FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/JAM  October 2005
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	
RESUMEN INFORMATIVO SOBRE LA PESCA POR PAISES	Organización de las Naciones Unidas para la Agricultura y la Alimentación	

JAMAICA

GENERAL GEOGRAPHICAL AND ECONOMIC DATA

Jamaica consists of a main island and various offshore banks of which Pedro Bank is the largest and most important fishing area. Some banks have small islands (cays). Agreements with neighbouring countries regarding the EEZ have not yet been completed, but there is an agreement with Colombia for the joint exploitation of the Alice Shoal.

Land area of the main island (236 km long, 35-82 km wide, water 160 km^2)	10 991 km^2
Pedro Bank, total area	8 040 km^2
Shelf area (to 200 m, main island and nine proximal banks)	4 170 km^2
Archipelagic waters, incl. Morant Bank and Pedro Bank	12 000 km^2
EEZ: 200 nautical miles (estimated, borders not yet fixed)	274 000 km^2

Length of coastline (main island only)	1 022 km
Territorial sea from archipelagic baseline	12 nautical miles
Population (end 2004) (growth rate 5‰)	2 650 900

Birth rate/1 000 population (2004)	17.6 births

Death rate/1 000 population (2004)	6.0 deaths
Net migration rate/1 000 population (2004)	-6.8 migrants
GDP purchasing power parity (2003 est.)	US$ 10.21 billion
GDP per capita purchasing power parity (2003 est.)	US$ 3 800

Population below poverty line (2002 est.)	19.7%
Agricultural GDP (2003 est.) (6% of GDP)	US$ 0.6 billion
Debt servicing (2002) (36% of GDP)	US$ 2.18 billion
Administrative divisions: Kingston and Saint Andrew, Clarendon, Hanover, Manchester, Portland, Saint Ann, Saint Catherine, Saint Elizabeth, Saint James, Saint Mary, Saint Thomas, Trelawny, Westmoreland	14 parishes

Commodity balance (2003)

Production marine fisheries tonnes	Production aquaculture tonnes	Import tonnes	Export tonnes	Total supply tonnes	Per caput supply kg/year
8 702	2 969	38 724	928	49 465	18.7

Trade (2003)	
Value of imports:	US$ 8 343 000
Value of exports:	US$ 39 740 000

STRUCTURE AND CHARACTERISTICS OF THE FISHING INDUSTRY

Production

Fisheries production in Jamaica (1997–2002) (tonnes)**

Species group	1996	1997	1998	1999	2000	2001	2002	2001 '000 US$
Finfish	12 478	5 579	4 161	6 284	4 586	4 400	7 000	*11 878*

Conch*	1 432	1 821	1 700	1 366	0	946	946?	*6 325*
Lobster	406	271	170	330	517	309	359	*2 085*
Shrimp	181	67	15	5	37	39	38	*381*
Others		10				51		
Total marine	14 497	7 747	6 045	7 985	5 140	5 745	8 342	*20 669*
Tilapia	4 000	4 200	4 300	4 500	4 500	5 000	2513	
Shrimp culture				?	?	?	456	
Total aquaculture	4 000	4 200	4 300	4 500	4 500	5 000	2 969	
Total production	18 497	11 947	10 345	12 485	9 640	11 379	11 312	

*Please note that production of conch is not reported as live weight, but as processed meat only.

Some key estimates for fisheries in 1997 and 2001 or 2002

Marine capture fisheries	**1997**	**2001 or 2002**
Fishermen (number guessed)	20 000	20 000
of which registered	11 000	14 014
of which full time	5 000	
Registered vessels (number)	3 000	4 154
of which fibre glass boats	2 000	
canoes	800	
Marine landings (tonnes)	7 700	8 342
Aquaculture production (tonnes)	3 450	6 150
Export (tonnes) (product weight)	3 037	2.4

Import (tonnes) (product weight)	21 047	28 398
Value of landings (US$)	43.0 million	20.7 million
Value of exports	US$15.5 million	US$5.6 million
Value of imports	US$51.4 million	US$2 58.2 million
Per capita supply	23 kg	about 23.9 kg

Sources: Jamaica Marine Fisheries Statistical Digest 1996 and FAO

Exports of fish and fish products, valued at US$ 8.9 million in 2001 accounted for 8% of all agricultural exports. The significant expansion in exports of fish from 1997 to 2000 was attributable to the growth of lobster, conch and tilapia exports.

Types of Fisheries

There are five main types of fishing operations:

- Industrial fisheries, for conch, lobster and fish;
- Artisanal fisheries at high sea, banks, inshore and inland;
- Aquaculture, including tilapia, penaeid shrimp, oysters, ornamental fish and others;
- Sport fishing for marlins and fishing trips with tourists and
- Collection of sea weeds, land crabs, etc.

The industrial fisheries are mainly involved in the export of conch and lobster, but also some first quality fish is exported. Artisanal fisheries, which generally serve the domestic market, fish on the island shelf and reefs, as well as on the offshore banks, and dispose of the catch on beaches on a daily basis, or via carriers in Kingston harbour.

Aquaculture enterprises are comprised of small and large fish farms that specialize in the culture of *Tilapia*, which is processed locally and sold to the domestic market or exported. The largest share of the aquaculture production is contributed by two or three large companies, which in addition to operating their own farms, also contract supplies from smaller farmers. Other enterprises include oyster farms, shrimp culture, based on imported larvae, ornamental fish culture, also based on imported species and the culture of aquatic plants. Except for two large shrimp farms all of these operate on a comparatively small scale. Inland capture fisheries are insignificant and are not monitored by the Fisheries Division. This is not to deny their probable importance as a local; food source. Sport fishing is also carried on, but this too is not closely monitored, although data are available from various tournaments, in particular on marlin.

Fleet

The fleet consists for 95% of open boats made of reinforced fibreglass plastic (FRP), ranging in size from 3.6 to 9 m, powered by one or two outboard motors (25 to 75 HP, mainly 40 HP). Some boats are propelled by oars. Decked steel vessels (15-30 m) form only 5% of the fleet and are mainly used in the conch and lobster fisheries. Also registered

are boats equipped for trolling, with powerful engines, used for sport fishing and the tourist industry. At the end of 2002 there were 4 154 registered fishing boats.

Material				Boat size		
	No.	%		Length (m)	No.	%
Fiberglass	2 697	70		1-3.9	111	28
Wood	860	22		4-8.9	3 106	79
Fiber/wood	209	5		9-25	689	17
Steel	56	1		>=26	7	0.2
Aluminum	11	0		Other	37	1
Other	41	1				
Total	3 874	100		Total	3 950	100

The fleet of so-called industrial vessel is used for fishing on the Pedro and Morant Banks and also for transporting fish and supplies from and to the Banks. For the seasonal conch fishery extra boats with crew are leased from other countries, mainly Honduras. There are practically no vessels in classes between the open canoe type and the industrial vessels.

Employment

Estimated employment (2002)	
Fish production sector	14 014 registered fishermen, plus part time, total perhaps 20 000
Aquaculture sector	180 registered farmers, total approximately 900
Industrial sector	300 (partly seasonal employment)
Marketing	Cleaners, hagglers, merchants, shops, no data available
Supplies to fisheries	Boat building, engines, gear, ice, etc., no data available
Services to fisheries	Government, NGOs, cooperatives

Note: Statistics for the industrial sector do not fall under the Ministry of Agriculture, but are grouped with other industries.

Landing sites

Open boats land at beaches or river mouths. The number of fishing beaches has gradually

decreased, at the moment it stands at about 133 on the main island, which corresponds roughly to one for every eight km of coastline. The principal beach landings are located on the south coast at Port Royal, Old Harbour Bay, Rocky Point and Whitehouse (new jetty, suitable for small vessels). On 21 beaches there is a station of the Fisheries Division where fuel and services of an extension officer are provided. On many beaches there are gear shacks and other facilities provided by the Fisheries Division or other organisations. Many fisher families live on or very near the beaches, which may create social and hygienic problems in some cases.

There are very few landing facilities for larger fishing vessels. Quays are available in Kingston Harbour, at Black River and in the harbour of Port Antonio (north coast), while Montego Bay provides more shelter than the usual beaches. Carrier boats land mainly at the fishing port in Kingston, where the artisanal catch from the Morant and Pedro Banks is landed and ice, water, fuel, and provisions are loaded for the offshore fishing stations. Industrial vessels fishing for conch and lobster may also be using private jetties.

Industrial fisheries for conch, lobster and fish

Conch: A relatively small number of mother vessels with dinghies, using scuba and hookah diving technology, is operated by major processing plants licensed to harvest a share of the overall quota of conch, as established each year by the Minister of Agriculture. Most of the vessels, divers and crew are leased from Honduras. The divers remove the meat from the shell under water. Further cleaning and processing is done on deck and later in processing plants. Harvesting and processing of conch is strictly regulated in order to comply with EU directives and CITES regulations. The average production of conch was 1 580 tonnes in the four years preceding 2000; in 2000 the fishery was closed due to litigation, in 2001 quota and production were at a lower level at 946 tonnes. Conch produced by artisanal fishers used to be absorbed by local processors for eventual sale to the export market, but this is not allowed under EU import regulations since hygienic standards at capture are not met.

Lobster: A limited number of industrial vessels are licensed to catch lobsters on the Pedro Bank, using wooden Florida traps, of which 90% is exported, while the rest is sold to the hospitality sector. Lobster production has averaged 295 tonnes between 1996 and 2001.

Fish: Some large vessels specialize in catching large demersal fish for the export market on the drop-off of the shelf, using drop lines. The possibility exists for such vessels to fish also at the Alice Shoals. However, it is not known how much use is made of that fishing area.

Artisanal fisheries for shrimp

The shrimp fishery is dominated by artisanal fishers, who operate mainly in or near Kingston harbour. It is generally a very primitive fishery. Shrimp fry is caught with pushnets for bait. Catches have declined from 181 tonnes in 1996 to 38.5 tonnes in 2001, probably because of dredging activities in the harbour. This is the only artisanal inshore fishery where improvements in gear etc. might lead to substantially higher landings.

Artisanal marine fisheries

The artisanal marine fisheries comprise about 14 000 registered and probably about 6 000 unregistered fishers, who operate from fishing beaches located around the island and cays of Pedro Bank. The largest number operates from the south coast, fishing the south shelf and Pedro and Morant Banks. Artisanal fishers use motorized open boats and fish pots and nets, for the most part operating as independent subsistence-type or marginal producers, while playing a very important role in the supply of fresh fish to the domestic market. This

was confirmed by a Fisheries Survey in 2004 that found that 72% of the registered fishermen operated as boat owners or captains of their vessels.

Safety at sea

Jamaica has a poor record with regard to safety at sea. Many small boats are temporarily or completely lost at sea, due to a lack of navigation, emergency and safety equipment. Small boats do not carry radar reflectors, which makes detection difficult. Compulsary flares are seldom carried.

Ownership of fishing and safety equipment by artisanal fishers

Items	1 unit	2 units	3 units	4 or more units	Total
Outboard motors	650	86	13	12	761
Compressors	20	5	3	-	28
Navigation equipment (compasses)	46	11	7	-	64
Standard safety equipment (life jackets)	79	27	43	11	160
Cold storage (ice boxes)	214	42	15	14	285

Impact of hurricane Ivan on artisanal fishers

Mean loss caused by hurricane Ivan in 2004 by fishing ground

Fishing ground	Mean loss sustained `000J$	Number of fishers
South Shelf	90	388
North Shelf	39	225
Pedro Bank	172	79
Morant Bank	86	2
Other grounds	61	61

The impact of hurricane Ivan on the fishing sector was most devastating for fishers on the Pedro Banks and the South Shelf. These fishers were among the majority whose fishing equipment and supplies were lost and destroyed by the hurricane. From the table below, it can also be determined that loss suffered by individuals was highest for fishers who exclusively used the Pedro Banks and the South Shelf.

Aquaculture

Aquaculture technology is fairly advanced and has developed significantly from initial projects initiated by the Fisheries Division in the 1970s. The facilities of the Fisheries Division at Twickenham are still the major source of fingerlings and technical assistance, but a small number of large companies operate well-equipped farms and also utilize the services of contract farmers. Most fish farmers source water from canals and rivers, while many deposit waste water back into the canal or river. Other means of disposal of waste water are wetlands, the sea and recycling. Since fish farming requires flat land and clay soils in addition to access to water, activities are confined to the southern plains e.g. Rio Cobre Basin in St. Catherine and Rio Minho catchment in Clarendon. The Black River and Cabaritta River catchments in St. Elizabeth and Westmoreland are currently underutilized.

Fish Farms

It is estimated that over 180 farmers with total pond acreage of 639 ha (1 578 acres) are involved in aquaculture. The Fisheries Survey of 2004 interviewed 49 fish farmers, mainly based in St Catherine (80%). The majority were producers of tilapia (92%), while 8% produced ornamental fish. There were no shrimp producers included in the survey; however it is known that there are now two very large producers, using imported larvae of *Penaeus vannamei*.

Hurricane Ivan

This hurricane in September 2004 was catastrophic for many fish farmers: 25% suffered loss and destruction to their farm infrastructure and 62% also suffered loss or destruction of fish stocks and equipment.

Inland fisheries and gatherers

In Jamaica the term inland fisheries is often used to represent aquaculture, perhaps because so little is actually known about inland capture fisheries. There are quite a number of rivers, small lakes and wetlands that provide an opportunity for inland fisheries. However, the Fisheries Department lacks means to collect data. Hunting for land crabs during the rainy season and collecting sea-moss (*Gracilaria* spp.) are quite popular.

UTILIZATION OF THE CATCH

Processing

Very little factual information is at hand about the fish processing sector, perhaps because this sector falls under a different Ministry. Various processors compete for the lucrative lobster and conch market. These products are frozen and exported, following HACCP, EU and USA standards for quality, which is controlled by the Veterinary Division. Frozen fish is imported in bulk and reprocessed locally for sale in supermarkets. There is one large processor for tilapia in Barton Isle, St. Elizabeth, originally exclusively intended for export, but now more directed to local markets. Shrimp processing is done at two large farms, for sale to hotels and export, while the artisanal catch is processed for sale on the road side.

Marketing

Industrial fishers tend to be oriented towards the export market, while the catch of artisanal fisheries is generally sold locally, either to the population or hotel chains. Shrimp is also exported, but it is not clear how much of the locally produced shrimp is sold on the domestic market, which imports a significant amount of frozen shrimp from the CARICOM area.

Mode of distribution of catch by artisanal fishers

Method of disposal of fish*	Number of fishers	%
Sale on beach	708	57.0
Supply to vendor	896	72.1
Supply to wholesale	56	4.5
Supply to hotel/restaurant	46	3.7
Supply to processor	27	2.1
For own use	272	21.9
For other use	23	1.8
No response	28	2.2
Total	1 242	

*Multiple responses possible.

Details of the distribution from fish farms were obtained from a survey in 2004.

Mode of distribution of output by fish farmers

Mode of Distribution	No. of responses	Percentage of sample*
Sale to higgler	38	77.5
Direct sale to consumer	13	26.5
Sale to distributor	6	12.2
Supply to hotel/ restaurant	7	7.7
Contract distribution	3	6.1
Supply to processor	3	6.1

Sale to exporter	1	2.0
Other distribution	7	7.7

*Multiple responses possible.

Artisanal fishers generally sell their catch to a vendor or sell the catch themselves on the beach. Other modes of distribution that are also used are "for own use", and supply to a wholesaler, hotel or restaurant. Very few artisanal fishers reported supplying catch to a processor. Supermarkets tend to concentrate on the sale of imported fish, including a large amount of frozen demersal fish, typically the bycatch of shrimp trawl fisheries in CARICOM countries, in addition to salted fish, a traditional component of Jamaica's breakfast. There are only a couple of dedicated fish markets in the country. Hygienic conditions are below standard at landing places where so-called fish cleaners operate. Large pelagics are not easily absorbed by the local market. Hotel chains that used to buy this product are now concentrating on cheaper imported fish.

FISHERY SECTOR PERFORMANCE

Economic role

The contribution to GDP by aquaculture amounts to approximately 0.25%, while that of capture fisheries may be a bit higher.

Apart from some small registration and licence fees, access to fishing grounds is practically free for all categories. It is the intention to change this in the future. Recent economic data on the conch and lobster fisheries are not available. Export of conch and lobster yielded over eight million US$ in 2001.

Economic prospects of artisanal fisheries

It is a well-established fact that near shore resources are unable to sustain fisheries at current rates of exploitation. One of the striking findings of the survey was the persistence of the belief among artisanal fishers that their type of operation is capable of providing a living. This might stem from the absence of viable alternatives, but it also increases the likelihood of resistance to efforts to change the pattern of fishing. The majority of fishers interviewed (85%) indicated that they would be able to make a living from fishing (regardless of whether they also had another income source).

Aquaculture

The 2004 survey yielded some information on investment and operating costs of fish farmers. Jamaica has lost export markets to countries in Central and South America where production costs are lower. Most of the products are therefore destined for the local market and hotel chains, except ornamental fish. The ornamental industry exports live fish to markets in the UK and USA. Increased exports are envisaged due to renewed interest and technical support. In 2001, 231 382 specimens were exported to the UK and 229 882 to the USA, with an f.o.b. value of 5 million J$.

STATE OF THE FISHING INDUSTRY AND CONSTRAINTS

Industrial fisheries

These fisheries do perhaps not receive the attention that they deserve. The fisheries for

conch and lobster are relatively well managed, but it might be possible to obtain more revenue from these products. Employment of foreign divers and leased vessels might be unnecessary if training programmes for divers were available for local fishers, etc. Some companies operate successfully in deeper waters in fisheries for large demersals such as groupers and snappers. Exploitation of the Alice Shoal by Jamaican fishers is very limited. The conch and lobster fisheries have suffered losses due to poaching, which result in much reduced quota for conch. In general very little revenue from those resources comes to the Government; this is likely to change under a new law.

Artisanal fisheries

The nearshore reef resources are since many years in a state of severe over-exploitation, in particular on the North shelf. Fishing is an employment of the last resort, and solving the overfishing problem is therefore more a sociological problem than a fisheries management problem. A new fisheries policy and law will introduce principles of limited access and "user pays", but in practice it will be hard to enforce such measures due to lack of funding for Monitoring, Control and Surveillance.

Aquaculture

Aquaculture is relatively well established, with a possibility of expansion. Main constraints are marketing and water supply.

DEVELOPMENT PROSPECTS

Despite general indications to the contrary, there may be some prospects for development. Jamaica will need to move away from using a large number of small open boats with outboard engines, to a limited number of larger, safer boats with inboard diesel engines. Such boats could then be used to exploit the deeper parts of shelf and banks and also resources of large pelagics that are known to pass through Jamaican waters in certain seasons. Handling and marketing of large pelagics can also be improved. The artisanal shrimp fishery is extremely primitive and there is much room for improvements in gear, boats, handling and marketing.

RESEARCH AND STATISTICS

The Fisheries Division lacks funding, equipment and personnel to carry out marine research programmes. Compulsory surveys for conch are carried out with financial assistance and equipment provided by the fishing industry. Aquaculture research is carried out on ornamental fish species and oysters, but studies on the use of other local species for aquaculture still need to be carried out.

Students of the University of the West Indies regularly carry out small research projects in fisheries, mainly on biological but also on socio-economic aspects. Staff of National Marine Parks may also carry out research. The vicinity to the USA has led to several research projects by other universities, resulting in a large number of scientific publications. Most of this research, however, is concentrated on biological aspects of reefs and communities associated with them (see also websites below). A database of some 750 publications is available.

Statistical data collection for marine fisheries and aquaculture are carried out by the Fisheries Division. Data collection of artisanal fisheries uses a sampling system designed in cooperation with CFRAMP. The data collection is operated from Kingston. Unfortunately, lack of funds causes a very limited and incomplete coverage and hence unreliable statistics. Sport fishing and aquaculture organizations also collect data. It should be noted that

reliable statistics will be essential for an evaluation of the effects of future management measures

INTERNET ADDRESSES OF RELEVANT INSTITUTIONS

http://www.moa.gov.jm (Government of Jamaica, Ministry of Agriculture, incl. Fisheries Division)

http://www.nepa.gov.jm (National Environmental Planning Agency)

http://www.nrca.org (under NEPA)

http://www.statinja.com (Jamaican statistics)

http://www.portlandbight.com.jm (Portland Bight Protected Area)

http://www.ccam.org.jm (Portland Bight Protected Area)

http://www.unesco.org/csi/act/jamaica (related to Portland Bight Protected Area)

http://www.unesco.org/csi/act/caricomp/ecosystem.htm (related to Portland Bight Protected Area)

http://www.mona.uwi.edu/cms/caricomp (related to Portland Bight Protected Area)

http://www.earthtrends.wri.org (country profile, coastal and marine ecosystems)

http://www.caricom-fisheries.com/ (CARICOM Fisheries Resource Assessment and Management Programme, CFRAMP)

http://www.cep.unep.org/pubs/techreports/tr36en/countries/jamaica.html (UNEP country profile)

http://www.reliefweb.int (Incl. CDERA, Caribbean Disaster Emergency Response Agency)

http://nature.org (The Nature Conservancy, The Pedro Bank project)

DOCUMENTATION

CFRAMP 2000. Jamaica National Marine Fisheries Atlas. CARICOM Fishery Report No. 4: 53p.

ISBN 976-8165-05-7

FAO (in press). Various reports of the FAO TCP Project TCP/JAM/2901, including:

- (second draft, 2004) Capture fisheries and aquaculture in Jamaica, a sector review. 173pp.
- (fifth draft, 2004) Fishery Policy Document. 46pp.
- (draft report, 2005) Economic study of Jamaican fishery industry. 78pp.

Espeut, P. and S. Grant, 1990. An economic and social analysis of small-scale fisheries in Jamaica. Published by FAO/WECAF.

Sanders, M.J., 1996. Summary review and policy issues for selected fisheries of Jamaica. FAO, TCP/JAM/4553 (A). 32pp.