 259 sq km and has three small cays and is fished by an estimated 200 fishermen, while the Pedro Bank is 8,040 sq km, has three cays, two of which supports 1,000 fishermen. Industrial vessels targeting conch and lobster operate in the offshore banks, Pedro Bank in particular. Artisanal fishers target the local market and their SPS is not developed, while the industrial fishers are mainly export oriented and their harvesting and post harvest standards are well developed.

The inshore fishers rely on low level of technology and capital in harvest operations. The most recent information indicates that of the 4,300 vessels registered, 62% or 2,684 had boat sizes that ranged between 6.0-11.9 metres, and that many were power driven. The other major category is comprised of boats with lengths up to 5.9 metres or 15.9. The majority in this size category was power driven. Other boat sizes ranging up to 17.9 metres and 24.0-29.9 metres were listed among the fleets. Again the majority was power driven.

Decked vessels were also used in fishery exploitation by Jamaican fishers. Their profiles are presented in Figures 8.2 and 8.3. In terms of size (length), three were up to 11.9 metres, five were between 12.0-17.9 metres, six were between 18.0-23.9 metres and four were between 24.0-29.9 metres. Some of these types of vessels were involved in trawling, trap setting and other multipurpose operations.

The vessels can be grouped by type and operational characteristics into four different characteristics. These are as follows:

(i) Wooden dug out canoes - approximately 7 metres in length, powered by oars, operate in the inshore fishery, remain at sea for less that 12 hours, do not carry ice, catch not gutted before sale;

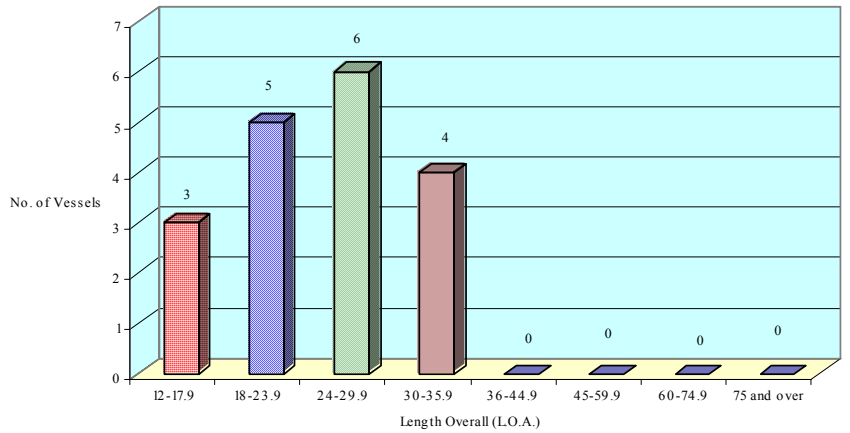
(ii) Fibreglass boats - generally 8.4 to 12 metres in length, operate in the inshore fishery, remain at sea for less than 12 hours, some may carry ice for refrigeration of catch;

(iii) Carrier vessels - generally >10 metres, inboard of outboard engines, transport fish from the offshore banks to the mainland, carry ice for storage of fish; and

(iv) Steel hull vessels - 18-35 metres in length, operate in the offshore banks, has either large ice holds or refrigeration units, catch targeted for the export market. Time spent at sea varies according to the species targeted – e.g. finfish and conch, boat remains up to 14 days, lobster, up to 1 month. Catch is washed with iced water on board, finfish is gutted and cleaned, operculum and viscera removed from conch, product is then chilled or blast frozen. Catch is further processed when landed.

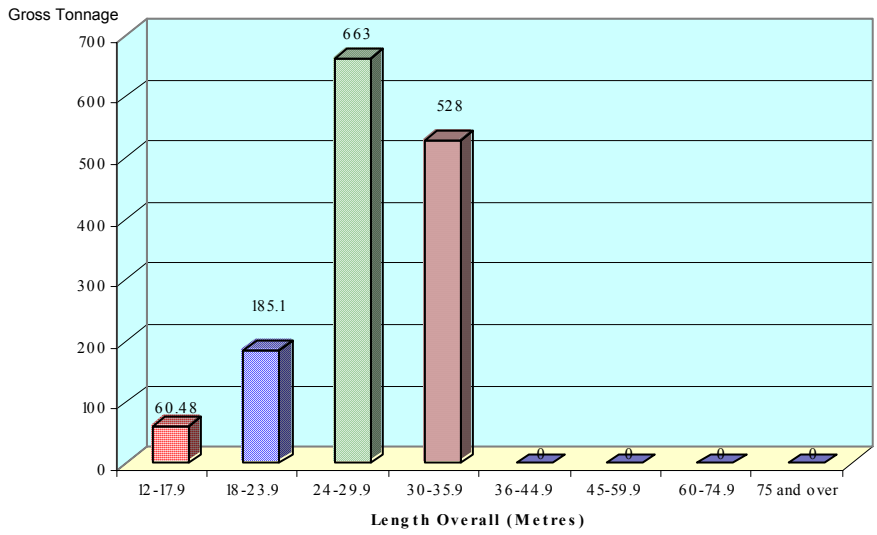
Fishing gears used in the industry include gillnets, spear guns, fish pots or Antillean Z-traps, Florida lobster pots and hooks and lines.

Figure 8.2: Number of Decked Vessels by Length Overall (L.O.A.) Jamaica 2003



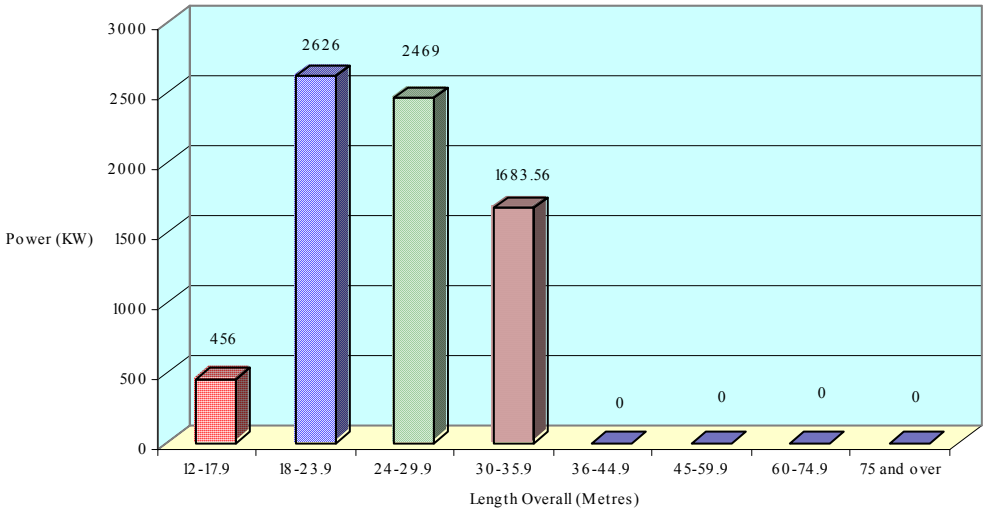
Data Source: Fisheries Division, Ministry of Agriculture, Jamaica

Figure 8.3: Gross Tonnage of Decked Vessels by Length Overall (L.O.A.) Jamaica 2003



Data Source: Fisheries Division, Ministry of Agriculture, Jamaica

Figure 8.4: Power of Decked Vessels by Length Overall (L.O.A.) Jamaica 2003



Data Source: Fisheries Division, Ministry of Agriculture, Jamaica

8.10 Quality Assurance and Food Safety

The Aquaculture, Inland and Marine Products and By-products Act (1999) contains legislation that addresses health and safety. The Veterinary Services Division (VSD) monitors the physical plant Standard Operating Practices and the Standard Sanitary Operational Plans. Plants and vessels are expected to conform to HACCP standards.

Vessels are required to inform the VSD of arrival times at the port. Samples are taken before offloading from the boat and after the product is transported by refrigerated truck and offloaded at the processing plant. The VSD tests the samples before issuing approval for further processing - once approved, further processing takes place, sampled by the VSD, products blast frozen, maintained in a holding freezer and once approved, transported in refrigerated container to the port of shipment.

The VSD also performs residue and bacteriological tests on the product before approving shipping. Plants are inspected daily and water used at the plant is tested weekly for heavy metals and bacteria. The current list of companies authorized to export fish and fishery products to the EU is listed in Box 8.1 below.

Box 8.1

Companies authorized to export Fish and fishery products to the EU

ANNEXE/ANNEX
Bruxelles, le 12 janvier 2004
E3 D(03)530060 RM/agm
PAYS / COUNTRY : JAMAIQUE / JAMAICA
PRODUIT / PRODUCT : PRODUITS DE LA PÊCHE / FISHERY PRODUCTS
MODIFICATION DE L'ANNEXE DE LA DECISION DE LA COMMISSION 2001/36/CE MODIFIEE EN DERNIER LIEU PAR LA TELECOPIE N° SANCO/530934 DU 23/05/2003
MODIFICATION OF ANNEX TO COMMISSION DECISION 2001/36/EC AS LAST AMENDED
BY TELEFAX N° SANCO/ 530934 DU 23/05/2003
New consolidated list for **JAMAICA**

1. VSDJ/B&D-004 B&D Trawling Limited KINGSTON PP
2. VSDJ/C&J-0012 C&J Seafood Limited CRAWFORD DISTRICT ST. ELIZABETH PP
3. VSDJ/DYC-007 DYC Fishing Ltd KINGSTON PP
4. VSDJ/GCG-020 G.C. Gorton (North Coast Fisheries Limited) MONTEGO BAY ST. JAMES ZV
5. VSDJ/JAL-003 Jamaica Aquaculture Limited BARTON ISLES ST. ELIZABETH PP
6. VSDJ/LK-040 Lady Kim (Stanley Mohammed) LIONEL TOWN CLARENDON
7. ZV VSDJ/LS-0180 Lone Star (B&D Trawling Limited) KINGSTON ZV
8. VSDJ/NFM-005 Newport Fish & Meats Limited NEWPORT EAST KINGSTON 15 PP
9. VSDJ/RAJ-050 Rajmilour (Wadwald Owen Kinght) TOWER ISLE ST. MARY ZV
10. VSDJ/RR-0200 Rough Rider (B&D Trawling Limited) KINGSTON ZV
11. VSDJ/TRE-009 Ton-Rick Enterprise Limited YALLAHS ST. THOMAS PP
12. VSDJ/WJ-070 Windjammer (Ton-Rick Enterprise Limited) YALLAHS ST. THOMAS ZV

Categorie Legend:
PP Processing plant
ZV Freezer vessel
PP Etablissement
ZV Bateau congélateur
In force since / En vigueur à partir du : 22/01/2004

The "***DÉCISION DE LA COMMISSION du 22 décembre 2000 fixant les conditions particulières 'importation pour les gastéropodes marins originaires de la Jamaïque*** *[notifiée sous le numéro C(2000) 4080]* ***(Texte présentant de l'intérêt pour l'EEE)*** *(2001/37/CE)*" states the latitude and longitude where live bivalve mollusks are allowed to harvest in Pedro Bank.

Source: http://forum.europa.eu.int/irc/sanco/vets/info/data/listes/11bz.pdf

8.11 Research and Development

Official data and information on fishery research and development activities were not obtained. However, other information on hand suggests that efforts are concentrated on commercial aquaculture for the export market. Although the Fisheries Division of the Agriculture Ministry was very active in research as well as providing strategic support, the commercial activities were mainly driven by the private sector. Unconfirmed reports indicate that these activities are being resuscitated.

8.12 Human Resource Status

The level of staffing has been described as minimal and inadequate. Another shortcoming is that their expertise lies largely in the discipline of fisheries biology. Reorganization, institutional strengthening and capacity building have been identified as necessary to meet the challenges posed by globalization and market liberalization. Introductory training in international trade policy and marketing is required to allow staff members to fully appreciate the linkages and issues that are likely to impact on the sector, to participate in the negotiation process; - this aspect is currently being addressed to some extent by other statal departments. It is noteworthy that some staff members have benefited from training in fisheries extension, post harvest handling, advanced marine diving techniques, project management and accounting. SPS and quality assurance expertise and responsibility currently lie outside the domain of the Fisheries Division of the Ministry of Agriculture.

8.13 Infrastructure

The landing facilities at Port Royal, Hunts Bay and others around Kingston were poorly developed and maintained. Gear sheds which were constructed in the 1970's were dilapidated; processing and personnel sanitary facilities were absent. The level of sanitation was substandard. Other fish landing facilities in Jamaica are reported to be in a generally better condition than those in Kingston. For example, the recently constructed Fisheries Complex in Whitehouse, Westmorland has modern fish landing and handling, as well as sanitary facilities. If these fishers are to benefit from export market opportunities, proper infrastructure must be constructed immediately. Some of the facilities currently used as landing sites need to be audited and re-engineered.

The VSD has a Residue and Biochemical Laboratory that is used to test samples of fish products and fishery waters from fish production areas. The International Centre for Environmental and Nuclear Sciences performs diagnostic tests for the presence of heavy metals (Cadmium, Lead and Mercury) and the Department of Pharmacology of the University of the West Indies performs tests for the determination of biotoxins in conch meat[2].

8.14 International Technical Assistance

International technical assistance received within recent years include:

(1) Technical cooperation between the governments of Japan and Jamaican under the Regional Fisheries Training Project – Post harvest handling, marine engineering, fishing gear technology, longline fishing, diamond back squid fishing;
(2) Training in the use of Lobster Casitas sponsored by the Mexican government;
(3) Data management and fisheries resource management through the CARICOM Regional Fisheries Mechanism; and
(4) Training in safety for small scale fishing boats through an International workshop.

List of persons consulted during the consultation exercise in Jamaica.

Jamaica		
Andre Kong	Director of Fisheries	Ministry of Agriculture, Jamaica
Dr. Richard Harrison	Permanent Secretary	Ministry of Agriculture, Jamaica
Wayne Pert	Agricultural Officer	Ministry of Agriculture, Jamaica
Marie Strahan	Director	Ministry of Agriculture, Jamaica
Robert Vivine	Trade Officer	Ministry of Agriculture, Jamaica
Camille Graham	Trade Officer	Ministry of Agriculture, Jamaica
Fisherfolk	Fisherfolk	Port Royal & Old Kingston

[2] Source: Harvest and Post Harvest Handling in the Jamaican Fishery Sector

Chapter 9

Profile of the Fishery Industry in Guyana

9.1 Background

Guyana has a maritime space of 138,240 sq km. Its coastline extends for approximately 432 km. The continental shelf extends outward from the shoreline to a distance of approximately 112.6 km, and has an area of 48,665 sq km. Artisanal fishers operate all along the coast, at distances of up to 56 km from the shore.

Guyana's fishing effort is concentrated in the shallow waters of the continental shelf. The marine resources exploited are mainly the demersal species. The fishing industry is based on three main types of fishery: the marine fishery, the inland fishery, and aquaculture.

Fishery products are an important source of 'animal protein' for the populace of Guyana. Its per capita consumption of fish has increased significantly over the last two decades. It was estimated at 9 kg in 1980 and estimated at 59.8 kg from 1996 to 2003/04.

Fishery Contribution to the Economy

The Guyana Bureau of Statistics estimates that the fisheries primary sector contributed about 1.59 % or G$154 million to the total GDP, see Table 9.1.

Table 9.1: Fishery Contribution to Total GDP - Guyana

Sector	1998	1999	2000	2001	2002	2003
Fishing (Guy $ mn)	142	143	164	165	170	154
Contribution to GDP	2.7	2.6	3.1	3.0	3.1	1.59
Growth Rate	2.6	1.0	14.1	1.0	3.0	0

Source: Bureau of Statistics, Georgetown, Guyana

Contribution to Employment and Incomes

The fishing industry employs an estimated 4,800 persons in the catching operations and another 5,800 in processing and marketing. Thus, more than 10,000 persons are employed directly in fishery. Many more people benefit indirectly from related occupations such as boat building, input supply and repair services. The sector employs an estimated 1,000 women in processing, distribution and retail sales who are increasingly participating in harvesting operations.

Government Revenues derived from the Fisheries

Fishery is a significant net contributor to Government revenues through export taxes, licence fees and consumption taxes on imported fuel for boats. The licence fee for fishing vessels is an additional source of revenue.

9.2 Trade Policies

This matter is now being brought into focus and is in the developmental stages.

9.3 Legislation and Regulation

The following legislation relates to or impacts on the fishing industry in Guyana:

(1) Fisheries Act 2002 (replaces the 1959 Fisheries Act and portions of the Marine Boundaries Act (Act 10 of 1977))

(2) Fisheries Product Regulations 2003 (Quality Control and Fish Inspection regulations

(3) Custom Act – Duty Free allowances on fishing gears, boats, ice-making equipment and consumption tax exemption

(4) Draft aquaculture regulations

(5) Maritime Boundaries Act (Turtle Excluder Device) signed on 25th April 1994

(6) The Marine Boundaries Act of 1977. This piece of legislation established a fishery zone beyond and adjacent to the territorial sea (12 miles), two hundred (200) miles from the baseline of the territorial sea. On February 23, 1991, the

zone became recognized as an Exclusive Economic Zone (EEZ) when the President of Guyana promulgated an order known as the Exclusive Economic Zone (Designation of Area) Order 1991, acting under the provision of Section 15 of the Maritime Boundaries Act, 1977.

The Fishing Industry Act provides the legal framework for the general administration of the fishing industry and makes provision for fishery protection. Currently, there is a four-week close season for prawns that is being reviewed to extend further to eight weeks.

In keeping with the Fisheries Act of 1958 and the Maritime Boundaries Act of 1977, trawlers are registered and licensed by type, depending on foreign or local ownership, length of vessel and its base of operation. Fishermen are also licensed to practice their trade.

The law prohibits trans-shipment at sea to foreign fleets, although it is widely suspected to occur on a significant scale.

A new fisheries policy was drafted in 1996 to promote the conservation of fishery resources. A draft Fisheries Management Plan was also developed.

9.4 Fishery Management Systems

The Guyanese fishing effort occurs in the shallow waters of the continental shelf, mainly the demersal fishery. Prawns and sharks have been reported as showing signs of overexploitation and efforts are being made to encourage deep slope demersal and pelagic specie exploitation. Assessments have reported that three species have been overexploited and there is still one more to do. It is estimated that the seabob fishery currently exploited at a level that exceeds the sustainable harvesting capacity by three times..

The industrial fishery is based at the Demerara River area at Georgetown and is supported by five major fish and shrimp processing plants.

9.5 Status of Fishery Resource

Guyana's fisheries fleet comprises 1300 artisanal vessels, 124 industrial vessels and 71 semi-industrial'. Currently there are about 100 seabob vessels / operators and 35 prawn vessels / operators (previously 100 prawns and 37 seabob). Fishers perform repair and maintenance work on their vessels in the close season. The components of the Guyanese fisheries sector are as follows:

Marine Fishery

(i) The Offshore Industrial (Trawl) Fishery

(ii) The Inshore Artisanal Fishery

Inland Fishery

(i) Subsistence Fishery

(ii) Ornamental Fish Fishery

Aquaculture

(i) Brackish-water Culture

(ii) Fresh-water Culture

Offshore Industrial Fisheries

The Offshore Industrial Fishery is equipped with 126 trawlers, 5 major processing plants, 9 small processing plants, and numerous wharves and dry docking facilities. The trawlers are 48 percent foreign owned.

The target species of the foreign-owned trawlers are the penaeid shrimp *(P. brasiliensis, P. notialis, P. schmitti, and P. subtilis)* Finfish and small amounts of squid (*Loligo spp.*) and lobster (*Panulirus spp.*) represent the by-catch. The locally-owned trawlers target the 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.

Inshore Artisanal Fishery

Marine fishing occurs off the coast of six (6) of the ten (10) administrative regions. An estimated 1331 boats ranging in sizes from 6-18 metres and powered by sails, outboard, or inboard engines exploit the Inshore Artisanal Fishery.

There are an estimated 4,500 artisanal fishermen; about 1,000 of these fishermen are boat owners. Sixty to seventy percent of the boat owners are members of Fishermen's Cooperatives. Table 9.2 illustrates the characteristics of the Artisanal Fishing Fleet of Guyana in 1997.

The onshore infrastructure includes wharves, ramps, workshops, fuel depots, requisite shops, ice machines and storage bins, and fish storage bins at eight sites along the coast. Four fishery complexes have been leased to fishermen's cooperatives and one other under private joint-venture arrangement.

Table 9.2: 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	Est. annual landings (1997) (Mt)	Principal Fishing Area
Frame Survey	1997 Vessel Count Exercise									
	35	Inboard Diesel	14/45	Handlines, fish pots	12-24 days	Snapper, Grouper	8	Ice	700	Edge of continental shelf, rocky areas(areas between 10 and 20 fathoms
558	63	Inboard diesel Lister, Perkins 210 hp	12-15/40-50	Gillnet polyethylene(in board)	10-12 days	Grey snapper, sea-trout, gillbacker, tarpon, spanish-mackerel, croaker, snook, shark spp.	4-6	Ice	2175	Area between 10 and 20 fathoms.
	308	Outboard engine 48 hp	8-11/35	Gillnet polyethylene (cabin- cruiser)	6 days	Grey snapper, sea trout, pagee, tarpon, croaker, gillbacker, spanish mackerel.	4-6	Ice		Area between 10 and 20 fathoms
	441	Outboard engine 25 hp	30m	Gillnet nylon	1 day	Bangamary, sea-trout, butterfish.	4	Ice	14,707.13	Area between 10 and 15 fathoms
253	373	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	finfish-2379.25 Seabob-575.5 Whitebelly-1717.13	Estuaries, river mouths and banks on the coast.
79	80	Outboard engine 6 - 9 hp	6 - 9/15 -30	Cadell	12h	Catfishes, sharks spp.	2-4	Fresh	2175.28	Areas between 5 and 10 fathoms.
46	35	Sail, outboard engine	6 - 9/15 -30	Pin Seine	12h	Mullet, snook, queriman, catfish, croaker, bangamary.	2	Fresh	206.2	Intertidal zones

Modified from Chakalall, 1979 **Note:** The 1997 Vessel Count Exercise only accounted for 80% of the artisanal vessels

9.6 Production and Trade Statistics

Table 9.3 presents production data of fish and shrimp in Guyana for the period 1997-2003. Also included in the Table is information on the number of trawlers and their trend used in fishery exploitation. The data show that whole weight shrimps increased from 1184 tonnes in 1997 to 1595 tonnes in 1999, decreased in 2000, increased in 2002 and began decreasing thereafter. On the other hand, tail weight decreased considerably between 1997 and 1998 and continued thereafter until 2001 when it increased, only to show a decreasing trend thereafter. Seabob and whitebelly shrimp showed variable trend over the period under consideration. However, with the exception of 2001 and 2002, white belly shrimp increased over the period. Seabob production on the other hand showed a decreasing trend since 1997. Total shrimp production showed an increasing trend from 12,000 tonnes in 1997 to more than 30,000 tonnes in 1998, only to decrease in 1999 variably thereafter.

Total finfish increased between 1997 and 1998, decreased in the intervening years and showed increasing trends thereafter. Artisanal finfish production increased from approximately 36,000 tonnes in 1997 to about 37,000 tonnes in 1998, but never again reached those levels thereafter. Red snapper production jumped significantly between 1997 and 1998 and generally maintains that trend over the period being considered. Finfish production on the whole was relatively stable between 1997 and 1999 but became generally erratic thereafter.

The number of boats engaged in fishery exploitation in Guyana was relatively stable over the period 1997-2003.

Table 9.3: Production Statistics for Fish and Shrimp from 1997-2003 (Tonnes)

Item	1997	1998	1999	2000	2001	2002	2003
Shrimp / Prawns :							
(Whole Weight)	1184.0	1935.1	1595.1	1131.5	1607.9	1522.4	1161.1
(Tail Weight)	1894.0	1209.4	996.4	707.0	1005.0	951.5	726.0
Shrimp /Seabob &	117268.0	10515.3	9393.7	16097.9	21096.8	18405.4	19016.7
No. Of Trawlers	**121.0**	**94.0**	**80.0**	**81.0**	**80.0**	**80.0**	**121**
Shrimp /Seabob &	5366.0	17692.8	3397.1	634.9	1163.6	730.0	187.9
Whitebelly -(Artisanal)				1463.5	1381.8	1400.0	2218.4
Total Shrimp	**123818.0**	**30143.2**	**14385.9**	**19327.8**	**25250.1**	**22057.8**	**22584.1**
Fin - Fish - (Industrial)	1181.0	1710.7	932.5	1138.5	941.5	3175.0	3311.0
Total Finfish (Industrial)	**1181.0**	**1710.7**	**932.5**	**1138.5**	**941.5**	**3175.0**	**3311.0**
Fin - Fish-(Artisanal)	35768.0	37478.9	34051.0	28628.8	25426.2	21586.5	29800.8
No. Of Boats	-	1331	1331	1300	1325	1300	1300
Red Snapper	26.0	351.0	273.0	510	524	424.0	612.0
FIN - FISH-(INLAND) (Including Aquaculture)	625.0	-					
Total Fin -Fish	**37600**	**39541**	**35257**	**30277**	**26892**	**25186**	**33724**

Source: Fisheries Department of Statistics, Guyana

Fishery Exports: Table 9.4 provides data on the level and trends in exports of marine products from Guyana for the period 1998 to 2003. These products include seabobs and white belly shrimps, finfish and by products and crabmeat. With the exception of the last product category, they all showed an increasing trend.

Exports in terms of volume and value, measured in Guyana dollars are presented in Table 9.3. The Table shows some minor variations in the quantity values due to inconsistency in source, but these are not significant enough to raise any concerns. However, it is important to note the consistency in the trends between both data sets. Another important observation is the fluctuation in the value of the Guyana dollar and its impact on total revenue from exports of fishery products.

The 2003 export earnings from fisheries was approximately $G 11.2 billion, while in 2002 it was G$11.6 billion (Table 9.5). Exports in finfish and by-products increased from 9,568.7 tonnes in 2002 to 9,849.6 tonnes in 2003, an increase of 2.9 %. Prawns and seabob exports increased from 9,752.8 tonnes in 2002 to 12,051.6 tonnes in 2003.

Further examination of the data show that Guyana exported an average of USD 2.8 mn over the period 1998 to 2000, most exports going to the USA. The majority of the fishery product exported was HS 030490 Fish Meat, Nesoi (Excluding Fish Steaks And Fillets), and Frozen fish valued at USD 1.3 mn. Forty-five percent went to the USA and 51% went to CARICOM destinations, as presented in Table 9.6.

Table 9.4: Exports of Various Marine Products – Guyana 1998-2003 (Tonnes)

Year	1998	1999	2000	2001	2002	2003
Prawns	1137	1280	1076	924	682	518
Seabob and White belly	3732	4902	7199	10923	9071	11534
Finfish and by-products	6607	4870	5268	6768	9339	9834
Crabmeat	36	25	3.33	3	24	15
Total Exports	**11512**	**11077**	**13546**	**18618**	**19116**	**21901**

Source: Fisheries Department Statistics, Guyana

Table 9.5: Earnings from Exports of Marine Products – Guyana (1998 –2003)

Year	Amount (mt)	Value G $
1998	11,627	6.5 billion
1999	11,170	9.0 billion
2000	13,547	7.2 billion
2001	18,340	11.0 billion
2002	19,322	11.5 billion
2003	21,901	11.2 billion

Source: Fisheries Department Statistics, Guyana

Table 9.6: Exports of Marine Fish Products to Various Countries (1998-2000 Av)

HS Code	Item / Product	Values in Thousand of US $ 1998-2000	Average volume (kg) 1998-2001	Export Destination (%)						
				USA	EU	Canada	Latin America	Asia	CARICOM	Other
030110	Ornamental Fish	210.5	125256	94	2	2			2	
030270	Livers And Roes	0	45	40		40			20	
030310	Pacific Salmon (Oncorhynchus Nerka, Oncorhynchus Gorbuscha, etc), Excluding Livers And Roes	0	136		45	55				
030350	Herrings (Clupea Harengus, Clupea Pallasii), Excluding Livers And Roes	4.5	2272.5						100	
030360	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus), Excluding Livers And Roes	2	4659	2				98		
030380	Livers And Roes	285.5	21819.5	92		8				
030410	Fresh Or Chilled	68.5	25681.5	6		2			92	
030420	Frozen Fillets	435.5	196403	22		3		6	69	
030490	Other	1333.5	481677	45		4			51	
030510	Flours, Meals And Pellets Of Fish, Fit For Human Consumption	0.5	53.5	98					2	
030520	Livers And Roes, Dried, Smoked, Salted Or In Brine	64	31825.5	11					89	
030530	Fish Fillets, Dried, Salted Or In Brine, But Not Smoked	15.5	7159.5				58		42	
030551	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus)	10	5183	2	2				96	
030559	Other	349.5	173402.5	4		2	24		70	
		2779.5	1075573.5							

Source: Hemispheric Database

Fishery Imports: Imports of fishery products into Guyana can be considered negligible base on data available (see hemispheric database and Table 9.7, imports).

Table 9.7: Imports of Marine Fish Products from Various Sources (1998-2000 Av)

HS Code	Item / Product	Average 1997/1998		Source of Imports (%)					
		Values in Thousand of US $	Volume in Kilograms	USA	EU	Canada	Latin America	CARICOM	Other
30110	Ornamental Fish	1	31					100	
30250	Cod (Gadus Morhua, etc), Excl Livers And Roes	2.5	143.5	100	-	-	-	-	-
30490	Other	0	5	100	-	-	-	-	-
30530	Fish Fillets, Dried, Salted Or In Brine, But Not Smoked	1	60	100	-	-	-	-	-
30551	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus)	0	20	100	-	-	-	-	-
30559	Other	0	5.5	100	-	-	-	-	-
	Total	**4.5**	**265**	-	-	-	-	-	-

Source: Hemispheric Database

9.7 Participation in International Trade Negotiations

Guyana participates actively in CARICOM and in the WTO in international trade negotiations. Guyana has begun reviewing relevant issues to address fisheries at the upcoming negotiations.

9.8 Appreciation of Issues

Officials at the Fisheries Division have a good appreciation of some of the relevant issues, especially in the areas of legislation, conservation and regulations. However implementation of suitable measures and systems, for example conservation measures seems to be constrained by socio-economic factors.

Stakeholders have recognized the need for modernization of the industry -in research, navigational equipment, surveillance, fish detectors, and database management. Further, institutional strengthening – (organizational structure, legislation, staffing, policies), and an overarching concern and appreciation for sustainable development should inform future decision-making.

Policymakers are of the opinion that 'international compliance' should not be the driver for development; rather countries should first address domestic issues such as food security and then

create rules for the international arena. Further, the fishing industry should play a greater role in diversifying the economy. Concerns have been expressed about the problems of piracy, poaching and international boundary disputes.

Some of the constraints to development of the industry highlighted are:

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

9.9 Pattern of Resource Exploitation

The vessels are categorized in four different types and / or operations:

(i) Wooden boats, generally 32-60 ft in length, used by artisanal operators.
(ii) Wooden boats, 26-50 ft using chinese seine
(iii) Semi-industrial stern trawlers of the red snapper fleet
(iv) Large trawlers (21 metres in length), steel constructed operating in the industrial fleet.

Fishing gear used in the industry include pin seines, chinese seines/fyke nets, cadell lines/"demersal longlines", drift nets/gillnets, circle seine and handlines/snapper lines. The chinese seine is used for harvesting the whitebelly shrimp.

Finfish are taken on board as by-catch on the prawn trawlers. However dumping at sea is still believed to be a widespread practise. There is a general opinion that prawn and shark have been over-exploited. However, this has not been scientifically determined.

All the boats used are made from wood and manufactured locally. Flat-bottom dory boats powered by sail, paddle, or small outboard engine are used with the chinese seine and cadell lines. Boats that operate close to shore are not equipped with ice boxes.

V-bottom boats which range in size from 7.63 -9.15m (25 - 30 ft) do not have cabins. They are equipped with iceboxes for refrigeration, powered by an outboard engine and are used by smaller gillnet (gillnet nylon) fishermen. There are also larger V-bottom vessels that range in size from 12.2m to 15.25m (40 - 50ft), with inboard engines and cabins. These vessels are used for larger gillnet and handline operations.

9.10 Quality Assurance and Food Safety

The plant owned by Guyana Seafood Exporters located in Georgetown has export approval for both EU and USA markets. However, there is a need to upgrade processing facilities, landing sites, refrigeration and sanitation facilities on board the vessels to ensure maintenance of sanitation and the integrity of the catch. Product compliance with market standards is critical for retention of market share and market development.

The cold chain is maintained by fishers whose product is targeted for export however Chinese seine and cadell fishers do not carry ice return with their catch after approximately 6-12 hours at sea. There is still need for further monitoring and determination of the adequacy of cooling methods employed by artisanal vessels and the integrity of the catch.

9.11 Research and Development

R&D is virtually non-existent for both products and fishery management. Also, little research and development is undertaken into new and value added products that would allow the industry to penetrate new markets. It is therefore recommended that a special R&D initiative should be undertaken.

9.12 Human Resource Status

The level of staffing has been described as inadequate. Reorganization, institutional strengthening and capacity building have been identified as necessary to meet the challenges posed by globalization and market liberalization. Training in international trade policy and marketing is required to enable staff members to fully appreciate the linkages and issues that impact on the sector, and to participate effectively in the negotiation process.

9.13 Infrastructure

The landing sites at Georgetown (Georgetown Fisheries Cooperative Limited), New Mahaicony, Better Hope and Rosignol are poorly developed and maintained. The level of sanitation at these sites needs to be substantially improved. If these fishers are to continue to benefit from export market opportunities, adequate infrastructure must be constructed and maintained.

Georgetown Fisheries Cooperative Limited has a clientele of 300 boats. Their catch is either sold on the domestic market fresh or processed at the Coop's processing plant for export. The Rosignol Fishing Cooperative Society Limited started operations in 1954. The group has 65 active members and benefits 240 workers and fishing operations take place on average 5-6 days per week.

The landing site at Noble House Seafood, located on the Demerara River was of high quality. This landing site and processing plant have been approved for exports to the USA and EU.

Picture 9.1: Gear Storage and Landing Facilities – Rosignol, Guyana

Picture 9.2: Berthing and Landing Facilities – Rosignol, Guyana

Picture 9.3: Open Air Wholesale Trading Facility and Transport – Rosignol, Guyana

Picture 9.4: Fish Packed for Transport to Processing Plant – Rosignol, Guyana

Picture 9.5: Berthing and Landing Facilities at Better Hope, Guyana

Picture 9.6: Berthing and Landing Facilities – New Mahaicony, Guyana

Picture 9.7: Berthing and Landing Facilities – Better Hope, Guyana

Picture 9.8: Berthing and Landing Facilities – Georgetown Fisheries Cooperative Limited, Guyana

Processing and Marketing: There are four licensed industrial processors operating in Guyana: Georgetown Seafoods & Trading Co. Ltd., B.E.V. Enterprises Limited, Marine Food Products Limited, and Noble House Seafoods Ltd. These industrial processors account for the majority of prawn and seabob production. In this sector there is a wide range of processing technologies and quality standards.

An estimated 95 percent of the prawns and 91 percent of the seabob are exported. In the case of finfish, 64 percent are exported and about 36 percent are consumed domestically.

Prawns are mostly exported frozen shell-on tails. The U.S.A is the most important market followed by Japan. A small quantity of exports goes to CARICOM member countries. Seabob shrimp (shell-less) is almost entirely exported to the U.S.A., with the domestic market absorbing the remaining, small quantities.

Declines in prawn production and increasing prices for finfish have resulted in greater interest in processing. Finfish landed by industrial processors is primarily a by-catch of shrimp operations.

9.14 Resources in terms of profitability

The limited information made available indicates that an estimated 50% of the value of the catch is paid to workers of the fishing vessel and the other 50% is allocated to the vessel owner. The owner then pays 10% of his retention to the captain of the vessel and his retention is allocated to expenses and returns to investment.

9.15 International Technical Assistance

International technical assistance received within recent years include:

(i) The Artisanal Fisheries Infrastructure Project (AFIP) implemented from 1984 to 1993 with assistance from CIDA and the EEC

(ii) Establishment of the inshore fishport complex at Meadowbank in Georgetown in 1987 – funded by the EEC and the Government of Guyana

(iii) Inshore fishport complexes at #66 and #43 on the Corentyne, and at Rosignol, Parika, Lima, Charity and Morawhanna – funded by CIDA and the Government

List of persons consulted

Guyana		
Dr. Dindyal Permaul	Permanent Secretary	Ministry Of Agriculture, Guyana
Dawn Mason	Principal Fisheries Officer	Ministry Of Agriculture, Guyana
Earl Thompson	Fisheries Officer-Guyana	Ministry Of Agriculture, Guyana
Ingrid Peters	Fisheries Officer	Ministry Of Agriculture, Guyana
Charles Seepersaud	Legal Officer / Trade Negotiator	ACPU- Ministry Of Agriculture, Guyana
Janet Kissoon	Manager	Guyana office For Investment (Go-Invest) - Guyana
Sharon Smith	Plant Manager	Nobel House Seafood- Guyana
Mohammed Khan	Chairman	Greater Georgetown Fishermen Cooperative Society Limited-Guyana
Rashid Baksh	President	Rosignol Fishing Cooperative Society - Guyana
Churaman Mahabir	Chairman	Rosignol Fishing Cooperative Society- Guyana
Bisram Sunwaro	Executive Member	Rosignol Fishing Cooperative Society- Guyana
Guyandeo Ramdeen	Executive Member	Rosignol Fishing Cooperative Society- Guyana

Chapter 10

Profile of the Fishery Industry in Belize

10.1 Background

The fishery sector contributed 7.2% of total GDP in 2001 and is the third largest contributor in economic importance. There are 3,000 fishermen registered of which 1,888 are active. The Northern Fishermen Co-operative Society Limited and the National Fishermen Producers Co-operative Society Limited are the two main fish processors. The continental shelf[3] has an area of 9,800 km sq and the claimed Exclusive Economic Zone is 169,840 km sq. The tourism industry based on the fishery areas have also been increasing in importance as fishers have creatively combined tourism related services with the fishery. Lobster and conch are the main species harvested, but shrimp and finfish have been increasing in importance within recent years. Stone crabs, marine aquarium fish, seaweed, shark and some species of squid are being exploited at a small scale.

Fisheries exports were estimated at Bz$ 110.6 million in 2003 and are projected to increase further with expansion in the aquaculture sub-sector. Farmed shrimp exports were estimated at Bz$ 91.8 million, followed by lobster with Bz$13.5 million and conch Bz$ 4.1 million.

Belize's national policy aims at ensuring a sustainable supply of marine products, particularly, lobster, shrimp and conch. To achieve this, the present management measures include minimum size, closed season and licensing requirements (given that sustainable level of production for these species may have already reached their maximum). To encourage further expansion of its fisheries, the country plans to exploit waters off its continental shelf.

[3] *The shelf area is a complex system consisting of the largest barrier reef in the Atlantic (220 m in length), three offshore atolls-(Lighthouse Reef which contains the Blue Hole, the Turneffe Islands and Glovers Reef), patch reefs, seagrass beds, several hundred cayes of sand and mangrove, extensive mangrove forests, coastal lagoons and estuaries. Total area fished is estimated to be about 4700 km2 within a depth range of 1.5-10 m2.* **Source: Caribbean Regional Fisheries Mechanism. http://www.caricom-fisheries.com/members/belize.asp**

10.2 Trade Policies

Belize has taken steps to liberalize its trade regime while at the same time seeking to maintain high levels of protection for certain domestic activities. Thus, certain imports, mostly agricultural products are subjected to non-automatic licensing requirements, in some cases amounting to outright prohibitions. Moreover, the availability of foreign exchange is limited.

Belize provides assistance to businesses, summarized as follow and detailed in the Annex:

(i) Import duty and tax concessions, available under the Fiscal Incentives Act, the Export Processing Zones Act, and the Commercial Free Zone Act.

(ii) Tax exemptions to companies incorporated under the International Business Companies (IBCs) Act, 1990 (Cap. 270, 2000). Specifically, IBCs are exempt from income tax and stamp duty and are not subject to exchange control regulations.

(iii) The Minister of Finance may exempt a business from paying tax during its first two years of operation if "it is necessary to do so to alleviate hardship or financial difficulty"[4].

(iv) Certain businesses registered in Belize can benefit from financial assistance available through the government-owned Development Finance Corporation (DFC). Assistance is in the form of preferential loans and is available to companies in the agricultural, fisheries, industrial, and tourism sectors.

(v) The Government also provides assistance in the form of training. The Ministry of Agriculture, Fisheries, and Cooperatives offer extension services to farmers and maintain several crop-development programmes.

(vi) Belize supports domestic agricultural production through tariffs, import licensing, and general services such as research, extension, training, and pest control.[5] The average tariff on agricultural products, at 18.2%, is well above the average for other products (Chapter III (2) (iii)).

[4] Section 108(2), Income and Business Tax Act of 1923, as amended (Cap. 55).
[5] Ministry of Agriculture and Fisheries (2003).

(vii) Preferential tariffs - Belize grants duty-free access to the vast majority of imports from other CARICOM members, provided that they meet the criteria for CARICOM values of origin. The list of CARICOM goods subject to MFN tariff rates is contained in the Fifth Schedule of the Customs and Excise Duties Act.

(viii) Other charges affecting imports - In addition to customs duties, imports are subject to sales tax, revenue replacement duty, and environmental tax. (**Sales tax** - the sales tax is levied at the moment of importation, assessed on the c.i.f. customs value plus the customs duty. The rate is 9% for all domestic and imported products except alcohol, tobacco, and fuel, which are subject to a 13% rate). **Environmental tax -** An environmental tax is applied to all imports, including those from other CARICOM member states, except certain basic items such as medicines and medical supplies for human use, and basic foodstuffs, including sardines. The *ad valorem* tax of 1% is assessed on the basis of the customs value of the goods. Domestic products are not subject to the environmental tax [6].

(ix) Export taxes, charges and levies - In 1996, Belize abolished export taxes levied under the Customs and Excise Duties Act through Statutory Instrument 9 of 1996.

(x) Duty and tax concessions – To promote domestic and foreign investment, Belize grants fiscal and other advantages to entities engaged exclusively in "international" or export-oriented activities.

(xi) Price controls - Under the Supplies Control Act, 1963 (Cap. 293, 2000), the Minister is entitled to control the prices of products whose "production, treatment, keeping, storage, movement, transport, distribution, exportation, importation, sale, purchase, use, or consumption is regulated or prohibited."[7]

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[6] Trade Policy Review. Belize. Report By The Secretariat. Wt/Tpr/S/134. 14 June 2004 WORLD TRADE ORGANIZATION . Trade Policy Review Body. Restricted.

[7] Section 3(1)(b), Supplies Control Act.

Table 10.1 Items with specific duties, March 2004
(BZ dollars, imperial gallons, and pounds)

Tariff line	Description	Specific duty (BZ$)
2710001310	Motor spirit exported under the processing agreement	0.54/gallon
2710001390	Other motor spirit (gasoline)	0.54/gallon
2710003110	Gas oils exported under the processing agreement	0.32/gallon
2710003190	Other gas oils	0.32/gallon
2710004210	Bunker "c" grade fuel oil exported under the processing agreement	0.04/gallon
2710004290	Other bunker "c" grade fuel oil	0.04/gallon
2710004910	Fuel oils not elsewhere specified or included	0.04/gallon
2710004990	Other fuel oils not elsewhere specified or included	0.04/gallon
2710009200	Lubricating oils	0.057/gallon

Source: Information provided by the authorities of Belize Fisheries Department, Ministry of Agriculture and Fisheries.

Table 10.2 Goods subject to licensing requirements, March 2004

HS code	Description of product	Licence granted automatically	Conditions
2309.906000	Other prepared complete animal feeds (except bird, cat, or dog food)	No	Positive recommendation from MAFC required
8903.990000	Outboard motorboats between 12 ft and 32 ft in length, for pleasure or sports, made of fibreglass (excepting rowing boats and canoes)	Yes	None

.. Not available.

a Goods that also require a licence when imported from CARICOM MDCs.

Source: WTO Secretariat based on the Supplies Control (Import/Export) Regulations and the Guidelines for the Approval of supplies Control (Import) (Export) Licence.

Table 10.3: Summary analysis of Belize's tariff for selected products (March 2004)

Description	No. of lines[a]	Average (%)	Minimum (%)	Maximum (%)	Standard deviation (%)	Coefficient of variation (CV)
Total	**6,292**	**11.3**	**0**	**70**	**11.4**	**1.0**
HS 01-24	1,050	20.5	0	45	16.1	0.8
By WTO category						
WTO Agriculture	985	17.9	0	45	15.4	0.9
- Animals and products thereof	147	27.3	0	45	16.8	0.6
- Other agricultural products n.e.s.	156	5.8	0	40	6.4	1.1
- Fish and fishery products	155	28.9	0	45	16.6	0.6
By ISIC sector[b]						
Agriculture and fisheries	426	20.6	0	50	17.9	0.9
By HS section						
Live animals and products	309	26.5	0	45	17.9	0.7
Vegetable products	399	18.3	0	45	16.3	0.9
Fats and oils	53	20.8	0	40	16.8	0.8
Prepared food, etc.	289	17.2	0	45	11.6	0.7

a Excluding items with specific duties.
b ISIC (Rev.2) classification, excluding electricity (1 line).

Source: WTO Secretariat estimates, based on information provided by the authorities of Belize.

Table 10.4 Products subject to price controls, March 2004

Schedule	Wholesale	Retail
Goods in Schedule I (Imported goods)	**Maximum percentage that may be added to landed cost[a] of imported goods**	**Maximum percentage that may be added to wholesale price**
Kerosene[e]	Not regulated	4.58 per gallon
Diesel[e]	Not regulated	5.20 per gallon
Gasoline[e]		
Regular	Not regulated	7.41 per gallon
Premium	Not regulated	7.56 per gallon
Butane (domestic) gas[e]	Not regulated	Prices vary depending on the district where sale takes place
Goods in Schedule II (local produce)		
King fish, queen fish, calipaver, alvacore, deep water, snapper (deep water, red, black, mutton, and reef), cabillo[c]	Not regulated	1.5 per lb
June fish, grouper, amberjack, rock fish, yellow tail, silk snapper, mackerel, barracuda[c]	Not regulated	1.35

a The Regulations define landed cost as the sum of the c.i.f. value of imports, the applicable customs duties and taxes, cartage, and bank and port charges.
b Price applies to domestic and foreign products.
c An additional BZ$0.25 per lb may be added to the price of salt water fish, conch, shrimps, and lobster sold in inland areas; for clean-gutted fish sold anywhere, BZ$0.25 per lb. may be added.
d According to the Supplies Control (Prices) Regulations, no person can charge more than the maximum retail price specified in the Regulations' Schedule, irrespective of the loaf's weight.
e Subject to changes dependent on the world market.

Source: WTO Secretariat, based on the Supplies Control (Prices) Regulations.

10.3 Legislation and Regulation

The Legislation that impacts directly on the Belizian Fishing Industry is as follows:

(i) The main legislation for the fishing industry is the High Seas Fishing Act, Cap. 210:10, 2003 and,

(ii) The Fisheries Act, Cap. 210, 2000.

(iii) BAHA regulates animal health issues as stated under the Meat and Livestock Act.

The Fisheries Act requires that artisanal fishers and fishing vessels are licensed annually in order to fish for commercial purposes. Further, export of fishery products is reserved for established fishing cooperatives. The High Seas fishery is regulated by the High Seas Fishing Act and requires vessels to be registered with IMMARBE. Licences are conditional upon fishing area, type of fish to be caught, and the period of the year. All licences are provided by the Belize Fisheries Department upon recommendation from the Director General and the Senior Deputy Registrar of IMMARBE[8].

Export prohibitions, restrictions, and licensing

In accordance with the Customs Regulations (Prohibited and Restricted Goods) (Consolidation) Order, 1988, Belize prohibits exports of fish and shrimps. Under the Supplies Control Act, 1963 (Cap. 293, 2000) and the Supplies Control (Import/Export) Regulations, exports of certain products require a licence, regardless of their destination. Licences for fish, crustaceans and molluscs – the Supply Control Unit must consult with the government body or association responsible for the product before granting the licence. According to the authorities, in 2003, the Supplies Control Unit granted 77 export licences for fish, crustaceans and molluscs.

Belize has adopted a policy to include the resource users / stakeholders in the management process in an effort to effectively manage the common resource. Such a measure will reduce the pressure on legislative reform and enforcement. Their philosophy speaks: *to break the pattern of "the tragedy of the commons" it is important that the resource users be involved in the management process and be allowed to feel a sense of ownership.* Belize promotes the concept of Conservation Compliance", as enunciated, the aim is to *"promote the conservation and sustainable use of fisheries resources for the benefit of the Belizean people."*

In order to achieve this goal, the country plans to proceed through monitoring, educating and providing protection for coastal resources to ensure adherence to the fisheries legislation. Thus, they have scheduled education/awareness programmes that target resource users and the public; seek closer working relationships with the fishermen's organizations and to involve them in the public consultation process. Further, enhancement of the Fisheries Advisory Board will seek to ensure continued effectiveness through the legislative process.

[8] Trade Policy Review. Belize. Report By The Secretariat. Wt/Tpr/S/134. 14 June 2004 WORLD TRADE ORGANIZATION . Trade Policy Review Body. Restricted.

Future policies planned for the sector will focus on patrols, staff training, enforcement of regulations, development of conservation-related programmes, protection of Marine Protected Areas, ensure compliance, enforce closed seasons and protect reefs from vehicle thoroughfare.

The Marine Protected Areas have been developed for conservation of marine biodiversity, for research by providing a natural laboratory, as a refuge and habitat thus enhancing reproductive capacity and for income generation through tourism.

Cooperatives and Fisheries

Cooperatives have provided a strategic engine for development in Belize for more than 55 years. They are governed by a legal framework and have been used to address poverty and economic problems through the pooling of resources to satisfy various needs. The Government's Cooperative and Credit Union policies are designed to strengthen the movement and to make the sector more efficient and competitive, while at the same time contributing to the economic and social well being of the population. It is also important to note here, the strong linkage of the cooperatives and the fisheries of Belize. Unlike other countries, the fisheries sector has strong internal intersectoral linkages. Thus policies and legislative agendas must take full cognizance of the multifunctional importance of the fishery of Belize.

International Collaboration: Initiatives towards international collaboration can serve to ensure that Belize is kept abreast with global development and new research findings and trends which can serve a beneficial as well as a timely intervention purpose. To this end, the Ministry of Agriculture has planned to support and where necessary, facilitate (i) the establishment of the Belize Institute of Agricultural Research & Development (BIARD) (ii) the establishment of the Belize Agricultural Research & Development Council and (iii) continue liaison and collaboration with international agricultural development support organizations (Reference source: The National Food & Agriculture Policy (2002-2020).

Other Legislative Agendas / Linkages: Protection of threatened species (e.g. queen conch) as well as critical habitats are also important. Watersheds are to be managed and conserved in order to minimize soil erosion and siltation of rivers whose resulting sedimentation of near shore marine environments can be disastrous to coral reefs and sea grass beds. Thus fishery legislation

alone has been recognized as necessary but inadequate for the protection its fishery. Legislation in other areas is also required, especially in those areas which impact directly on the fishery.

Further, in December 1996, seven of the protected areas on the reef were listed jointly as a World Heritage Site under UNESCO's World Heritage Convention. This Convention "provides for the protection of those cultural and natural properties deemed to be of outstanding universal importance."

The Belize Barrier Reef Reserve System consists of seven sites covering a total of 92,610 ha. These are: Bacalar Chico National Park and Marine Reserve, Blue Hole Natural Monument, Half Moon Caye Natural Monument, South Water Caye Marine Reserve, Glover's Reef Marine Reserve, Laughing Bird Caye National Park, and Sapodilla Cayes Narine Reserve. http://www.greenreefbelize.com/reefbriefs/briefs9.html World Heritage Sites.

The policy in the sector is informed by the Fisheries Advisory Board which is comprised of the fishing cooperatives, stakeholders from the private sector, non-governmental organizations, and relevant government departments. The Fisheries Act imposes an export tax on fish (fresh, salted, smoked or cured), shrimp, and crawfish (crayfish, rock lobster and shellfish) with rates of BZ$0.01 per lb., BZ$0.03 per lb., and BZ$0.10 per lb. or gross tail weight respectively. However, the authorities note that this tax has never been levied and that the customs and excise taxes are the only taxes levied. The provisions of the Fisheries Act extend to all rivers, streams, watercourses, lakes, lagoons, and other inland waters[9].

10.4 Fishery Management Systems

The Belize fishing effort takes place in the shallow waters of the continental shelf which compromise the longest barrier reef in the Western Hemisphere and the second largest in the world, known as the Belize Barrier Reef Reserve System. Within the System, there are three offshore atolls- (Lighthouse Reef which contains the Blue Hole, the Turneffe Islands and Glovers Reef), patch reefs, seagrass beds, several hundred cayes of sand and mangrove, extensive mangrove forests, coastal lagoons and estuaries. Total area fished is estimated to be about 4700

[9] Trade Policy Review. Belize. Report By The Secretariat. Wt/Tpr/S/134. 14 June 2004 WORLD TRADE ORGANIZATION . Trade Policy Review Body. Restricted.

km2 within a depth range of 1.5-10 m2. (**Source: Caribbean Regional Fisheries Mechanism http://www.caricom-fisheries.com/members/belize.asp)**.

Glover's Reef is internationally recognized for its majestic cayes, turquoise waters, vibrant marine flora & fauna and its unique reef structure. The area is also treasured for its historical, geographical & scientific attributes.

In 1993, the Glover's Reef was officially designated as a marine reserve and in 1996, and the area was demarcated with the different zones, namely: the General Use, Conservation, Seasonal – Closure, & Wilderness Zone. Also during that year, the Belize Barrier Reef Reserve System was declared a World Heritage Site. Being a part of this system, Glover's Reef Marine Reserve was amongst the six other marine reserves, which were recognized for its rich contribution to humanity, and thus, declared a World Heritage Site.

The Glover's Reef Marine Reserve ranks amongst the best marine protected areas in Belize and is managed by the Belize Fisheries Department. (Reference Source: The National Food & Agriculture Policy. (2002-2020). No Farmer = No Food. Ministry Of Agriculture & Fisheries & Government of Belize, April 2003).

10.5 Status of Fishery Resource

Consultations during the field visits indicate that the higher priced commercially exploited marine species (Lobster, Conch and Shrimp) may be at or beyond their Maximum Sustainable Yield (MSY). This is expressed from visual observations which show small increases in landings and greater fishing effort.[10] In order to proactively address this matter, even before scientific assessment is undertaken, measures are geared towards reduction in effort which may take the form of limiting entry, licensing by species, quotas and closed season/ areas. In cases where fishers are displaced, a combination of strategies has been proposed:

[10] Subsequent feedback on the draft report indicate that reports have been prepared which would provide further clarification of this issue. However, they were not made available at the time of final preparation of this report. Since we are recommending that national country reports on the status of the fishery be prepared routinely, we trust the subsequent revisions shall provide the necessary clarification.

i. exploitation of alternative commercially exploitable species such as shellfish (oysters, clams etc), blue crabs, pelagic fish species (tunas, mackerels, jacks) and squids.
ii. Training of fishermen to reduce post harvest losses and increased value through improved quality.
iii. Enhance the fishery-tourism linkage, thereby allowing the fishers to explore other revenue generation options such as the provision of services (tours and sport fishing).

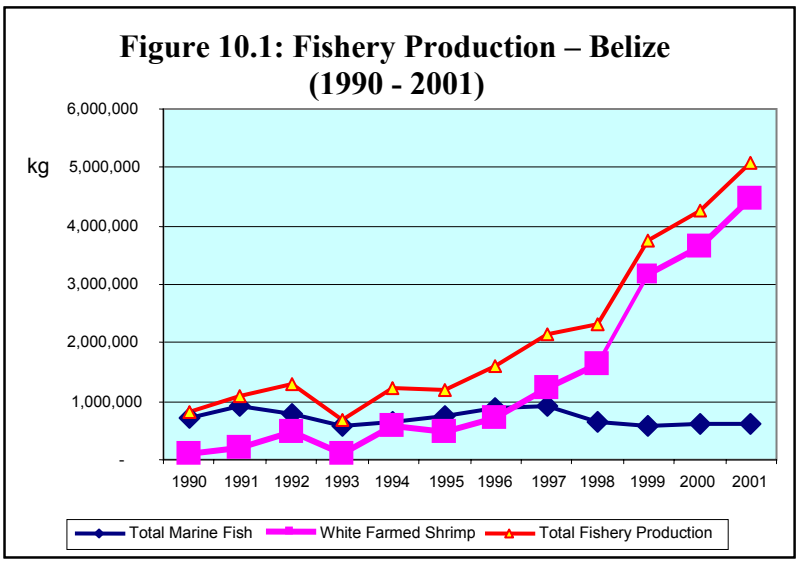
The production of fish has been relatively constant since 1980, ranging from 1,617 tonnes in 1980 to 1,471 in 1993 (Table 10.5). However a gradual increase was evident between 1994 and 2000, largely due to investments in aquaculture – white farm shrimp production Lobster tail production has been relatively stable while conch and fish production showed an uneven declining trend. Figure 10.1 shows increases in total fish catch as well as total marine fish production from 1990 to 2000. Examination of the data shows a gradual decline in total marine fish production between the period 1990 to 2001. During the same period, farmed shrimp production showed substantial growth.

White Farm shrimp comprised 86% of Belize's fishery production in 2000 (Figure 10.2). This is followed by Lobster tails (6%) and whole lobster (5%), while pink sea shrimp production was just 1%.

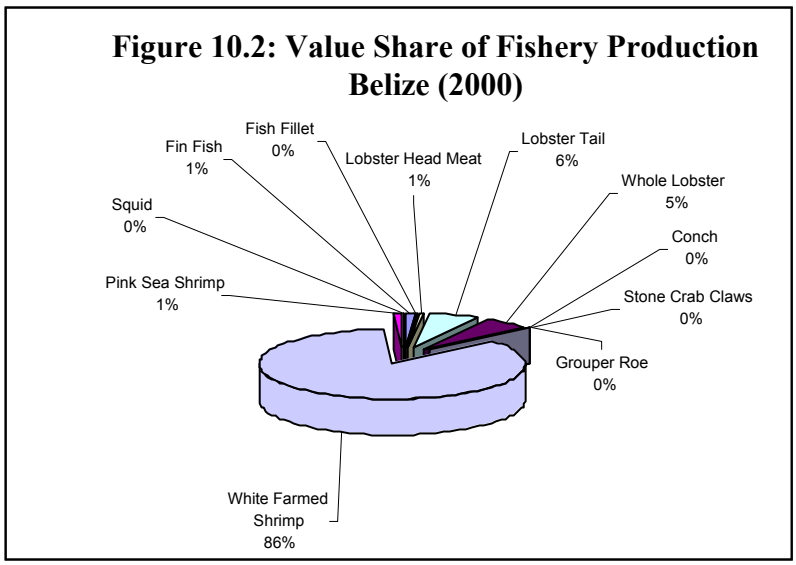
Table 10.5: Production of Fishery Products – Belize (1980-2002)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Fin Fish	723482	610,244	775,970	1,003,785	533,906	501659	713133	893,821	809,422	599,441	537,436	695,427	526,912	362,194	199,255	280,762	775,510	175,495	193757	183110	109575		526,912
Fish Fillet	57267	24,840	40,009	57,520	67,386	84707	99522	63,083	52,763	36,057	56,586	87,558	86,191	58,169	60,499	43,386	53,782	47,376	50408	38666	28205	41498	86191
Lobster Head Meat										8,244	15,803	19,490	12,877	13,655	23,344	30,842	31,423	37,345	36861	47968	50637	45150	12877
Lobster Tail	407409	748,723	642,595	664,916	636,018	721952	515197	523,670	580,340	537,373	423,235	504,515	477,904	428,307	469,834	508,408	407,254	589,428	516279	609523	555254	432884	477904
Whole Lobster											-	78,911	66,420		141,091	324,336	174,657	566,942	556713	309377	513469		66420
Conch	363197	333,067	369,407	445,662	523,479	413692	257351	291,194	314,600	244,971	369,210	458,389	462,421	334,691	415,924	301,951	325,180	115,678	13535	16164	8671	579561	462421
Stone Crab Claws	0	40,222	19,164	3,104	5,274	4,136	4,741	9,524	12,491	7,536	7,335	6,962	7,482	7,467	8,207	13,137	29,123					4258	7482
Grouper Roe	0	-	-	102			157,379		1,314	187	38		321	509	650	882	1,095	120	74	352			321
White Farmed Shrimp								16,932			188,993	435,601	1,083,158	203,088	1,311,427	1,048,431	1,574,283	2,710,967	3,620,151	6974120	8002118	9812135	1083158
Pink Sea Shrimp	62951	-	2,827	27,012	350	14,431	167	250,849	259,770	291,199	192,849	141,900	106,312	62,681	75,368	107,956	83,013	94,868	89,185	76616	99285	151750	106312
Squid									543		80	116			134	213	245	300,000	172	214	555		
Turtle	2737	374	-	42	25	40	443	155	623														
King crab claws															2,641	2,104	207						
Post larvae shrimp																	42,000						
Farm lobster																	9,930	69,100					
Whole Fish																						81528	
TOTAL	1,617,043	1,757,470	1,849,972	2,202,143	1,766,436	1,740,617	1,747,935	2,049,227	2,031,866	1,725,007	1,791,565	2,428,869	2,829,998	1,470,761	2,708,374	2,662,408	3,507,702	4,707,319	5,077,135	8,256,109	9367769	11148763	2829996

Source: Statistical Records, Belize Fisheries Department, Ministry of Agriculture and Fisheries.



Source: Belize Fisheries Department, Ministry of Agriculture and Fisheries



Source: Belize Fisheries Department, Ministry of Agriculture and Fisheries

Lobster annual production (tails) ranged from 500 to 700 tons over the last 10 years. Production of whole lobsters on the other hand was considerably less and ranged from 66 tons to 513 tons over the same period. Yields are considered within the scientific estimates of Maximum Sustainable Yield for the Belizean Lobster Fishery. At the same time, the cooperatives have been receiving good prices for the product on the export market. See Table 10.5.

Marine shrimp (pink) has been showing a declining trend from 1987 to 1993/94 and increased thereafter. Declines over the last year (2001/02) were due to poor environmental conditions, the late arrival of shrimp trawlers from neighbouring Honduras and a drastic reduction in fishing effort since only four vessels fished this season compared to nine in the previous year **(Belize Fisheries Department, Annual Report 2003).**

However, in the case of the Queen Conch, the situation seems similar to most countries of the Wider-Caribbean region. Production has been declining and is due to overexploitation. As the case of The Bahamas and other countries, the Secretariat of the Convention for the Regulation of International Trade of Endangered Species (CITES) has mandated Queen Conch exporting countries to assess the status of this fishery resource and implement measures to ensure sustainability.

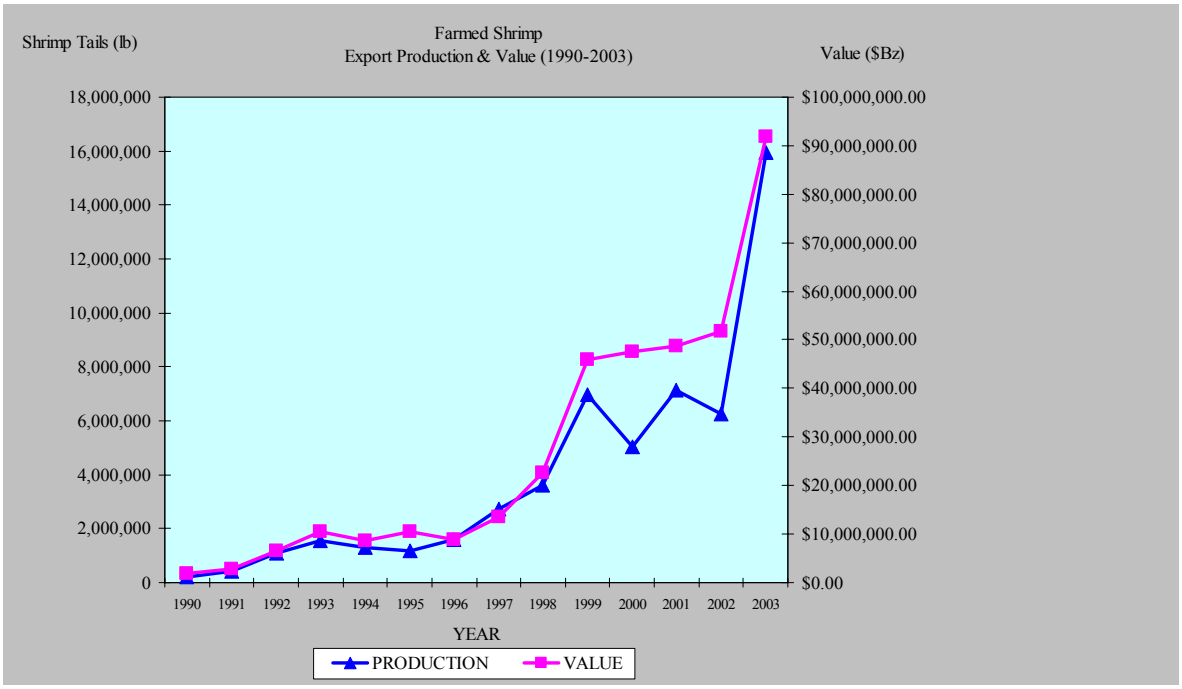
The Fisheries Department has initiated surveys of its conch fishery in November 2003 in an effort to satisfy the September 2004 deadline for notification given by CITES.

International trade sanctions were imposed on Belize as a result of non-compliance with ICCAT regulations. Belize attended the 18th Regular meeting of the International Convention for the Conservation of Atlantic Tuna and Tuna-like species in Dublin Ireland in November of 2003 where they were successful in negotiating the lifting of sanction which came became effective on January 1st, 2004.

Shrimp Aquaculture

In 2002, there were 7,904 acres of ponds in operation and another 8,407 acres was constructed in 2003. The 14 shrimp farms in operation at the end of 2003 were Caribbean Shrimp, Nova Ladyville, Crown Shrimp, Paradise Shrimp Farm, Triton Mariculture, Haney's Shrimp Farm, Belize Aquaculture Limited, Royal Maya Shrimp Farm, Crustaceans Shrimp Farm, Texmar, Aquamar, Nova Toledo, Toledo Fish Farm Limited and Melinda Mariculture. These produce an estimated 33 million pounds of whole shrimps or 22 million pounds of shrimp tails. Figure 10.3 extracted from Belize Fisheries Department Annual Report 2003 shows the production and value of farmed shrimp in Belize for the period 1990 to 2003.

Figure 10.3: Farmed Shrimp Export Production & Value (1990-2003)



Source: **BELIZE FISHERIES DEPARTMENT, Annual Report 2003**

Processing

The fish-processing industry in Belize can be divided into two major categories: (i) the four co-operatives (National Fishermen, Placencia Co-op, Northern Fishermen and Caribena Co-op) which purchase from their members, process and export and (ii) the industrial processing for the inland shrimp farm.

Mother boats bring in lobster tails and conch fresh/ chilled on ice to the processor where they are cleaned, graded, and packed for export, mainly to the USA and The Bahamas.

The National' and Northern' processing plants are certified to export lobster tails to the USA and into the Red Lobster chain of restaurants. Fishery production data from the processing plants / cooperatives are presented in Table 10.6.

Table 10.6: Fishery Production range and volume from Belize Processing Plants / Cooperatives in 2003 (lbs)

Commodity	National	Northern	Placencia	Caribena	Total
	Fishermen				
Fish Fillet	31,191.0	6,833.0	3,474.0	-	41,498.0
Lobster Head Meat	23,378.0	20,445.0	1,327.0	-	45,150.0
Lobster Tail	185,319.0	215,572.0	26,260.0	5,733.0	432,884.0
Conch	229,491.0	339,344.0	9,490.0	1,236.0	579,561.0
Stone Crab Claws	-	4,237.5	-	20.0	4,257.5
Pink Sea Shrimp	30,745.0	121,005.0	-	-	151,750.0
White Farmed Shrimp	-	-	-	-	9,812,135.0
Whole Fish	-	65,667.5	6,360.0	-	81,527.5
Aquarium Fish	-	-	-	-	*2,649.0*
Aquatic Inverts	-	-	-	-	*7,370.0*
TOTAL (lbs)	500,124	773,104.00	46,911	6,989	11,148,763.0

Source: Fisheries Division, Ministry of Agriculture and fisheries, Belize

10.6 Trade Statistics

Export

Belize has shown a substantial increase in fishery products export from 2002 to 2003 largely due to substantial output increases of farmed shrimp as presented in Table 10.7. Export of farmed shrimp increased from $Bz 48.9 mn in 2002 to $Bz 91.9 mn in 2003. Lobster exports was valued at $Bz 13.5 mn in 2003, increasing marginally from 2002. Export value of lobster, conch and other species has remained relative stable from 2001 to 2003.

A review of other trade data sources show the main export destinations for Belize fish products were the USA, Japan and CARICOM. An estimated 94% of HS Code 0306 Crustaceans were exported to the USA during the 1998 – 2000 period; 95% of HS Code 0302 Fresh Fish to CARICOM (Jamaica); 82% of HS Code 0303 Frozen fish also to CARICOM and 90% HS Code 0306 Dried salted fish to Latin America. These trends were observed from data available in the Hemispheric Database and presented in Table 10.8.

Imports

Fishery products imported into Belize was mainly of HS Code 0303 Crustaceans and HS 0307 Mollusks from the USA as presented in Table 10.9. Imports were negligible, valued at USD 1.8 mn, probably for re-export.

Table 10.7: Export market value of marine products for 2001, 2002and 2003 – Belize

Commodities	2001	2002	2003
Lobster	$ 12,777,400.00	$ 12,678,600.00	$13,488,982.19
Conch	$ 4,615,960.04	$ 3,144,223.19	$4,137,651.93
Conch trimming	$ 28,350.00	$ 197,331.68	-
Lobster meat	$ 195,760.00	$ 422,304.45	$104,229.10
Live Conch	$ 2,269.69		
Whole fish	$ 11,875.00	$ 706.13	-
Stone crab	$ 706.13	-	$25,117.88
Farm shrimp	$ 48,738,671.25	$48,924,666.64	$91,847,880.00
Pink shrimp	$ 194,613.82	$ 1,405,748.62	$998,154.25
Shark		$ 12,500.00	
Fish Fillet	$ 390.56	$ 127,159.00	$403.00
Aquarium fish	$ 37,629.20	$ 30,300.98	$41,599.00
Ground Conch	$ 57,306.40	$ 6,708.19	
Total	**$ 66,660,932.09**	**$ 65,553,932.07**	**$110,644,017.56**

Source: Belize Fisheries Department, Ministry of Agriculture and Fisheries

Table 10.8: Average Export of Fishery Products 1998-2000 – Value Volume and Destination – Belize

HS CODE	Item/Produt	Average 1998-2000		Export Destination (%)						
		Values in Thousand US$	Volume in Kilograms	USA	EU	Canada	Latin America	Asia	CARICOM	Other
0301	Live Fish.	50.7	0.0	2	96		2			
0302	Fish, Fresh Or Chilled, Excluding Fish Fillets And Other Fish Meat Of Heading No. 03.04.	47.3	18694	5					95	
0303	Fish, Frozen, Excluding Fish Fillets And Other Fish Meat Of Heading No. 03.04.	30.0	12110.0	10					82	8
0304	Fish Fillets And Other Fish Meat (Whether Or Not Minced), Fresh, Chilled Or Frozen.	2.0	322.0	2						98
0305	Fish, Dried, Salted Or In Brine; Smoked Fish, Whether Or Not Cooked	6.7	4415.0	10			90			
0306	Crustaceans, Whether In Shell Or Not, Live, Fresh, Chilled, Frozen, Dried, Salted Or In Brine;	28132.3	2402024.3	94			2	2	2	
0307	Molluscs, Whether In Shell Or Not, Live, Fresh, Chilled, Frozen, Dried, Salted Or In Brine;	24.0	2497	6	94					
		28293	2440062.3							

Source: Hemispheric Database

Table 10.9: Average Import of Fishery Products 1998-2000 – Value, Volume and Source – Belize

HS Code	Item / Product	Average 1998-2000		Source of Imports (%)						
		Values In Thousand US $	Volume In Kilograms	USA	EU	Canada	Latin America	Asia	CARICOM	Other
0301	LIVE FISH.	0	0							
0302	Fish, Fresh Or Chilled, Excluding Fish Fillets	2	1776				100			
0303	Fish, Frozen, Excluding Fish Fillets And Other Fish	0	12	100						
0304	Fish Fillets And Other Fish Meat	0	177	4			1	95		
0305	Fish, Dried, Salted Or In Brine; Smoked Fish,	0	252	41			32	27		
0306	Crustaceans, Whether In Shell Or Not, Live, Fresh, Chilled, Frozen, Dried, Salted Or In Brine;	1543	181320	83			14	1	2	
0307	Molluscs, Whether In Shell Or Not, Live, Fresh, Chilled, Frozen, Dried, Salted Or In Brine;	273	14277	96		1	2	1		
	Total	**1817**	**197765**							

Source: Hemispheric Database

10.7 Appreciation of Issues

The Fisheries Department, BAHA and industry personnel were quite aware of the major issues that relate to the world fishery industry. Trade policy, health, conservation and specific trade issues. The Fisheries Staff was highly sensitized for the need conservation and surveillance as well as the need for sustainable pattern of resource exploitation. The following issues are highlighted:

- **Sustainability of the Conch Fishery:** Inadequate law enforcement and patrols, disregard for fisheries regulation as well as inadequate research/monitoring on sustainable production level are seen as threats to the long-term survival of the industry.

- **Sustainability of Lobster Fishery:** Increases in the number of fishers as well as enlargement of size and scope of operation of current fishers can put pressure on the long-term sustainability of the lobster industry.

- **Health:** In 1996 the taura virus infected two farms and by 2001 all farms were infected. This infection led to a decrease in the larval survival rate from 65% to 37%. Production was reduced by 44%. Health monitoring, quarantine and good management practises are important for sustainability of aquaculture industry.

Appreciation for the fishery concerns is further reflected in the Mission of the Fisheries Department:

The mission for the Fisheries Department is to *"provide the country and the people of Belize with the best possible management of aquatic and fisheries resources with a view to optimize the present and future benefits through efficient and sustainable management."* This mission requires the following support services: enforcement of fisheries regulations, quality assurance, detailed biological and socio-economic research, park and coastal zone management and strategy implementation[11].

[11] **Source: The National Food & Agriculture Policy (2002-2020)**

10.8 Pattern of Resource Exploitation

Belize operates a preservation zone for an estimated 5 % of its fishery; conservation zone 15% and open fishery 80%. The open area is however affected by various mechanisms. No traps are allowed in certain areas and an intelligence command centre comprising of Fisheries Officers, Port Authority and Immigration Officers perform joint patrols for monitoring and enforcement of regulations.

Only the inshore reef fishery is currently exploited in Belize, fished by open boats, sloops, large dug-out canoes and trawlers.[12]

- **Open boats** are made of wood or fiberglass, 4.3-7.6 m in length and propelled by outboard engines. These boats are used primarily for lobster trapping.
- **Sloops** are mostly wooden vessels measuring up to 10 m in length. These are equipped with sails and smaller auxiliary outboard engines and used primarily for free diving to harvest lobster, conch and occasionally finfish.
- **Large dug-out canoes** are used primarily in southern regions of Belize. They are sometimes equipped with small engines and/ or oars and are used primarily to catch finfish using handlines or nets.
- **The foreign shrimp trawlers** operate as joint ventures with fishing cooperatives during the open shrimp season. These are of the standard Mexican Gulf, contracted from Honduran operators.

There are 1,788 fishermen and 581 boats licensed in Belize (Table 10.10). From this number, 63 are registered with Northern Cooperative and 48 with National Cooperative. There are 115 boats measuring less than 20 feet and 466 greater than this length.

[12] Reference **Source: Caribbean Regional Fisheries Mechanism.** http://www.caricom-fisheries.com/members/belize.asp

Table 10.10: Registration of Fishing Boats - Belize

Month	Renewal	1st Issue	Total # of Boat	20 ft or less	21 feet and greater
January	104	24	131	17	114
February	73	21	50	7	43
March	70	15	33	5	28
April	86	12	32	6	26
May	161	17	72	17	55
June	496	89	168	38	130
July	66	19	21	1	20
August	72	20	24	9	15
September	139	49	27	6	21
October	84	38	15	6	9
November	62	28	7	2	5
December	31	12	1	1	0
Total	**1444**	**344**	**581**	**115**	**466**

Source: Fisheries Department, Belize.

10.9 Quality Assurance and Food Safety

The responsibility for quality assurance and food safety rests with the Belize Agricultural Health Authority (BAHA), created in 1999. The Belize Agricultural Health Authority Act, 2000 (Cap. 211, 2000) authorizes the Minister of Agriculture to issue, in consultation with BAHA, any order prohibiting or controlling importation for SPS reasons.

The Belize Agricultural Health Authority (Inspection and Certification Fees) Regulations, 2001 (Statutory Instrument No. 62 of 2001) lists the documents and inspections necessary to import products subject to sanitary and phytosanitary requirements (see Table 10.11 below). A permit issued by BAHA is required to import most agricultural-related, including and fish and fishery products. Import permits can be revoked or modified where a Ministerial order changes the conditions of entry of the product to which the permit applies.

BAHA is responsible for the inspection and the enforcing of food safety and health standards for the fishery-processing plants. These tasks include:

i. Monitoring the hygiene of the fishing boats;

ii. Training personnel on behalf of fish-processors and the government in the area of quality assurance and inspection;

iii. Inspection at the landing-sites;

iv. Inspection and certification of fish-processing plants according the HACCP and EU standards;

v. Evaluating and monitoring for possible hazards (hygiene, biotoxins such like ciguatera and in the future histamine and chemical residues on aquaculture products);

vi. Preparing and implementing the fish-inspection legislation

vii. Inspection of the packaging, labeling, storage and transport of fishery products

Table 10.11 Lists of documents and inspections necessary to import products which are subject to sanitary and phytosanitary requirements

Product category	Import permit	Phyto-sanitary certificate	Sanitary certificate	Certificate of treatment	Certificate of origin	Inspection	Inspection by quarantine	**Other**
Veterinary drugs								
Vaccines	Yes	No	Yes	No	No	Yes	No	
Antibiotics for animal use	Yes	No	Yes	No	No	Yes	No	Sampling
Liquid disinfectants, ectoparasites, vitamins and other	Yes	No	Yes	No	No	Yes	No	
Fish and fishery products								
Live shrimp larvae	Yes	No	Yes	No	Yes	Yes	No	International veterinary certificate
Fish (fresh, dried and canned) and fish products	Yes	No	Yes	No	No	Yes	No	Notification of each shipment to an inspector
Fish food	Yes	No	Yes	No	Yes	Yes	No	
Packing material	No	No	No	No	No	No	Yes	

Notes: Import permit issued by BAHA. Phytosanitary certificate issued by exporting country. Sanitary certificate issued by exporting . country. Certificate of treatment issued by exporting country. Certificate of origin issued by exporting country. Inspection done by quarantine officials.

Note: Only used products are subject to SPS requirements.

Source: Belize Agricultural Health Authority (Inspection and Certification Fees) Regulations, 2001 (Statutory Instrument No. 62 of 2001).

Belize is a member of the three standards-setting bodies referred to in the SPS Agreement, namely the Codex Alimentarius, the World Organization for Animal Health, and the International Plant Protection Convention (Convention of 1991).[13] Belize applies the tolerance levels for biological residues in meat and other animal products specified in the Codex Alimentarius.[14] It requires all food exporting enterprises to comply with a hazard analysis and critical control point (HACCP) system.[15]

The Belize Agricultural Health Authority is responsible for issuing sanitary and phytosanitary certificates for exports. The Customs and Excise Department is responsible for issuing all certificates of origin except those accompanying exports to the United States under the Caribbean Basin Initiative (CBI). These are issued by the Belize Chamber of Commerce and Industry. Box 10.1 outlines the authority of BAHA and lists the companies in Belize which have been authorized to export fish and fishery products to the EU.

[13] WTO document G/SPS/GEN/27/Rev.10, 25 March 2003.
[14] Section 6 of the Belize Agricultural Health Authority (Biological Residues) (Control) Regulations.
[15] Section 4(2), Belize Agricultural Health Authority (Food Safety) Regulations.

Box 10.1

Companies authorized to export Fish and Fishery products to the EU

COMMISSION DECISION
of 15 October 2003
laying down special conditions governing imports of fishery products from Belize
(notified under document number C(2003) 3645)

(Text with EEA relevance)
(2003/759/EC)
THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community, Having regard to Council Directive 91/493/EEC of 22 July 1991 laying down the health conditions for the production and the placing on the market of fishery products (1), as last amended by Regulation (EC) No 806/2003 (2), and in particular Article 11 thereof,

Whereas:
(1) An inspection has been carried out on behalf of the Commission in Belize to verify the conditions under which fishery products are produced, stored and dispatched to the Community.

(2) The requirements in the legislation of Belize on health inspection and monitoring of fishery products may be considered equivalent to those laid down in Directive 91/493/EEC.

(3) In particular, the Belize Agricultural Health Authority (BAHA), is capable of effectively verifying the implementation of the legislation in force.

(4) The BAHA has provided official assurances regarding compliance with the standards for health controls and monitoring of fishery products as set out in Chapter V of the Annex to Directive 91/493/EEC and regarding the fulfilment of hygienic requirements equivalent to those laid down by that Directive.

(5) It is appropriate to lay down detailed provisions concerning fishery products imported into the Community from Belize, in accordance with Directive 91/493/EEC.

(6) It is necessary also to draw up a list of approved establishments, factory vessels, or cold stores, and a list of freezer vessels equipped in accordance with the requirements of Council Directive 92/48/EEC of 16 June 1992 laying down the minimum hygiene rules applicable to fishery products caught on board certain vessels in accordance with Article 3(1)(a)(i) of Directive 91/493/EEC (3). These lists should be drawn up on the basis of a communication from the BAHA to the Commission.

(7) It is appropriate for the present decision to be applied 45 days after its publication to provide for the necessary transitional period.
(8) The measures provided for in this decision are in accordance with the opinion of the Standing Committee on the Food Chain and Animal Health,

HAS ADOPTED THIS DECISION:
Article 1
The Belize Agricultural Health Authority (BAHA), shall be the competent authority in Belize identified for the purposes of verifying and certifying compliance of fishery products with the requirements of Directive 91/493/EEC.

Article 2
Fishery products imported into the Community from Belize shall meet the requirements set out in Articles 3, 4 and 5.
(1) OJ L 268, 24.9.1991, p. 15.
(2) OJ L 122, 16.5.2003, p. 1. (3) OJ L 187, 7.7.1992, p. 41.

Nova Companies (Belize) Ltd – Processing Plant Approved No. BZZ-FP-Nov-001.

Source: http://forum.europa.eu.int/irc/sanco/vets/info/data/listes/11bz.pdf

10.10 Research and Development

The following research and monitoring activities are pursued by the fisheries department:

(i) Conch: The total length, shell lip thickness, shell lip width and presence of eggs if any for conchs found within the patch reefs surveyed. The shell lip width and shell lip thickness are recorded for adults as the conch produces a shell lip only when it has reached maturity. Research continues with regards to the level of fishing pressure that the conch fishery can sustain in order to develop management strategies. Monitoring and enforcement of conservation measures is viewed as critical towards preservation and sustainability of the conch industry.

(ii) Lobster: The carapace length, sex and presence of eggs are recorded for lobsters found at the patch reefs. The sex is determined visually by looking at the third pair of leg at maturity. Options are to be explored to make optimal use of by-products such as lobster heads.

(iii) Fishes: The fork length of five different species of fishes (hog fish, Nassau grouper, black grouper, mutton snapper, and queen triggerfish) are recorded. The Fisheries Department will seek to develop management plans for each of the main commercial species after stock assessment is completed. Diversification of the fishing industry will be encouraged to reduce pressure on the heavily exploited species (lobster, conch and shrimp).

(iv) Shrimp - Biological data collection (average size, catch/effort & trawler etc.) for the pink sea shrimp.

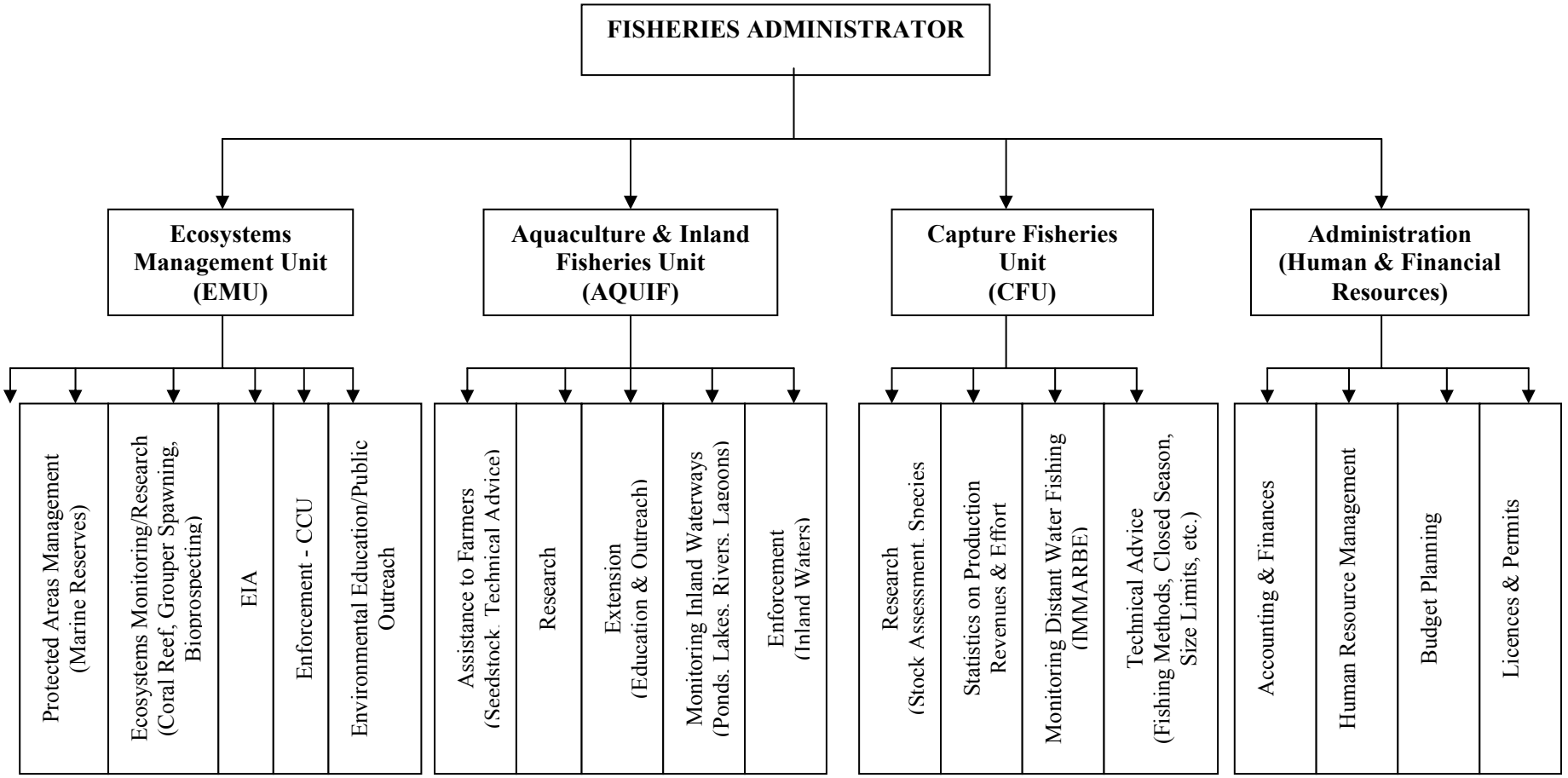
(v) **By-catch** - Evaluation of by-catch composition and volume in order to find alternative uses.

10.11 Human Resource Status

Inadequate staff has been highlighted as one of the major constraints in the Fisheries Department. The current staff structure is presented in Figure 10.4.

It is recognized that management strategies can only be implemented with a sound human resource base (a cadre of trained professionals). Thus, the department's future staff development initiatives programmes are to be pursued through (i) in-service and academic training (done both locally and abroad) and also (ii) partnerships with countries that offer development aid, such as Japan, Korea, Taiwan, the European Union and the USA and (iii) a programme for the 'sharing' of expertise between fishers and related agencies.

Figure 10.4: Functional Organogram of Fisheries Department (Current Structure)



Source: Belize Fisheries Department

10.12 Infrastructure

The major landing sites in Belize are at Punta Gorda and Belize City. Others are Corozal Town, San Pedro on Ambergris Caye, Caye Caulker, Dangriga, Placencia. Fishery products are landed at ports at the processing plants as well as the other landing sites and transported by refrigerated trucks to the two processing plants. Fishery products are also landed at various smaller ports in Belize City for local sales.

The ports at the two co-operatives processing plants are well developed, however, those at Punta Gorda and Belize City need to be urgently upgraded. Pictures 10.1 to 10.4 show conditions at various landing sites and retail markets in Belize.

Picture 10.1: Belize National Fishermen Producers Co-operative – Landing Site

Picture 10.2: Landing Site: Belize City

Picture 10.3: Fish Market: Belize City

Picture 10.4: Fresh Fish for Sale: Belize City

Belize		
Hugh O'Brien	Chief Executive Officer,	Ministry of Agriculture and Fisheries, Belize
James Azueta	Fisheries Officer,	Ecosystems Management Unit Coordinator, Ministry of Agriculture and Fisheries, Belize
Robert L. Usher	Executive Secretary / Managing Director,	Northern Fishermen Co-operative Society Limited, Belize
Shawn Adasha Richards	Trade Economist	Ministry of Foreign Trade, Belize
Andrea Reneau	Aquatic Animal Health Officer,	Belize Agricultural Health Authority, Belize
Windell Middleton	Manager, Investment and Business Facilitation	BELTRAIDE, Belize
Roberto Harrison	CEO Investment and Business Facilitation	BELTRAIDE, Belize
Hugh Saul	Executive Director	Caribbean Regional Fisheries Mechanism Secretariat
James V. Hyde	Director, Nova Companies (Belize) Ltd.	Nova Companies (Belize) Ltd.
David Liong	Field Operations Manager	Nova Companies (Belize) Ltd.
David Duran	Processing Plant Manager	Nova Companies (Belize) Ltd.
Michael Morales	Fisheries Officer	Ecosystems Management Unit Coordinator, Ministry of Agriculture and Fisheries, Belize
Charles Heusner	Chairman	Belize National Fishermen Producers Cooperative Limited

Chapter 11

Profile of the Fishing Industry

The Bahamas

11.1 Background

The Bahamas occupies a total land area of 13,935 km^2 and a shelf area of shallow water of 116,550 $km^{2.}$ The length of the coastline of the 700 small islands, and cays spread over an area of 230,000 km^2, located on 16 plateaus separated from each other and from Florida, Cuba and Hispaniola by depths ranging from 200 to 2,000 fathoms. The fishing industry of The Bahamas is confined on the shallow banks.

The fishery sector has been contributing an average of USD 105mn or 2 % of GDP out of total of USD 5,200 million to the Bahamian economy. Employment contribution is substantial, estimated in 1995 at around 9,000 persons full time. In some instances, the fishing industry is referred to as a last form of employment in the tourism, services and banking-based economy.

Caribbean Spiny Lobster is the major export commodity, averaging USD 70 – 80 mn annually from a total export value of USD 109.8 mn in 2003. The major markets are the USA, France and Canada.

11.2 Trade Policies

Currently, The Bahamas is currently not a member of the WTO. The fishery investment opportunities are generally restrictive and trade policies encourage investments from Bahamians. The policies that impact on the fishery sector are summarized as follows:

- Non-Bahamian investors are not encouraged to exploit the fishery resource.
- The supply of the primary products is very high and there is no domestic competition from imports of fishery products.

- There are some small investments in shrimp farming and duty on imported shrimp is set at 35%. Efforts are currently being made to increase the duty because of cheap imports / low international prices.
- There are no income or sales taxes and custom duties are set generally high.
- Fishing boats and gears are allowed entry free of duty. However, items not listed are charged 10% duty.
- Fuel cost is high and no subsidies are given to fishers. Fishers justify their need for subsidies given the scattered location of the fisheries and the distance to transport to market / processing plants.
- Commercial fishing industry within the EEZ is legally reserved for only 100% owned Bahamian vessels.
- Seafood processing and aquaculture, however, has been placed on the list to target oversea investors
- All non-Bahamian investment projects must have the approval of the government's National Economic Council

11.3 Legislation and Regulation

The Fisheries Resources (Jurisdiction and Conservation) Act 1977 and the Fisheries Resources (Jurisdiction and Conservation) Regulations 1986 need to be updated. The rules and regulations that govern the seafood processing industry is contained in the Extraordinary Official Gazette of The Bahamas dated 6th August 2002 entitled **The Food Act (Chapter 218) called The Food (Seafood Processing and Inspection) Regulations, 2002.** The legislation was updated to meet the international requirements, addressing HACCP and Standard Operating Procedures as well as microbial, chemical and heavy metal maximum tolerance levels.

There are also rules and regulations for implementation of open and closed season for conservation of spiny lobsters, turtles and stone crabs. In addition there have been recent closures for groupers. These grouper closures have been implemented by the Fisheries Department based on general observations on landings until a scientific assessment is conducted. Exploitation of the lobster industry seems to be close to the maximum sustainable yield. The cost of the fishing effort also remains to be established.

Protection of the fishery resources is enforced by the Fisheries Department with the assistance of the Police, Royal Defense Force and Customs Department. However, it is reported that these national security departments are already constrained for the manpower required for drug interdiction and other duties and are therefore unable to assist to the level required for fishery surveillance.

The Fisheries Act limits commercial fishing to Bahamians only; all commercial boats must be 100% Bahamian owned and permits are issued for the use of spiny lobster and stone crab traps. Foreign fishing vessels are allowed under very limited circumstances, such as fishing conducted for sporting purposes with the appropriate permit for scientific research, by vessels owned by an international organization in which The Bahamas enjoys membership, like the Food and Agriculture Organization, and under the terms of a fishing treaty with another state. The Bahamas has not entered into any fishing treaties.

Fisheries Officers are not allowed to carry firearms during patrols. Monitoring of the fishery is weak, largely due to the size of the fishery which stretches from the Florida Keys in the north-west to the Turks and Caicos Islands in the south-east.

The maritime boundaries (EEZ) have not been established at the time of visit in June 2004. It is of concern that when this is established, Cuba may claim traditional fishing rights during negotiations and thus may have to be allowed access into a part of the country's fishing grounds. The other boundaries at the Turks and Caicos Islands, Haiti and the USA are still to be demarcated.

The approved Fisheries Resources (Jurisdiction and Conservation) Regulations 1986 regulate the fisheries resources of The Bahamas. A summary of the prohibitions are as follows:

- Use of bleach or other noxious or poisonous substances
- Use of Scuba gear in the capture of marine products or resources
- Use of firearms or explosives for fishing
- Spear fishing within the following areas: One mile of the coast of New providence; one mile of the southern coast of Freeport, Grand Bahama; two hundred yards off the coast of all other family islands

- Nets used for fishing must have a minimum mesh gauge of 2 inches. Exceptions to this net are used for catching goggle-eyes and pilchards
- Scale-fish traps are required to have a self-destruct panel and minimum mesh sizes of 1 by 2 inches (greatest length mesh) for hexagonal wire mesh traps
- The taking of corals is prohibited
- Construction of artificial reefs without the permission of the minister is prohibited

Crawfish

- Annual closed season from April 1st to July 31st
- A minimum harvestable size limit of 3.25 inches carapace length or 5.50 inches tail length
- A permit is required for vessels trapping crawfish.
- Crawfish traps, unless otherwise approved shall be wooden slat traps not more than 3 feet in length, 2 feet in width and 2 feet in height with slats placed not less than 1 inch apart.
- The possession of "berried" or egg bearing female crawfish is prohibited. Stripping or otherwise removing the eggs from "berried" females is prohibited.

Conch

- The harvesting and possession of conch, the shell of which does not possess a well formed lip, is prohibited.

Turtle

- An annual closed season from April 1st to July 31st.
- A minimum harvestable size limit of 24 inches back length for green turtle and 30 inches back length for loggerhead turtle
- All turtle captured must be landed whole
- The taking or possession of turtle egg is prohibited
- The capture or possession of hawksbill turtle is prohibited

Scalefish

- The capture of bonefish by nets is prohibited

- The selling of bonefish is prohibited
- The catching of grouper and rockfish weighing less than 3 pounds is prohibited

Stone Crab

- An annual closed season from June 1st to October 15th
- A minimum harvestable claw length of 4 inches
- The harvesting of female stone crabs is prohibited

Other Regulations

- Marine Reserves are being established in the following areas: North Bimimi, Berry Islands, South Eleuthera, Exuma Cays and Abaco.
- A grouper spawning site at High Cay Andros site closed for 3 months in 2003 (Dec 16th to Feb 16th) for Nassau grouper. This fishery was closed nationwide for the month of January 2004.
- The capture or molesting of marine mammals is prohibited
- A permit is required to use air compressors for fishing purposes
- Use of air compressors is restricted to the period August 1 to March 31 to a water depth range of 30 to 60 feet.

Source: Summary of Fisheries Resources (Jurisdiction and Conservation) Regulations 1986. Department of Fisheries, The Bahamas.

11.4 Fishery Management Systems

The fishery industry has been described as a mono-crop industry, largely one specie is exploited, that is, the lobster. Conch, crab and finfish are exploited to a lesser extent. An experiment in lobster ranching was once allowed but project failed.

Large fishers operate factory boats and small independent fishers sell their catches to processors. The Spanish Wells fishers operate with a 'cooperative like' structure and independent fishers such as Hurricane Seafood operate a shared ownership type of business structure where employees

earn shares in the business over time (boat captains are given 49% of the factory / mother boat after working 5 years).

Prices for spiny lobster are set by processors in collaboration with the North American buyers. Prices are set in advance to the season but fishers may bid prices up according to fishery landings. Prices for lobster tail may start at USD 8.00 to USD 9.00 per lb at the beginning of the season and close at USD 12.00 to USD 13.00. Conch is sold year-round, based at a price of USD 3.00 / lb by fishers.

Currently, CITES have placed controls on the international trade in conch because it is suspected that exploitation is above the maximum sustainable yield. Thus, The Bahamas is required to show scientifically that current harvesting rates are not yet at the sustainable limit in order to satisfy the concerns raised. Industry' operators have indicated that more can be harvested if the restriction on the amount that can be exported are lifted by the government of The Bahamas.

The fishery administration reported that the current surveillance / monitoring system in place is grossly inadequate and poaching by fishermen from the Dominican Republic (DR), 'Yachties' and Americans are a common problem. Further, the DR fishers reportedly poach in the close season while Bahamian fishers are restricted. The Fisheries Act gives authority to officers (Police, Royal Defense Force and Customs) to monitor the fishery but this joint effort has been inadequate to curtail this problem.

11.5 Status of Fishery Resource

There were about 9,000 persons employed in the Fishing Industry in 1995: 6,000 of which are employed in the lobster fishery and 3,000 involved in the grouper, conch and processing plants. 'Single Day' fishers go out to sea with ice abroad their vessels while the majority of larger vessels have refrigeration units on board. During the lobster season Spanish Wells fishers go out to sea with 12 to 14 crew members and remain at sea for up to 26 days. Some Mangrove Cay vessels operate with 10 to 12 crew members and may return to shore in 10 days while others using smaller vessels make day trips. Fishers at Abaco operate with 2 crew members and return daily.

Opinions expressed by some administration indicate that overexploitation may be as a result of the duty free entry allowed on imports of vessels and gears aimed at encouraging entry into the industry. Fuel is also considered a key item that may lead to overfishing.

There are no EPZ statuses granted for fish processors. The city of Freeport on Grand Bahama is a free zone but no major fish processing takes place there. Duty free concessions previously allowed on packaging material have been removed.

Divers are allowed to fish with air compressors with the appropriate permits and Casitas are used to attract lobsters. The current estimates indicate 4,000 vessels ranging in size from 3.1m to 30m. Slightly more than 600 of the vessels that exploit the fishery are greater than 6.1m in length. The smaller vessels (1,500) are the main fishing vessels and the larger are usually mother / factory boats. Only vessels greater than 6.1m are required to be licenced to engage in commercial fishing. In 2003, a total of 394 licenses were issued for commercial fishing. Fishery products are transported from the Family Islands to New Providence, the main market. This is done by approximately 23 mailboats, which operate on a weekly basis.

11.6 Trade Statistics

In 2003, the total production of fishery products was estimated at 12,651 tonnes. Total landings 5,681 tonnes of lobster were valued at USD 92.7 mn (dressing % estimated at 33% for lobsters). Table 11.1 summarizes the categories of fishery products and values exported from The Bahamas during 2003. An estimated 60% of fishery products exported to the USA and 34% to France as shown in Table 11.2 and the variety of other fishery products export to various destinations are presented in Table 11.3.

Table 11.1: Quantity of Fishery Products Exported from The Bahamas in 2003

Product	Ouantity (kg)	Value (USD)	% of total
Crawfish / Lobster	3,391,470	$106,272,530	97.69
Scalefish	70,661	$522,775	0.48
Conch meat	67,858	$404,840	0.37
Stone crab claws	28,260	$642,431	0.59
Sponge	55,182	$943,001	0.87
		$108,785,577	

Source: Department of Fisheries, The Bahamas

Table 11.2: Destination of Lobster Exported from The Bahamas in 2003

Lobster Destination Market	Quantity (kg)	Value (USD)	% of total
USA	2,096,283	$64,701,608	60.88
France	1,118,186	$36,105,420	33.97
Canada	147,636	$4,655,038	4.38
Japan	0	$0	0
Barbados	11,636	$225,464	0.21
Spain	17,727	$585,000	0.55

Source: Department of Fisheries, The Bahamas

Table 11.3: Destination of Other Fishery Products Exported from The Bahamas in 2003

Product / Destination Market	Quantity (kg)	Value (USD)
Scalefish - USA	82,210	$522775
Conch – USA	67,813	$404440
Conch - Barbados	46	$400
Stone crab claws - USA	28,160	$640231
Stone crab claws - Canada	100	$2200
Sponge – USA & Canada	39,090	$644,043
Sponge - Europe	16,092	$298,958

Source: Department of Fisheries, The Bahamas

11.7 Market Intelligence

The Fishing industry in The Bahamas is highly developed and processors have secured guaranteed marketing arrangements with large food service organizations in the USA and France.

11.8 Participation in International Trade Negotiations

The Department of Fisheries staff and Fishers / processors were not fully aware that 'Fisheries' is now being addressed at the WTO negotiations. However, staff at the Ministry of Trade and Industry were aware of the matter and were about to initiate an awareness programme. It is to be noted that The Bahamas have observer status only – they are not a member of the WTO at this time. The Department of Fisheries staff and Trade personnel however were not fully appraised of the issue of 'subsidies' as it relates to fishery at the WTO. For example, with respect to the possibility of opening up the economy for investments by non-Bahamians – the current

regulations which prevent non-Bahamian fishers from exploiting the fishery may have to be revisited and the authorities may be required to issue new licenses to exploit the fishery on the basis of scientific evidence.

11.9 Appreciation of Issues

Below is a summary of issues that were highlighted:

- Managers of Tropic Seafood and Paradise Fisheries are co-chairpersons of the Bahamas Fisheries Advisory Committee and advise/liaise with government on issues impacting on the industry.
- On the issue of market competition, Bahamian companies do not benefit from subsidies and have to compete openly in the US market with US firms who reportedly receive substantial amounts of subsidies for their operations
- Bahamian processors do not benefit from customs duty or any other kind of concessions; they are required to pay the same cost of electricity as others in the sector.
- The Fisheries sector need to be upgraded; government staff and fishers require more technical training, laboratory equipment needs modernization and inspectors need to be trained to a level that authorizes them to grant internationally accepted certification.
- Personnel at all levels including industry stakeholders do not have a full appreciation of the positive and negative implications of their possible membership in the FTAA and WTO.
- The Bahamas do not have a significant land-based agricultural sector. Therefore unlike other CARICOM countries, the fisheries sector is considered as the 'subsistence' system in the country.
- The duty rate on seafood is 35% on imports.
- Currently, The Bahamas has not been fully certified to export fishery products to the EU for SPS reasons. At the current level of certification, due to expire at the end of 2005, exports are allowed to individual EU Member states, provided that the Member State is satisfied with the assurances provided by the Competent Authority in The Bahamas (The Department of Fisheries) and that the items were processed under conditions equivalent to those in the EU (Full certification is pending a final decision by the EU). Exports from The Bahamas are allowed to the USA and all food safety requirements are being met in that regard.

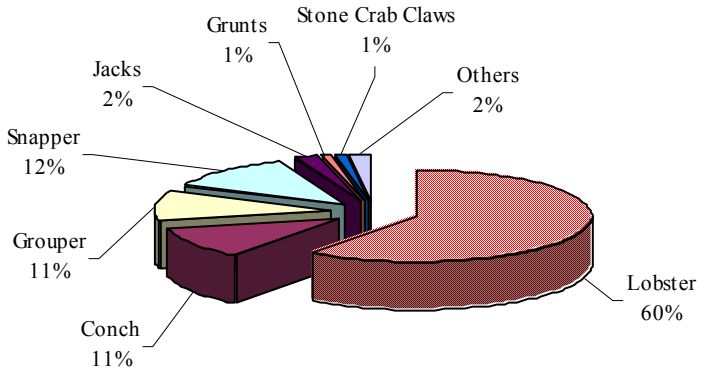
- During the closed season for Nassau Grouper in The Bahamas, imports of other species of grouper, e.g. from Mexico are allowed. It is suspected that fishers from the Dominican Republic are involved in illegal fishing in The Bahamas during the closed season for Nassau Grouper.
- Staff shortages: The geographical layout of The Bahamas is 150,000 sq miles with over 700 islands. The dispersed nature of the country makes surveillance difficult. Outside of those in Nassau, there are only 4 fisheries inspectors at Abaco, one in Andros and 2 at Freeport to monitor/perform surveillance work in the fishery in an industry that is contributing more that USD 100 million to the economy. Yacht operators reportedly poach in Bahamian waters and do not observe bag limit and fishing Laws. Industry personnel have expressed a willingness to assist with funding additional fisheries inspectors and vessels for surveillance duties to conserve the fishery and reduce poaching activities.
- Since the onset of the HACCP regulatory requirement, the number of processing plants in the country has been reduced. There have been significant improvements in the processing plants still licenced and Tropic Seafood has constructed a new processing facility. The EU has requested an assurance that the cold chain is maintained at the plant during lobster processing (objections exist where lobster tails brought in the previous day is kept chilled rather than frozen to facilitate next-day processing operations.
- Bahamians are now allowed to invest in joint ventures with non-Bahamian firms in fishing operations.
- The fishery sector is relatively open; once Bahamians have the equipment they can exploit the fishery (without consideration for the maximum sustainable limit). Recreational fishers are not registered which can also lead to over-exploitation.

11.10 Pattern of Resource Exploitation

Divers use Hawaiian slings or hooks to catch most of the spiny lobsters; they may be aided by air compressors carried on small boats. The fisheries department issues permits which authorize use of air compressors and traps. Landings, by weight, in 2003 were: Lobster 60%, conch 11%, grouper 11%, snapper 12%, jacks 2%, grunts 1%, Stone crab claws 1%, others 2%, see Figure 11.1.

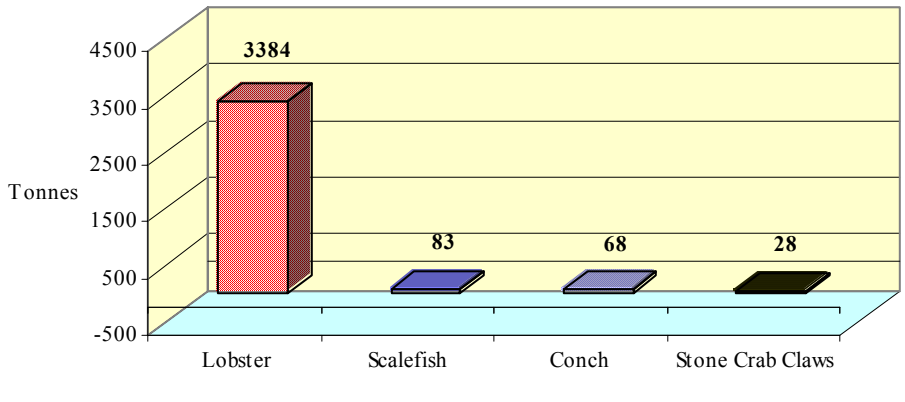
An estimated 90% of the lobster is exported in the form of individual quick frozen tails. In 2003 seven exporters shipped 3,384 tonnes of frozen tails, four exporters shipped 83 tonnes of scalefish, five exporters shipped 68 tonnes of conch, five exporters shipped 28 tonnes of stonecrab claws at a total value of $109.8 mn mainly to USA, France and Canada.

Figure 11.1: The Bahamas - Fishery Production by Volume Share 2003



Source: Department of Fisheries, The Bahamas

Figure 11.2: Export of Fishery Products from The Bahamas - Tonnes (2003)



Source: Department of Fisheries, The Bahamas

11.11 Quality Assurance and Food Safety

Factory boats, which operate with a HACCP plan developed for boat-processing operation process their catch at sea. The inspectors do not perform routine inspections on the boats, rather they inspect the documentation, probably due to a lack of resources; however, limited sampling is taken to the laboratory for testing. The products are allowed entry into the USA and France, but not all EU countries and the fisheries Division operates a recall programme if necessary. At the time of our visit, the laboratory did tests for e-coli, coliform and salmonella and were to commence testing for sulphates but did not have the equipment to do histamine and heavy metals tests and the food processing lab was inactive. It takes about 2 weeks to test a sample and sometimes the shipment leaves the country before test results are completed.

Further, no inspections are done on the fishery products that go into the local food service sector and the fresh / chilled domestic market (which can have implications for the tourism industry). However, the Food Act Chapter 218 has been modified to include inspection of small landing sites, domestic market and artisanal operators.

Clearly, while the standards in the industry appear to be quite high especially at the processing plants and factory boats, the health and food safety system will have to be continuously upgraded. A multifunctional laboratory has been constructed and is being upgraded but there is definitely a need for timely, effective and adequate laboratory procedures and facilities to test shipments before export and to bring the industry up to the standards required for effective competitiveness and expansion of market share.

11.12 Research and Development

A comprehensive resource assessment is required and the country has not updated all its legislative regulations to satisfy international requirements. CITES has requested that a number of management measures be implemented and for a stock assessment to be conducted on the conch fishery of The Bahamas, but due to limited resources this particular exercise could not be undertaken. The fishery however, has been open for staff of the FAO to conduct research when required which serves to assist with the research effort.

11.13 Human Resource Status

The current staff complement appears quite small and inadequate to satisfy the size of the fishery. There is currently a freeze on recruitment which further hampers the work of the Fisheries Department. Budget allocations have been held relatively constant, financial input is minimal. While there is no staff recruitment allowed, there is ongoing attrition / retirement or others who have left to upgrade their skills.

The sector is clearly a major foreign exchange earner, utilizing the country's natural resources. Thus, the potential contribution of the fisheries' need to be further assessed which may help to justify the additional investments to the sector subject to resource assessment.

11.14 Infrastructure

The landing sites visited on New Providence Island were well developed and kept in a reasonably sanitary condition. The processing plants as well as the factory boats were in very good condition and had HACCP plans in place for their operations. Some fishers have refrigeration units on their boats to store their catch and maintain the cold chain. Others carry ice and land their catch while maintaining the cold chain. Pictures 11.1 to 11.3 show various landing sites in The Bahamas.

Picture 11.1: Fish Landing Site – Nassau, Bahamas

Picture 11.2: Lobster Traps Loaded on Mother Boat – The Bahamas

Picture 11.3: Fishing Vessels moored at Multipurpose Port – The Bahamas

11.15 Resources in terms of profitability

The investments in the fishing industry in The Bahamas are substantial and are of a high level.

- One boat plus traps operation cost was reported at about $5000 / trip (traps, fuel and 5 operators)
- Factory boat harvesting trip costs $12,000 to $15,000 / trip. Undertake 13 trips per season
- July 1 to June 30 cost $210,000 and payroll is an additional 50% of that cost
- Investment into business $420,000, capitalize over 5-7 years
- After payback I 5 years, divest 49% of ownership to captains
- Technology – GPS, refrigerator, casitas
- Turn over $ 35 million for 6 million pounds of tails

List of Persons Consulted during this Exercise in The Bahamas

Name	Post	Department/Office
Michael T. Braynen –	Director of Fisheries,	Department of Fisheries, Ministry of Agriculture and Fisheries and Local Government, The Bahamas (michaelbraynen@bahamas.gov.bs)
Pat Bethel	Assistant Director of Fisheries,	Department of Fisheries, Ministry of Agriculture and Fisheries and Local Government, The Bahamas
Gilford Lloyd	Senior Fisheries Officer, Marine Biologist,	Department of Fisheries, Ministry of Agriculture and Fisheries and Local Government, The Bahamas
Helen Ebong	Permanent Secretary	Ministry of Trade and Industry, The Bahamas hebong@bahamas.gov.bs
Hank O. Ferguson	Trade Officer	Ministry of Trade and Industry, The Bahamas (hankobrien@hotmail.com
Glenn Pritchard	General Manager	Tropic Seafood, The Bahamas
Anthony McKinney	President and Chief Executive Officer	Paradise Fisheries, The Bahamas amckinney@paradisefisheries.com
Shawn Tinquest –	Manager, Owner	Hurricane Seafood, The Bahamas
Avis Richard	Senior Chemist	Department of Fisheries, Ministry of Agriculture and Fisheries and Local Government, The Bahamas
Edward Taylor	Fisheries Inspector	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas
Rachel Williams	Senior Biologist	Department of Fisheries, Ministry of Agriculture and Fisheries and Local Government, The Bahamas
Koji Wright	Data Manager	Department of Fisheries, Ministry of Agriculture and Fisheries and Local Government, The Bahamas

Chapter 12

Profile of the Fishing Industry

Suriname

12.1 Background

Suriname's coastline stretches between Guyana and French Guiana, a distance of 620 km in length. The continental shelf has an area of 56,885 km sq and the territorial sea (up to 12 nautical miles) area is 8,999 km sq. The claimed Exclusive Economic Zone is 119,050 km sq. An estimated 87% of the population resides within 100 km of the coast (Coastal Statistics, 2000[16]).

The industrial fishery targets the export market and is operated by mostly foreign trawlers while the artisanal fishery supplies mainly the local market.

The annual production of marine fish production (excludes aquaculture) was estimated at 16,000 tonnes in 2000. Mollusks and Crustaceans were estimated at 250 tonnes in 1997 and aquaculture production which includes freshwater was 345 tonnes in 2000.

The per capita food supply (consumption) of fish and fishery products was 25 kg in 2000. Exports were reported at $US 4,827,000 and imports at $US 6,211,000.

12.2 Infrastructure

One of the main fishery landing site is the Paramaribo Central Market where fish is marketed for either export processing or domestic consumption. Cevihas, Domdurg, Sluis II and Boomskreek are the other major landing sites for the marine fisheries and Sail, Jagtlust and Sujafi are the main ones for shrimp. At Sail, both marine and cultured shrimps are processed on the compound.

[16]Source: Coastal and Marine Ecosystems – Suriname.
http://www.google.tt/search?q=cache:3VKeGvLncUsJ:earthtrends.wri.org/pdf_library/country_profiles/Coa_cou_740.pdf+suriname+fishery&hl=en&ie=UTF-8

Table 12.1 provides an overview of other landing sites for brackish, marine and inland fisheries, and is listed from east to west along the coastline[17]. Pictures 12.1 and 12.2 show the docking facilities at SAIL and Nieuw Amsterdam, respectfully. Both are well developed, of concrete and steel infrastructure and are maintained in a reasonably good sanitary condition. However, berthing facilities along the Suriname River such as those used by the Javanese fishers are dilapidated and structurally unsound, as shown in Picture 12.3.

Table 12.1: Primary Landing Sites - Suriname

Brackish	Marine	Inland
Matapica	Visserij Centrum	Paramaribo Central Market
Margrita	Commewijne	Toutlifout
Marienburg	Blauwgrond	Domburg
Nieuw Amsterdam	Jagtlust	Stoepenbrug
Rust en Werk	Sluis II	Uitkijk
Clevia Sluis	Boomskreek	Java
Blauwgrond	SAIL	Pokigron
Paramaribo Central	Paramaribo Central Market	Pikien Saron
Market	De Molen	Witagron
Calcutta	Cevihas	Clara Sluis
Boskamp	Sujafi	Apoera
Totness	Domburg	
Afdamming		
Nickerie Central Market		
Zeedijk		

Source: Coastal and Marine Ecosystems – Suriname.
http://www.google.tt/search?q=cache:3VKeGvLncUsJ:earthtrends.wri.org/pdf_library/country_profiles/Coa_cou_740.pdf+suriname+fishery&hl=en&ie=UTF-8

[17] Source: Coastal and Marine Ecosystems – Suriname.
http://www.google.tt/search?q=cache:3VKeGvLncUsJ:earthtrends.wri.org/pdf_library/country_profiles/Coa_cou_740.pdf+suriname+fishery&hl=en&ie=UTF-8

Picture 12.1: Docking Facilities at SAIL - Suriname


Picture 12.2: Landing Site at Nieuw Amsterdam 'Back Sluice' used by Artisinal Fishers - Suriname

Picture 12.3: Landing Site at Nieuw Amsterdam used by 'Javanese' Fishers- Suriname

12.3 Fishery Management Systems

The Suriname fishing effort takes place in the shallow waters of the continental shelf, mainly the demersal fishery. Suriname has classified their fishery resources into management units as presented in Table 12.2.

Table 12.2. Classification of fishery resources into management units.

MANAGEMENT UNIT		MAIN SPECIES	OTHER SPECIES
01	Large demersal fish	*Cynoscion acoupa* *Cynoscion steindachneri* *Arius parkeri, Arius proops*	*Megalops atlanticus* *Epinephelus itajara* *Lobotes surinamensis*
02	Small soft-bottom demersal fish	*Macrodon ancylodon,* *Cynoscion virescens, Nebris microps,*	*Larimus breviceps* *Arius spp.* *Bagre spp.*
03	Small sandy-bottom demersal fish	*Lutjanus synagris*	*Haemulon spp.* *Calamus spp.*
04	Red snapper & deep sea fish	*Lutjanus purpureus*	*Rhomboplites aurorubens* *Serranidae*
05	Rays & sharks		
06	Large pelagic fish	*Scombridae*	*Sphyraenidae, Caranx*
07	Small pelagic fish	*Engraulidae, Clupeidae*	*Carangidae*
08	Brackish water fish	*Mugilidae, Centropomidae* *Tilapia mossambica*	*Arius passany, Arius couma,* *Elops saurus*
09	River fish	*Plagioscion surinamensis*	
10	Fresh water fish	*Callichthydae, Erithrinidae*	*Aequidens spp.*
11	Estuarine shrimp	*Xyphopenaeus kroyeri*	*Nematopalaemon schmitti*
12	Penaeid shrimp	*Penaeus subtilis* *Penaeus brasiliensis*	*Penaeus schmitti* *Penaeus notialis*
13	Deep sea shrimp		
14	Crabs	*Ucides cordatus*	*Other crabs*
15	Cephalopods		
16	Sea turtles	*Chelonia mydas, Dermochelys coriacea*	*Lepidochelys olivacea,* *Eretmochelys imbricata*

Source: Fishery Notes, Suriname

12.4 Status of Fishery Resource

The Fisheries Division has 390 artisanal vessels licenses -- 350 licences for artisinal driftnet fishery and 40 for the bangamery fishery on their registration list in June 2004. There are also 310 industrial vessels licenses as shown in Table 12.3. The fishing grounds are also classified by the type of vessel, type of gear used and the depth zones. These are presented in Table 12.4.

Table 12.3: Number of Licenses for each type of Fishery - Suriname

Category / Fishery License	Number of Licenses
Artisinal	
Driftnet	350
Bangamary	40
Industrial	
Demersal Bottom Trawl	15
Coastal Pelagic Trawl	10
Large Pelagics	15
Red Snapper / Mackerel	150
Seabob Shrimp Trawl	30
Deep Sea Prawn Trawl	100
Total	**710**

Source: Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname . June 2004.

Table 12.4: Classification of Fishing Grounds by Type of Vessel

TYPE OF BOAT	FISHING GROUNDS	TYPE OF GEAR	DEPTH ZONE
Trawler	sea	Shrimp Deep sea shrimp Sea bob Small finfish Cotters Large finfish	20 – 80 m 190 – 250 m 13 – 20 m 10 – 30 m 20 – 85 m 20 – 50 m
Decked Guyana	sea	Drifting gillnets	5 – 20 m
Open Guyana	sea	Drifting gillnets Pin seine Longline	5 – 10 m 0 – 5 m 2 – 10 m
Korjaal	estuaries	Chinese seine Bottom longline Drifting gillnet	2 – 5 m 2 – 5 m 2 – 5 m
	river	Haritete (river seine)	0 – 1 m
Korjaal or no boat	river and inland	other	

Source: Coastal and Marine Ecosystems – Suriname.
http://www.google.tt/search?q=cache:3VKeGvLncUsJ:earthtrends.wri.org/pdf_library/country_profiles/Coa_cou_740.pdf+suriname+fishery&hl=en&ie=UTF-8

12.5 Processing

The fish-processing industry in Suriname can be divided into artisanal and industrial processing plants. Artisanal processing industries are mainly family-undertakings, and produce mainly for local market. One of the major commodities being dried, salted shrimps as shown in Picture 12.4 and 12.5. Industrial processing plants such as SAIL, Sujafi, Guiana seafoods, Bera Fisheries, Caribbean Seafoods and others are relatively large scale, producing the following primary and semi-manufactured / value added products:

a. Fresh on ice, whole gutted fish, mainly exported to USA
b. Frozen fish products (whole gutted, sliced, fillets fish)
c. Frozen head-on and headless shrimps (SAIL, Sujafi and COMAS)
d. Frozen peeled seabob shrimps
e. Smoked fish
f. Salted fish
g. Dried shrimps

In January 1997, forty-one (41) processing plants were registered at the Department of Fisheries. In 2001 only 16 fish processing plants and 4 shrimp processing plants were registered at the Department of Fisheries. In June 1994, 8 fish and 4 shrimp processing plants were exporting to European Union.

Picture 12.4: Small Scale Shrimp Drying at New Amsterdam Traditional Fishing Community

Picture 12.5: Dried Salted Shrimp, Ready to Eat

12.6 Appreciation of Issues

Marketing

Some processors indicate that the current difficulties faced in their marketing effort were largely inherited from the colonial system. The Ministry of Agriculture has also indicated their awareness of difficulties faced by marketers/processors and has indicated an intention to undertake a detailed study of the export markets for fish and fish products.

Policy

The fishery policymakers have recognized the need for greater responsibility in the responsible use of this natural resource as well as the importance of retaining market share and have been focusing on:

- research on the biomass stock to avoid overexploitation.
- laboratory facilities for research, inspection and certification (all the laboratories are not accredited and do not participate in ring tests)
- training programmes especially in application of HACCP principles (there is a lack of well-trained personnel in both government and private sector)

In addition, some of the global objectives pursued include:

- Long-term conservation of the fishery resources.
- Maximization of the long-term production of fish; contribution to the protein supply on the local market; production of affordable protein. These objectives can be seen as different expressions of achieving Maximum Sustainable Yield (MSY) levels.
- Maximization of the long-term economic yield (MEY): the level of harvest required to achieve this objective is always lower than the MSY level.
- Contribution to the trade balance; generation of foreign currency; maximization of exports. These objectives may coincide with MSY or MEY.
- Contribution to employment; maximization of the number of households earning their livelihood from the fishery, directly or indirectly; maintaining or improving living standards of the communities that depend on fishing and related activities.

(Source: Costal and Marine Ecosystems – Suriname)

12.7 Pattern of Resource Exploitation

The fishing industry, including aquaculture had an estimated 3,628 persons employed in 2000. Further, there was an estimated 268 docked fishery vessels between 1995-1998. According to the fishing vessel used, type of gear and the fishing ground exploited, the fleets in Suriname has been divided into two categories: (a) the industrial fleet and (b) the small-scale or artisanal fleet as seen in Table 12.5

Table 12.5: Classification of fishing fleets operating in Suriname

Fleet Category	Type Of Vessel	Type Of Gear
Industrial Fleet	Outrigger trawlers	Shrimp trawl Fin-fish trawl Sea-bob trawl
	Stern trawlers	High-opening trawl
Small-Scale Fleet	Snapper boats	Hook and line
	Guyana boats	Drifting gillnet Njawarie (banknet) Longline (bottom)
	Korjaal (canoes)	Large fuiknet (Chinese seine) Medium fuiknet (Chinese seine) Small fuiknet (Chinese seine) Drifting gillnet Longline (bottom) Kieuwnet (fixed gillnet) Haritete (river seine)
	Small or no canoes	Drag net Spannet (fixed gillnet) Chastnet

Source: Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname . June 2004.

The fishery resources of Suriname have been classified into 16 management units as presented in Table 12.6. The drifting gillnets fleets use different mesh sizes which vary from 9 – 20 cm, depending on the type of boat. Differences exist in the number of nets used by the vessels, the engine power and vessel age -- engine power varies from 365 – 475 hp. All trawlers are required to use turtle excluder devices in the nets.

Efforts are being made to assess the impact of the selective and non-selective gear types. Drifting gillnets used in the coastal zone have large mesh sizes (6 to 8 inches stretched), and belong to the most selective fishing gears. The large fuiknet can also be counted among the most selective gears. Alternatively, trawls are non-selective and retain a range of different species and sizes, including a number that are of no economic value, and undersized individuals. The njawarie is probably the only other fishing gear with selectivity as low as that of the trawls. (Ministry of Agriculture, 2004)

Table 12.6. Main and secondary target stocks (T,t), main and secondary by-catch (B,b) by fleet.

Gear \ Resource	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Shrimp trawl	b	B	b	b	B	b	b	b			b	T		b	b	?
Fish trawl	t	T	T	b	B	b	B				b	b		b	b	?
Stern trawl	b	T	T	b	b	t	B					b		b	b	?
Sea-bob trawl	b	B			B		b				T	t		b	b	?
Hook & line				T	b	t										
Drifting gillnet	T	t			B	b		b								?
Njawarie	T	T			B			t								?
Longline	T	t			b											
Large fuiknet	t	T														
Medium fuiknet		t					t				T	b				
Small fuiknet		b					b					b				
Kieuwnet								T		t						
Haritete									T							
Lagoon drag net								t			t					
Estuary drag net								t			t					
Spannet								t	T	t						
Chast-net								t		t						

Source: Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname . June 2004.

12.8 Legislation and Regulations

Suriname's marine fishers are regulated by Decree C-14 since 1980 and the inland fisheries by the *Visstand Bescheringswet,* since 1961. For the inland fisheries, Article 2 of *Visstand Beschermingswet* 1961 applied to fishers with Surinamese nationality for fishing in river mouths, rivers and other inland waters using korjaal (canoe) varying from 8.5 m to 12 m in length, width of 2-2.6 m and depth of ±0.6 m. The mesh size of the net will also vary according to the fishery type, from 1.875 – 8.750 cm[18].

For coastal fisheries, the relevant legislation is Articles 14 and 17 of Decree C-14 for fishing in the EEZ of Suriname. The vessels used are called Decked and Open Guyana type (GG, OG) varying in from 14 to 15 m, with a width of 2.5 – 3.5 m and depth of 1.25 – 1.50 m, all with at least one fish box with ice for storage. For Njawarie (pin seine), meshes of 2.5 cm are used on the mud banks along the coast.

A new legislation will address management of the country's fisheries, both marine and inland. Administration of the fishery is the responsibility of the Fisheries Division.

12.9 Processing and Quality Control Legislation

The Department of Fisheries, Ministry of Agriculture, Animal Husbandry and Fisheries, has responsibility for inspection and quality assurance in the sector. Their authority is based on the Fish Inspection Law (Viskeuringswet) of 16 November 2000.

The applicable State Decree and the Ministerial Decree enforced since February 2002 are as follows:

1. Fish Inspection State Decree (viskeuringsbesluit)
2. Fish Inspection Decree (Algemene beschikking)
3. HACCP-decree (HACCP bechikking)
4. TVBN-decree (TVBN bechikking)
5. Tariffs-decree (Tarieven beschikking)
6. Additives decree (Additieven beschikking)
7. Model decree (Modellen beschikking)

[18] Source: Coastal and Marine Ecosystems – Suriname.
http://www.google.tt/search?q=cache:3VKeGvLncUsJ:earthtrends.wri.org/pdf_library/country_profiles/Coa_cou_740.pdf+suriname+fishery&hl=en&ie=UTF-8

Draft texts are in preparation for the incorporation of the Fish Inspection Institute (Viskeuringsinstituut VKI) and the recognition and registration decree (Erkenning en registratie beshikking).

12.10 Fishery Production and Trade

Suriname's annually fish landings were estimated at 16,000 tonnes. The aquaculture shrimp output of marine shrimps in 2000 was 200 – 300 tonnes. The main export destinations for Suriname fisheries products are the EU (35% fish + 10% shrimp), USA (40% fish), Japan (90% shrimp), CARICOM (Jamaica 20% fish). Exports of specific product classified by HS Code are presented in Table 12.7. This data set was obtained from the Hemisphere Database. Imports are considered negligible, averaging USD 152,000 in 1999-2000 (Table 12.8).

Table 12.7: Export of Fishery Products – Suriname

HS Code	Description	Average		Destination of Exports (%)						
		Values In Thousand of US $	Volume In Kilograms	USA	EU	Canada	Latin America	Asia	CARICOM	Other
030240	Herrings (Clupea Harengus, Clupea Pallasii), Excluding Livers And Roes	5.7	4519.0		100					
030250	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus), Excluding Livers And Roes	503.0	1018906		14		10		76	0
030270	Livers And Roes	0.3	826		100					
030350	Herrings (Clupea Harengus, Clupea Pallasii), Excluding Livers And Roes	0.0	33		100					
030360	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus), Excluding Livers And Roes	423.7	804845	28	21	0	14		32	5
030380	Livers And Roes	5.7	3768		18			82		
030410	Fresh Or Chilled	833.7	1629351	32	25	1			42	0
030420	Frozen Fillets	128.7	100967	12	80			7	1	0
030490	Other	23.0	17184	12	14	6	1	54	13	0
30520	Livers And Roes, Dried, Smoked, Salted Or In Brine	0.0	91							
030530	Fish Fillets, Dried, Salted Or In Brine, But Not Smoked	195.3	131953		100					
030551	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus)	4.0	4046							
030559	Other	70.0	47690		88			12		0
		2193.1	3764179							

Source: Hemispheric Database

Table 12.8: Import of Fishery Products – Suriname

HS Code	Item / Product	Average 1999-2000		Source of Imports (%)						
		Values In Thousand of US $	Volume In Kilograms	USA	EU	Canada	Latin America	Asia	CARICOM	Other
30110	Ornamental Fish	9.67	0	76	3				21	
30240	Herrings (Clupea Harengus, Clupea Pallasii), Excluding Livers And Roes	0.33	0		100					
30250	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus), Excluding Livers And Roes	0	0	50	50					
30350	Herrings (Clupea Harengus, Clupea Pallasii), Excluding Livers And Roes	0.33	0		100					
30360	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus), Excluding Livers And Roes	2.33	0							
30380	Livers And Roes	0.33	0	96	2			2		
30410	Fresh Or Chilled	5.33	0	2	98					
30420	Frozen Fillets	1.33	0		98			2		
30490	Other	7.67	0	96	2				2	
30510	Flours, Meals And Pellets Of Fish, Fit For Human Consumption	1.33	0	50	50					
30520	Livers And Roes, Dried, Smoked, Salted Or In Brine	0	0	33	33			33		
30530	Fish Fillets, Dried, Salted Or In Brine, But Not Smoked	6.33	0	2	98					
30551	Cod (Gadus Morhua, Gadus Ogac, Gadus Macrocephalus)	110.67	0	2	96				2	
30559	Other	6.67	0	2	96			2		
	Total	152.00	0.00							

Source: Hemispheric Database

12.11 Food Safety and Quality Assurance

The Department of Fisheries, Ministry of Agriculture, Animal Husbandry and Fisheries, is responsible for the inspection and the enforcing of food safety and health standards for the fishery processing plants. The tasks include:

i. Inspecting the hygiene of the fishing boats
ii. Training of personnel on behalf of fish-processors and the government in the area of quality assurance and inspection
iii. Inspection at the landing-sites
iv. Inspection and certification of fish-processing plants according the HACCP and EU standards
v. Evaluating and monitoring for possible hazards (hygiene, biotoxines such like ciguatera and in the future histamine and chemical residues on aquaculture products)
vi. Preparing and implementing the fish-inspection legislation
vii. inspection of the packaging, labeling, storage and transport of fishery products

Since January 1996, only registered companies can export fishery products. Effective July 1997, only HACCP certified companies could export to Europe. When the Fish Inspection Legislation is enforced, only registered processing plants will be allowed to produce and export. Box 12.1 below provides a list of companies currently authorized to export fish and fishery products to the EU.

Three laboratories are involved in testing fishery products.

(1) Laboratory of the Fisheries Department
   a. The Freshness-laboratory[19]
   b. The Micro-biology laboratory[20]

   The Ciguatera test is also done with Cigua-check test kits. This test is a semi-quantitative method. Fish is not suitable when it exceeds the limit of 1 ppb.

(2) The Central Laboratory of the Ministry of Public Health is responsible for the microbiological and chemical tests for product and potable water for the processing plants.

[19] This laboratory can carry out the following measurements:
- Acidity: pH
- Quality index: Q-factor
- Water-activity: Aw
- Refractive index of the eye fluid: RI
- Refractive index of the flesh fluid
- TVB-N by vapodestillation
- TVB-N by reference method (Antonakopoulos destillation)

[20] This laboratory monitors the results of the cleaning and disinfecting method used by the processing plants:
- Total bacterial count with RODAC
- Total bacterial count with dipslides for coliforms and enterobacteriaceae
- Primary Energy Source of living micro-organisms with HYLITE (ATP- method)

(3) The Soil Science Laboratory, Department of Agriculture University of Suriname carries out checks on mercury and the chemical residues of the aquaculture products.

Risk assessments are done at the following points:

(1) Fishing area and Aquaculture nurseries:
- Ciguatera
- Histamine
- Chemical residues in water and sediment from the ponds and aquaculture products
- Hg
- Residue of pesticide (fish flesh)

(2) Fishing boats:
- Hygiene
- GMP (processing, storage)

(3) Landings sites

(4) Transport

(5) Processing plants: Total Quality Management (HACCP and the prerequisites)

(6) Harbor facilities

Box 12.1

Companies authorized to export Fish and fishery products to the EU

ANNEXE/ANNEX
Bruxelles, le 10 juin 2004
E3 D(04)531605 RM/agm
PAYS / COUNTRY : SURINAME / SURINAME
PRODUIT / PRODUCT : PRODUITS DE LA PÊCHE / FISHERY PRODUCTS
MODIFICATION DE L'ANNEXE DE LA DECISION DE LA COMMISSION 2002/857/CE
MODIFICATION OF ANNEX TO COMMISSION DECISION 2002/857/EC
Nouvelle liste consolidée pour **SURINAME** / New consolidated list for **SURINAME**

1. SUR/597/001 Sail Ltd. PARAMARIBO PP
2. SUR/597/002 Sujafi Co. Ltd. PARAMARIBO PP
3. SUR/597/004 Seafood Industries Suriname N.V. PARAMARIBO PP
4. SUR/597/003 Guiana Seafoods NV COMMEWIJNE PP
5. SUR/597/101 Omicron Seafood N.V. PARAMARIBO PP
6. SUR/597/102 Caribbean Seafoods N.V. DUISBURG PARAMARIBO PP
7. SUR/597/104 Suvveb N.V. BETHESDA PARAMARIBO PP
8. SUR/597/105 N.V. Doroe PARAMARIBO PP
9. SUR/597/107 Bera Fisheries N.V. PARAMARIBO PP
10. SUR/597/108 Parhum N.V. LIVORNO PARAMARIBO PP
11. SUR/597/110 Suriname Sea Catch N.V. PARAMARIBO PP
12. SUR/597/112 Holsu N.V. DOMBURG DISTRICT WANICA PP
13. SUR/597/114 N.V. Unity LIVORNO PARAMARIBO PP
14. SUR/597/115 Deep Sea Atlantic N.V. DISTRICT WANICA PP
15. SUR/597/116 Bisoen Ocean Seafood N.V. PARAMARIBO PP
16. SUR/597/117 Bera Fisheries N.V. DIJKVELD PARAMARIBO PP
17. SUR/597/118 Guysur Fisheries N.V. WANICA PP

Categorie Legend:
PP Processing plant
PP Etablissement
In force since / En vigueur à partir du : 23/06/2004
Source: http://forum.europa.eu.int/irc/sanco/vets/info/data/listes/11bz.pdf

12.12 Human Resource Status

Staff members of the Fishery Division benefited from the following courses / workshops:

Date	Name of the course/training	Lecture(s)
April 5-9, 94	HACCP in the fisheries sector (FAO/DANIDA)	Lima Dos Santos / Hector Lupin (FAO)
April 5-12, 95	Quality management in fish processing plants (ABOS/Fish.Dept)	Dr. Vanthuyne
April 18-20, 95	HACCP audit (ABOS/Fish.Dept)	Dr. Vanthuyne
May 12, 95	Processing of fish (filleting) (ABOS/Fish.Dept/STIVI)	Arjune (local expert)
Oct. 1995	3 courses: (ABOS/Fish.Dept) - Layout for processing plants - Cleaning and disinfection methods - GMP	Dr. Vanthuyne
May, 1996	Laboratory methods on freshness tests	Dr. Vanthuyne
Oct 1996	The use of the food additives in fishery products (ABOS/Fish.Dept)	Dr. Vanthuyne
March 1997 – Febr. 1998	Fish Inspection and Quality Management in the Fisheries sector. (ABOS/Fish.Dept/NATIN)	NATIN University of Sur. Fisheries Dept.
Oct 1998 - Sept. 1999	Fish Inspection and Quality Management in the Fisheries sector. (ABOS/Fish.Dept/NATIN)	NATIN University of Sur. Fisheries Dept.

Consultations and Visits

Suriname

Name	Post	Address
Mr. J. Sahtoe	Permanent Secretary	Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname
Ir M.P. Mahadew	Director of Fisheries	Fisheries Division, Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname
Fisheries Staff	Staff	Fisheries Division, Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname
Ing. P. Sewdien	Managing Director	Namoona Fisheries, Suriname
Gerry G. Mannes	Managing Director	Omicron Seafood, Suriname
Javanese Fishers	Javanese Fishers	East Bank, Suriname River, Suriname
Mariette van Dijk	Manager	N.V. COMFISH, Comfish N.V. comfish@sr.net (Shrimp Farm), Suriname

SUMMARY TABLE

Field Consultation

Listed below are names of the main persons consulted in the various countries. This list is by no means exhaustive.

Suriname		
Name	**Post**	**Address**
Mr. J. Sahtoe	Permanent Secretary	Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname
Ir. M.P. Mahadew	Director of Fisheries	Fisheries Division, Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname
Fisheries Staff	Staff	Fisheries Division, Ministry of Agriculture, Animal Husbandry and Fisheries, Suriname
Ing. P. Sewdien	Managing Director	Namoona Fisheries, Suriname
Gerry G. Mannes	Managing Director	Omicron Seafood, Suriname
Javanese Fishers	Javanese Fishers	East Bank, Suriname River, Suriname
Mariette van Dijk	Manager	N.V. COMFISH, Comfish N.V. comfish@sr.net (Shrimp Farm), Suriname

Guyana		
Dr. Dindyal Permaul	Permanent Secretary	Ministry Of Agriculture, Guyana
Dawn Mason	Principal Fisheries Officer	Ministry Of Agriculture, Guyana
Earl Thompson	Fisheries Officer- Guyana	Ministry Of Agriculture, Guyana
Ingrid Peters	Fisheries Officer	Ministry Of Agriculture, Guyana
Charles Seepersaud	Legal Officer / Trade Negotiator	ACPU- Ministry Of Agriculture, Guyana
Janet Kissoon	Manager	Guyana office For Investment (Go-Invest) - Guyana
Sharon Smith	Plant Manager	Nobel House Seafood- Guyana
Mohammed Khan	Chairman	Greater Georgetown Fishermen Cooperative Society Limited- Guyana
Rashid Baksh	President	Rosignol Fishing Cooperative Society - Guyana
Churaman Mahabir	Chairman	Rosignol Fishing Cooperative Society- Guyana
Bisram Sunwaro	Executive Member	Rosignol Fishing Cooperative Society- Guyana
Guyandeo Ramdeen	Executive Member	Rosignol Fishing Cooperative Society- Guyana

Belize		
Hugh O'Brien	Chief Executive Officer,	Ministry of Agriculture and Fisheries, Belize
James Azueta	Fisheries Officer,	Ecosystems Management Unit Coordinator, Ministry of Agriculture and Fisheries, Belize
Robert L. Usher	Executive Secretary / Managing Director,	Northern Fishermen Co-operative Society Limited, Belize
Shawn Adasha Richards	Trade Economist	Ministry of Foreign Trade, Belize
Andrea Reneau	Aquatic Animal Health Officer,	Belize Agricultural Health Authority, Belize
Windell Middleton	Manager, Investment and Business Facilitation	BELTRAIDE, Belize
Roberto Harrison	CEO Investment and Business Facilitation	BELTRAIDE, Belize
Hugh Saul	Executive Director	Caribbean Regional Fisheries Mechanism Secretariat
James V. Hyde	Director, Nova Companies (Belize) Ltd.	Nova Companies (Belize) Ltd.
David Liong	Field Operations Manager	Nova Companies (Belize) Ltd.
David Duran	Processing Plant Manager	Nova Companies (Belize) Ltd.
Michael Morales	Fisheries Officer	Ecosystems Management Unit Coordinator, Ministry of Agriculture and Fisheries, Belize
Charles Heusner	Chairman	Belize National Fishermen Producers Cooperative Limited

Jamaica		
Andre Kong	Director of Fisheries	Ministry of Agriculture, Jamaica
Dr. Richard Harrison	Permanent Secretary	Ministry of Agriculture, Jamaica
Wayne Pert	Agricultural Officer	Ministry of Agriculture, Jamaica
Marie Strahan	Director	Ministry of Agriculture, Jamaica
Robert Vivine	Trade Officer	Ministry of Agriculture, Jamaica
Camille Graham	Trade Officer	Ministry of Agriculture, Jamaica
Fisherfolk	Fisherfolk	Port Royal & Old Kingston

The Bahamas		
Michael T. Braynen –	Director of Fisheries,	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas (michaelbraynen@bahamas.gov.bs)
Pat Bethel	Deputy Director of Fisheries,	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas
Gilford Lloyd	Senior Fisheries Officer, Marine Biologist,	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas
Helen Ebong	Permanent Secretary	Ministry of Trade and Industry, The Bahamas hebong@bahamas.gov.bs
Hank O. Ferguson	Trade Officer	Ministry of Trade and Industry, The Bahamas (hankobrien@hotmail.com
Glenn Pritchard	General Manager	Tropic Seafood, The Bahamas
Anthony McKinny	President and Chief Executive Officer	Paradise Fisheries amckinney@paradisefisheries.com
Shawn Tinquest –	Manager, Owner	Hurricane Seafood, The Bahamas
Avis Richard	Senior Chemist	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas
Edmund Taylor	Fisheries Inspector	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas
Rachel Williams	Senior Biologist	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas
Koji Wright	Data Manager	Department of Fisheries, Ministry of Agriculture and Fisheries, The Bahamas