FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/BAR
PROFIL DE LA PÊCHE PAR PAYS	Organisation des Nations Unies pour l'alimentation et l'agriculture	August 2005
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BARBADOS

GENERAL ECONOMIC DATA

Area:	432 km^2
Shelf area (to 200 m):	320 km^2
Length of coastline:	92 km
Population (2003):	270 600
GDP current (2003):	$US 2.6 billion
Per caput GDP (2003):	$US 9 260
Agricultural GDP (2003):	5.8% of GDP
Fisheries GDP (2003):	8% of the Agricultural GDP

FISHERIES DATA

Commodity balance (2003):

	Production	Imports	Exports	Total supply	*Per caput* supply
	t live weight				kg/year
Fish for direct human consumption	2 500	8 876	272	11 090	41.1

Fish for animal feed and other purposes	15	-	-	15	-

Estimated employment (2002):	
Primary sector	2 000 full- and part-time fishermen
Secondary sector	825
Gross value of fisheries output (2002):	n.a.
Trade (2003):	
Value of imports	$US 13.5 million
Value of exports	$US 869 000

STRUCTURE AND CHARACTERISTICS OF THE INDUSTRY

Marine fisheries

Located at latitude 13° 10' N and longitude 59° 35' W, Barbados is the most easterly of the Caribbean islands, and is entirely surrounded by the Atlantic Ocean. Barbados is less than 200 nautical miles from neighbouring islands to the north, west and south. According to the Barbados Fisheries Management Plan 2004-2006, marine boundaries still have to be settled, but the potential extended marine jurisdiction has been estimated at approximately 48,800 km2 of ocean. The surrounding oceanic surface waters are relatively low in nutrients, thermally stable and of low productivity. The surface currents off Barbados are complex but generally directed towards the northwest from the Amazon and Orinoco Rivers of South America.

Barbados has a small shelf area of just 320 km2 which cannot support a large demersal fishery. As such the predominate fishery is the multi-fleet, multi-species fishery for oceanic pelagics. The local fisheries are currently open access. The local fishing industry comprises nine main fisheries: shallow shelf reef fishes, deep slope fishes, coastal pelagic, large pelagic, flyingfish, sea urchins, turtles (now closed), lobsters and conch. The flyingfish and large pelagic fisheries dominate the local industry. Fishing areas range from inshore coral reef to international waters.

The 2002 fisheries output was provisionally estimated at 2,472.3 tonnes. The four-winged flyingfish (Hirundichthys affinis) was the most important species comprising approximately 64% of the total annual landings. The second most important species was dolphinfish (Coryphaena hippurus) which comprised 22% of the total annual landings. The kingfish catch improved during 2002 while catches of billfish and tuna declined.

Typically fishing vessels are classified locally according to length and then by type. Vessels are divided into three classes based on length – class 1 (< 6m); class 2 (> 6m but < 12m) and class 3 (>12m). Within each length class, vessels are further classified according to type based on their physical structure or the type of gear carried. As such, four different types of vessel are recognized in the fishing industry - moses, dayboats/launches, iceboats and longliners.

The smallest of these vessels is the moses (dinghies) which are open boats 3-6m long, constructed of either wood or glass reinforced plastic powered either by oars or 10-40hp outboard engines. There are approximately 485 of these used primarily in the reef and coastal fisheries. Gear commonly associated with these boats includes hand and trolling lines, fish traps and cast nets.

Dayboats or launches are mostly decked wooden boats, 6-12m in length, propelled by inboard diesel engines of 10–180hp , which carry one to two fishers and land their catch daily since they carry no ice while at sea. There are approximately 250 dayboats, which normally range up to 30 miles from shore and are used primarily for harvesting flyingfish and large pelagics on day trips. Dayboats are normally equipped with navigation, communication and safety equipment and commonly use hand and trolling lines, gill nets and hoop nets as gear.

Iceboats are similar to dayboats except for size. Iceboats are normally greater than 12m in length, outfitted with insulated ice holds facilitating multi-day trips (5-10 days), powered by 180–200hp inboard diesel engines and equipped with navigation, communication and safety equipment. These boats usually target the same species as dayboats using the same gear. There are an estimated 190 iceboats in the industry which range up to 200 miles or greater from shore.

The longliner fleet consists of approximately 30 boats greater than 12m in length (12 to 24m). Longliners are outfitted in a similar fashion to the iceboats but are used primarily for fishing tunas and swordfish for export, with a bycatch of large pelagics such as shark and billfish sold locally. These boats, with a crew of 4 or 5, remain at sea from 12-28 days and may range more than 400 miles offshore. Pelagic longline gear is mainly used but some longliners may carry all of the other gear specific to iceboats.

Inland fisheries and aquaculture

No significant inland capture fisheries exist.

Utilization of the catch

There are approximately 30 fish landing sites around the island, categorized according to type of physical infrastructure and facilities as primary (markets), secondary (sheds) and tertiary (beaches). The majority of catches are landed at the primary sites and are often sold directly to consumers or fish vendors, the latter of which are predominantly women. The primary fish landing sites are at Bridgetown, Oistins, Skeete's Bay, Consett Bay, Paynes Bay, Weston and Speightstown.

During 2002, two new fishing facilities at Tent Bay, St. Joseph and Payne's Bay, St. James were completed. The construction of the markets was in keeping with Government's policy of providing improved vending facilities for rural small business persons, while making a range of fish and agricultural products more easily accessible to a wide cross-section of the rural population. Also during this period, rehabilitation work was undertaken on the Oistin's

Visitors Jetty at a cost of BDS$ 1.6 million. The work included the reconstruction of the lower berthing platform and fendering system to facilitate the use of the jetty for loading and unloading fuel, ice and fish. Deck slabs and the concrete structure were also repaired.

According to the Barbados Fishery Management Plan 2004-2006, it is estimated that 53% of the fish landed are distributed by vendors. The vendors purchase fish directly from the boat at the landing site or from the processor, usually outside of the landing site. 30% of fish landed are distributed via the processor who either purchases fish from iceboats at the landing site or imports frozen fish. Consumers may obtain fish directly from the boat or the vendor at the landing site. Approximately 9% of fish landed is distributed in this way. 2% of whole fish are purchased from the landing site by the hospitality sector (restaurants, hotels and institutions). Exporters take approximately 6% of fish from the landing sites and are primarily interested in exporting large pelagics such as tunas and swordfish from longline vessels.

State of the industry

The estimated total annual landings for the past 30 years have fluctuated between 3,000 and 5,000 tonnes. In the same period, the local fleet has increased its fishing capacity by changes in vessel design to range further, stay at sea longer and catch more of the pelagic species, which are targeted particularly for export. The introduction of longliners and the increased number of fiberglass iceboats have helped in making fishing slightly less seasonal. However, there are still main season gluts of flyingfish and off-season shortages of all locally caught pelagic species.

The main fisheries in Barbados are shallow-shelf reef; bank-reef and deep slope; coastal pelagics, flyingfish; large pelagics, sea eggs; lobsters; conch and sea turtles.
The status of the stocks ranges from under exploited to overfished. The shallow-shelf reef fishery which occurs on nearshore coral reefs targeting hinds (Serranidae); parrotfishes (Scaridae), grunts (Haemulidae); surgeonfishes (Acanthuridae) and triggerfishes (Balistidae) is thought to be overfished. Fishermen have reported reduced catch per unit effort and fish size on the south and west coasts. For the period 1994-2003, estimated annual landings of reef fish varied between 7 and 16MT. Increased exploitation of this fishery is not recommended.

The deep-slope and bank reef fishery mainly targets snappers (Lutjanidae), primarily the queen snapper (Etelis oculatus), silk snapper (Lutjanus vivanus) and vermillion snapper (Rhomboplites aurorubens). According to the Barbados Fisheries Management Plan 2004-2006, the resource may be fully exploited in some areas but not in others. During the period 1994-2003, annual catches ranged between 12-44 tonnes with potential yield estimates for the Barbados shelf range estimated at 18-80 tonnes per year.

Jacks (Carangidae), herrings (Clupeidae), silversides (Atherinidae), anchovies (Engraulidae), ballyhoo (Hemiramphus spp.), robins or scads (Decapterus spp.), barracuda (Sphynaena spp.), garfish and small tunas are the targeted species of the coastal pelagic fishery. These species are used mainly as bait for other fisheries, although some may be used as food. The resource status of this fishery has not been assessed. Annual estimated catches of jacks and small tunas during the period 1994-2003 ranged from approximately 8 to 33 tonnes.

The annual estimated landings of large pelagics between 1994 and 2003 were in the range of 740 and 1200 tonnes. Fishing effort directed at the large pelagics has increased due to

an increase in the number of iceboats and the growth of the longline fleet, both in number and average size of vessel. Most of the target species of this fishery − tunas (Scombroidei), wahoo (Acanthocybium solandri), billfishes (Istiophoridae), dolphinfish (Coryphaena hippurus), swordfish (Xiphias gladius) and mackerels (Scombermorous spp.) − are highly migratory. While ICCAT reports many large tuna species to be fully exploited or overexploited for the Atlantic, the status of most other tuna-like species in the western Atlantic and Caribbean is uncertain.

The most important fishery for Barbados is the flyingfish fishery. The four-winged flyingfish (Hirundichthys affinis) comprises more than 90% of the flyingfish catch. Flyingfish account for almost two-thirds of total landings in most years and during the period 1994 to 2003, annual estimated catches of flyingfish were in the range 1500 to 2600 tonnes. The fishing effort directed at flyingfish increased through the 1980s but in recent years has leveled off due to a slowing in fleet expansion and conversion of some iceboats to longliners. The fishery is economically important with over 2000 fishermen and 500 vendors seasonally employed in the fishery. In addition, over 200 persons are employed as scalers or boners at fish markets and approximately 125 are employed at fish processing plants. Flyingfish account for a large percentage of the production of these plants.

In Barbados a well-established, nationally economically important sea egg fishery has existed for more than a century. The species targeted is the white sea urchin (Tripneustes ventricosus). High demand has led to overexploitation of this resource and for the majority of the period between the mid-1980s to 2000, the stock was considered to be in a collapsed state. During this period two multi-year harvesting moratoria were enforced (1987-1989 and 1998-2001) to allow the depleted stock to recover. Sea eggs returned in abundance in 2001 and stock levels remained relatively high in 2002 but with some decline in 2003 and further decline in 2004.

The lobster fishery is a minor one in Barbados with the potential for increased importance through links to tourism. Currently, there is no data collection and therefore no catch and effort data available but anecdotal information suggests that recently there has been a possible increase in abundance.

Conchs are now mainly harvested for their shells which are polished and sold as souvenirs to tourists. The principal species targeted is the queen conch (Strombus gigas). As with the lobster fishery, no data has been collected for this fishery. The status of conchs in Barbados is unknown however anecdotal information suggests that local conch populations are typically much smaller than those in neighbouring islands.

Economic role of the fishing industry

In 2002, the contribution of fisheries to GDP was estimated at US$ 14.6 million. This is 8% of the agriculture contribution and 1% of the national total. The fishing industry continues to be a major social and economic asset. The primary stakeholders of the harvest sector are fishermen and boat owners. Fishermen dominate the harvest sector comprising 63% of the primary stakeholders while boat owners account for 37%. Overall, 78% of the primary stakeholders (including boat owners) are active fishers. The majority of fishermen and boat owners are males. 99% of fishermen and 91% of boat owners are males. Recently, the post-harvest sector has grown, attracting both young women and men in considerable numbers. Vendors and boners make up the majority of the primary post-harvest stakeholders (37% and 39%, respectively). Females make up the majority of the post-harvest sector, comprising 63% of the sector. Foreign exchange earnings for the industry

have increased due to the export of tuna and swordfish.

DEVELOPMENT PROSPECTS

The 2004-2006 Barbados Fisheries Management Plan outlines strategies for the development and management of the fishing industry to ensure its sustainable contribution to the nutritional, economic and social well-being of Barbadians. During the 2004-2006 plan period it is essential that Barbados properly discharge its regional and international obligations and receive adequate benefits from the international instruments that it is party to, through strategic participation and representation at relevant meetings and alliances. Some changes to legislation and administration will be necessary.

The Barbados Fisheries Management Plan identifies visions for the harvest and post-harvest sectors and main fisheries for 2004-2006. The numerous visions include, the training of fishers and fisherfolk organizations to enable them to play an active role in sustainably managing the fisheries resources and quality assurance; encouraging fishers to use responsible fishing practices and discouraging involvement in activities that undermine the effectiveness of accepted national, regional and international fisheries management measures; continued development of modern and appropriate infrastructure that supports the loading of supplies, sanitary offloading of catch and construction or repair of vessels; improving benefits to fisherfolk; implementation, enforcement and monitoring of compliance with national seafood legislation and standards; and production and marketing of quality value-added seafood products.

Demand

Small, sustained increases in overall demand can be expected from the low local population growth rate (0.3%) or variable visitor arrivals (5.6% increase in 2003). The greatest changes are expected to come from consumer preferences for healthier foods and convenience products. Fish processors will adjust their product offerings if the harvest sector can ensure a consistent supply of high quality fish at a reasonable price. The alternative is for the trade sector to increase levels of importation.

RESEARCH

The Fisheries Division and the University of the West Indies, in particular, the Centre for Resource Management and Environmental Studies (CERMES), conduct fisheries-related research in Barbados. CERMES conducts research relevant to natural resource and environmental management and over the past ten years has conducted fisheries research as part of its graduate degree programme in Natural Resource and Environmental Management. The Bellairs Research Institute of McGill University has made a tremendous contribution to fisheries research and offers field courses, workshops and research projects in fisheries and environmental science however, the field station has become less significant recently.

By law, the government must be informed about fisheries research activities in the waters of Barbados and must grant permission for it to be conducted. It is expected that the information resulting from research will improve and guide future management decisions to prevent overexploitation and facilitate sustainability.

Data used to monitor fisheries in relation to management objectives, strategies and targets are routinely collected to predict or plan for the future by evaluating trends and patterns.

The areas currently monitored by the Barbados Fisheries Division are catch and effort trends, biological and ecological trends, and social and economic trends and factors. Data collected include daily fish catches at landing sites, fish prices at fish markets, species diversity and distribution, size or age composition of catch, fecundity, potential yield, stock structure catch and landings, fishing effort, catch per unit effort (CPUE), fishing gear selectivity and efficiency, age and education of fisherfolk, family and social unit composition, quality of life, participation in fisheries management, effects of changes in fishing technology, recruitment into the fishing industry, occupational alternatives, incomes and expenses, fish price analysis, cost-benefit and cost-effectiveness analysis of management measures, employment and trade trends.

AID

The fairly high per caput GDP of Barbados excludes the fisheries sector from several sources of international aid. Currently there are no fisheries infrastructure projects in progress in Barbados therefore no funding has been requested. In the past, funding for infrastructure development of the Consett Bay, Skeete's Bay and the Oistin's fish markets was received from the European Development Fund (EDF), while the Inter-American Development Bank (IADB) was sourced for the funding of the Bridgetown Fisheries Complex.

For 2002, commercial bank credit to the fisheries sub-sector was recorded at BDS$ 2.3 million, virtually the same as 2001. The Rural Enterprise Fund, administered by the Rural Development Commission, approved eleven loans valued at BDS$ 130,350.

INTERNET LINKS

The following are available email and website addresses for the Barbados Fisheries Division and associated organisations:

Organization Internet links

Barbados Fisheries Division Email: fishbarbados@caribsurf.com
Website: http://grid2.cr.usgs.gov/cepnet/barbados/fisheries/pages/fisheries.html

Centre for Resource Management and Environmental Studies (CERMES) Email: cermes@uwichill.edu.bb
Website: http://cavehill.uwi.edu/cermes

Coastal Zone Management Unit Email: coastalstaff@coastal.gov.bb
Website: www.coastal.gov.bb

Bellairs Research Institute Email: bellairs@sunbeach.net
Website: www.mcgill.ca/bellairs

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