

BELIZE FISHERIES DEPARTMENT

Annual Report 2002

The Belize Fisheries Department through its mission “to provide the country and the people of Belize with the best possible management of its aquatic and fisheries resources, with a view to optimize the present and future benefits through efficient and sustainable management”, continues to ensure the steady development of the sector and ensure the integrity, productivity and sustainability of our ecosystems.

The Fisheries Sector still continues to contribute significantly to Belize’s Economy with export earnings in 2002 valued at \$65,553,932.07 and contributing approximately 7% to the GDP of Belize (Table 1).

Trends in the market value of marine products for 2001 and 2002

Commodities	2001	2002
Lobster	\$ 12,777,400.00	\$ 12,678,600.00
Conch	\$ 4,615,960.04	\$ 3,144,223.19
Conch trimming	\$ 28,350.00	\$ 197,331.68
Lobster meat	\$ 195,760.00	\$ 422,304.45
Live Conch	\$ 2,269.69	
Whole fish	\$ 11,875.00	\$ 706.13
Stone crab	\$ 706.13	
Farm shrimp	\$ 48,738,671.25	\$ 48,924,666.64
Pink shrimp	\$ 194,613.82	\$ 1,405,748.62
Shark		\$ 12,500.00
Fish Fillett	\$ 390.56	\$ 127,159.00
Aquarium fish	\$ 37,629.20	\$ 30,300.98
Ground Conch	\$ 57,306.40	\$ 6,708.19
Total	\$ 66,660,932.09	\$ 65,553,932.07

To further strengthen the management of Belize’s Fisheries Sector, the Belize High Seas Fishing Bill was drafted and has had its second reading in the House of Representatives. This bill when passes into law will allow the Government of Belize through the Fisheries Department and the National Ship Registry to be able to more efficiently regulate and monitor its high fishing fleet. This will ensure that vessels flying the Belizean flag will be in compliance with international conventions and regulations’ governing the world’s Deep Sea Fish Stocks and allow Belize to create and maintain a better image and a cooperating and compliance status in the global Fisheries Sector. Through the High Seas Fishing Act, the Government of Belize will also be able to collect revenues through licenses and other fees which could then be used to strengthen the Fisheries Department in order to achieve its overall mandate.

CAPTURE FISHERY

The marine capture fisheries sector was still recovering from the severe of hurricane Iris and tropical storm Chantal in 2001. In 2002, the capture fisheries in Belize accounted for approximately 39% of the total earnings generated by the Fishing Industry. Earnings by the main commodities such as Lobster and Conch remained relatively the same as 2001. Pink Sea shrimp earnings showed a marked 622% increase. This was due to the fact that 12 boats were allowed to trawl in Belize for the 2001-2002 season in order to provide the Fishing Cooperatives, pillars of the Belize Fishing Industry, with a means to earn much needed revenues for their continued survival. The Fisheries Department found it necessary to carry out the necessary scientific studies with the cooperation of experts from the Caricom Fisheries Units in order to determine the present status of the wild shrimp stock in Belize. This study was completed in 2002 and the recommendation for management resulting form the study is expected to be presented to the fishing community and the Ministry of Agriculture, fisheries and Cooperatives in early 2003 to accommodate the new fishing season.



Capture Fisheries Unit Personnel Collecting Biological Data from Shrimp Trawler

Management of the Nassau Grouper Fishery

The year 2002 was historical because Belize for the first time has now passed into law regulations for the protection and conservation of the Nassau grouper. In November of 2002, the Minister of Agriculture, Fisheries and Cooperatives signed Statutory Instruments which declared a closed season for the Nassau grouper from December 1st to March 31st and the year round protection of 11 of the 13 documented spawning sites for this fish. The Nassau Grouper has been an important fin fish fishery producing more than 2 tons per day at sites such as Cay Glory in the 1960's. However in 2001, fishermen reported catching only 2 fish at sites like Cay glory per day. These laws were the result of partnerships between the fishing community, the conservation NGOs in Belize and the Belize Fisheries Department.



Diversification of the Fishing Sector

In 2002, the pilot project to determine the feasibility of using fish aggregating devices (FADs) as an alternative fishing method was implemented. Two FADs were deployed in the Turneffe Atoll area in our Belizean Coastal waters and their performances are currently being monitored. It is projected that two more will be built and deployed in the year 2003. This program was developed to provide a possible alternative for fishers to increase production and reduce fishing pressure on the reef system and commodities such as the Lobster and Conch which are currently being fished at their maximum sustainable yields (Estela de Leon, 2002; Appledorn, 1996). The FADs will allow for the exploitation of commercially important pelagic species in our deeper waters.



ECOSYSTEMS MANAGEMENT

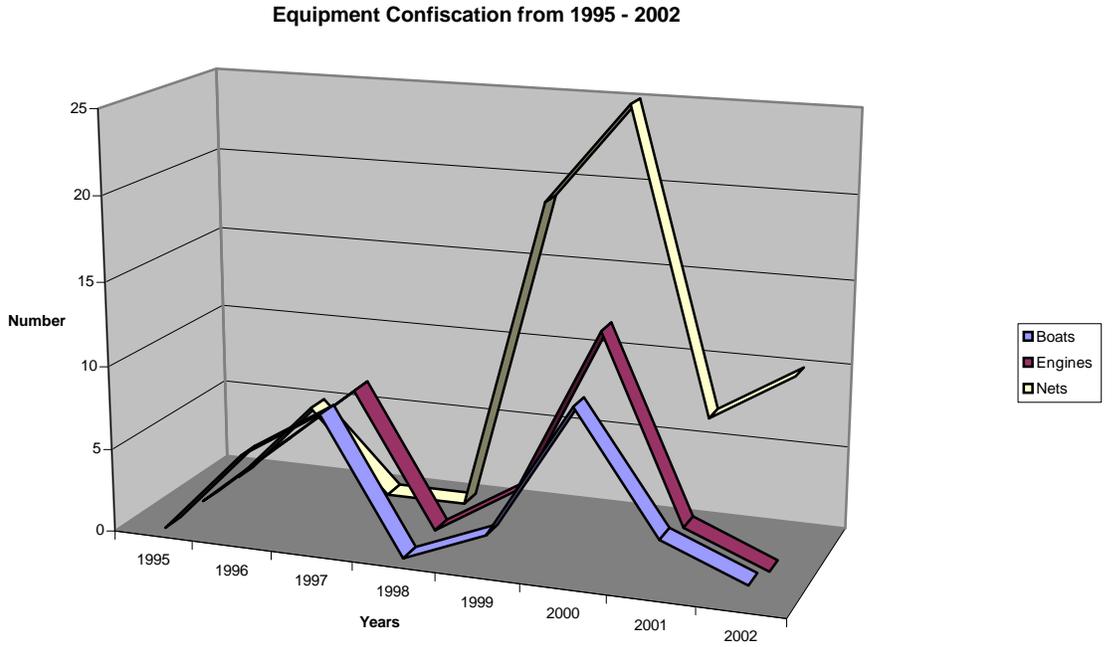
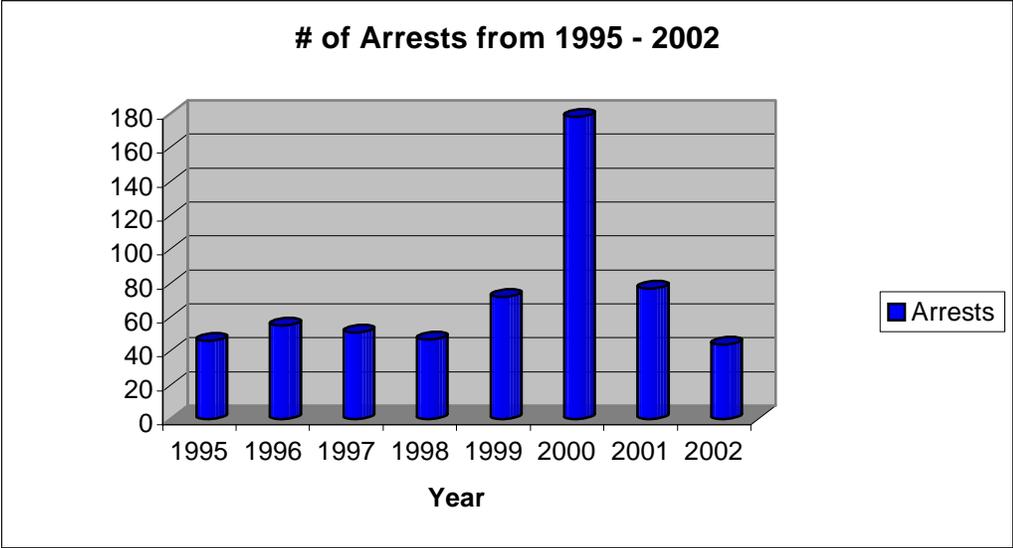
The Ecosystems Management Unit (EMU) of the Fisheries Department consists of the marine reserves and the Conservation Compliance Unit (CCU). The new management paradigm has shifted from specific species and site protection to the protection of entire ecosystems and the regulation of the activities within those systems. The EMU's objectives are as follows:

- To promote a sustainable fishery through ecosystems management.
- To enforce the Fisheries Regulations.
- To enhance biodiversity by promoting undisturbed areas.
- To encourage research and monitoring.
- To promote recreation via tourism.
- To conduct environmental education to all user groups specifically to the fishers.
- To assist DOE, PGD and other line agencies in conducting EIAs for development and dredging operations.
- To assist the National Emergency Management Organization in disaster emergencies.

Enforcement

The Enforcement Unit conducted limited patrols and restaurant checks for 2002 due mainly to the financial constraints experienced by the Fisheries Department for the fiscal year 2001-2002. As a result, operations were scaled down to cover the basics. The Fishing community was very helpful in streamlining enforcement activities especially since resources were limited. The Fishing Cooperatives met with the Department and agreed to cooperate and participate in intelligence sharing in order to curb illegal fishing. The Conservation Compliance Unit also met with key communities such as the Sarteneja and Copper Bank Communities, which represent the largest number of active fishermen in Belizean waters, to address the issue of partnership with the Department in the elimination of illegal fishing. Fisheries Prosecutions resulted in thirty-one convictions with fines amounting to \$70,070.00.

Enforcement in the marine reserves has been very regular and effective. There was more coordination with the reserves especially in enforcing the new grouper regulations recently brought into force.

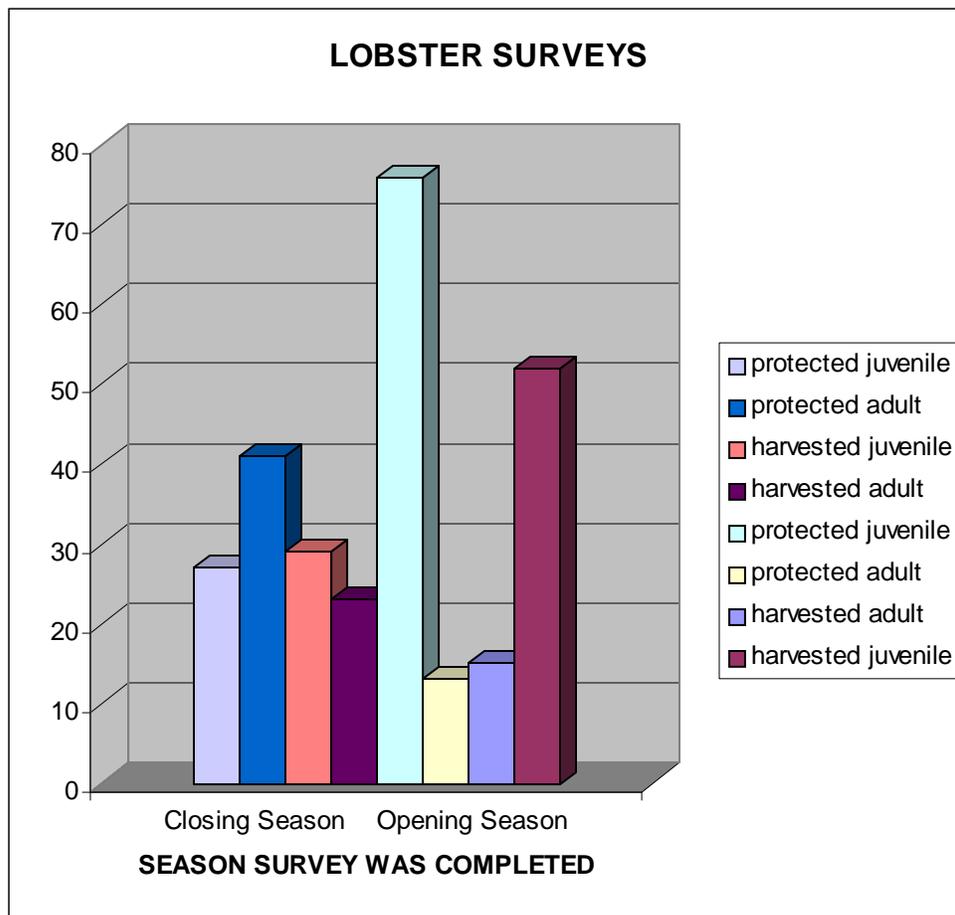


Monitoring

Monitoring for lobster, conch, finfish and other commercially important species continued at the reserves. Monitoring was standardized in 2002 and will be regularized with the implementation of the Mesoamerican Barrier reef Systems project Synoptic Monitoring program in 2003.

In December 2002, the first Marine Protected Areas Forum was held in Belize. At this forum for the first time in the history of the Fisheries department, each marine reserve had scientific results to share with the general public on the research being implemented. In general, the studies all confirmed the theory that the biodiversity and population size of important commercial species were much higher in the no take areas of reserves. These areas are then expected to act as natural sinks for these important species and create a natural spill over effect into exploited areas.

Graph Showing Changes in Numbers of Lobsters Found in Harvested Versus Protected Areas in the Bacalar Chico Marine Reserve



Data collection for the Caribbean Planning for Adaptation to Climate Change (CPACC) project continued in 2002. This data is submitted to the CPACC data analysis center at the University of the West Indies each year to monitor the changes in the status of the coral reefs in Belize due to climate change.



Biologist collecting beach trap data from caretaker

Carrying Capacity Study

The World Wildlife Fund provided a small grant to conduct the carrying capacity study at the Hol Chan Marine Reserve. This study was essential since the number of visitations to the reserve have increased significantly. San Pedro Town was visited by 59% of all cruise ship visitors and most of these visitors subsequently visit the Hol Chan Marine Reserve. The results are still being analyzed from the study but preliminary findings are suggesting a number of corrective measures to prevent future negative impact on the integrity of the ecosystems in Hol Chan.

Co-Management Agreements

Co-management strengthened in 2002 for the Toledo Institute for Development and Environment (TIDE), Friends of Nature (FoN) and the Toledo Association for Sustainable Tourism and Empowerment. These institutions co-manage the Port Honduras Marine Reserve, Gladden Spit and Silk Cayes Marine Reserve and the Sapodilla Cayes Marine Reserve respectively. The Forest and Marine Reserve

Association of Caye Caulker was inactive. This co-management agreement will be revisited early in 2003 in order to cancel the agreement and foster new partnerships with local organizations in Caye Caulker.

Environmental Impact Assessment

The Fisheries Department played an important role in the National Environmental Appraisal Committee (NEAC), which assesses and approves national developments and Environmental Impact Assessments (EIAs). The biggest contribution was made on coastal and marine developments.

AQUACULTURE AND INLAND FISHERIES

The **AQUIF Unit** has made great strides in consolidating its programmes, and focusing them towards definitive ends. In this regard major emphasis has been placed on forward planning and accomplishing the various tasks within the context of a logical programmatic framework to address the development challenges of the Aquaculture and Inland Fisheries Sub-Sectors. In relation to this undertaking, five (5) program areas have been defined and this in effect reflects the job description of the Officers within **the Unit**. These program areas are:

- (i) *The marine aquaculture development programme;*
- (ii) *Inland aquaculture development programme;*
- (iii) *Inland fisheries conservation and development programme;*
- (iv) *Seed stock production and research and development programme;*
- (v) *Aquaculture and inland fisheries and extension program.*

In 2002, the Aquaculture Sub-Sector continued to expand. This was evident from the increase in the number of farms and consequently the area under production, as well as the number of potential farming operations going through the EIA and/or the EPZ Approval process. This was relevant to both the shrimp-farming component of the industry, as well as the Inland Freshwater Farming component of the industry.

Marine Aquaculture Development



Paradise Shrimp Farm located on the Coastal Road

The objective of the Marine Aquaculture Development program is to provide advice and information to the general public in regards to the developmental issues affecting marine aquaculture, to review development proposals, conduct site appraisal visits to proposed development sites, assists in the EIA clearance process and to generate annual statistical reports on the performance of the mariculture sub-sector.

In regards to the area devoted for shrimp farming, there was an increase in land tenureship from 44,304 acres of land in 2001 to 55,112 acres of land in 2002 [See table II].

TABLE II - PROFILE OF THE AQUACULTURE INDUSTRY - 2002

STATISTICAL FEATURES	YEAR 2001	YEAR 2002
TOTAL FARM LAND	44,304 ACRES	55,112 ACRES
AREA HARVESTED	5,818 ACRES	6,588 ACRES
PRODUCTION AREA	5,818 ACRES	6,788 ACRES
AREA NOT IN OPERATION	68 ACRES	68 ACRES
NEW FARMS	490 ACRES	458 ACRES
EXISTING FARM EXPANSION	-	590 ACRES
TOTAL ACREAGE	6,356 ACRES	7,904 ACRES
TOTAL PRELIMINARY PROJECTIONS FOR PRODUCTION (Heads-on)	13,460,000 pounds	23,730,000 pounds
TOTAL PRELIMINARY PROJECTIONS FOR EXPORT (Tails)	8,614,400 pounds	15,187,200 pounds
REALIZED PRODUCTION	9,812,135 pounds	8,891,366 pounds
TOTAL PRODUCTION ESTIMATES (Heads-on)	-	10,111,940 pounds projected
TOTAL EXPORT (Tails)	7,127,374 pounds	5,406,857 pounds
TOTAL EXPORT VALUE	\$48,738,671.25	\$44,528,326
AVERAGE MARKET PRICE/Lb. TAILS	\$6.84	\$8.23
TOTAL NUMBER OF FARMS CONSTRUCTED	15	15
TOTAL NUMBER OF FARMS OPERATIONAL	11	13
TOTAL NUMBER OF FARMS REALIZING HARVEST	11	12
TOTAL NUMBER OF FARMS ABANDONED/DECOMMISSIONED	1	2
TOTAL NUMBER OF FARMS UNDER PERMITTING REVIEW	3	3

There was an increase in pond production area from 5,818 acres in 2001 to 6,788 acres in 2002. This represents an increase of 16%. It should be noted that only 6,588 acres of the 6,788 acres of land under production were harvested in 2002 - the remaining acreage was harvested by one farm in early 2003. Production pond acreage is expected to increase to 7,904 acres in 2003, of which 7,836 acres are expected to be in operation by the end of the year. The remaining acreage is relevant to farms that have been decommissioned or lying fallow.

The number of farms in operation increased from eleven (11) in 2001, to thirteen (13) in 2002, with an additional two (2) farms that have been abandoned or lying fallow. In addition to this overall number of fifteen farms, with the two (2) new farms in the early stages of development (Rio Mar and Melinda Mariculture Ltd) and one (1) farm pending approval by the NEAC, this should bring the total number of farms to eighteen (18) by late-2003.

Farm production for 2002 has been estimated to be 10.1 million pounds of heads-on shrimp, with an approximate of 6.47 million pounds of tails being processed for sale in the local market (10-15%) and most of the product being exported to the U.S. and the E.U. markets.

In relation to inland freshwater farming developments, this may be separated into two (2) levels of enterprise – these are the large-scale commercial operations and the small-scale subsistence and trial operations. In relation to the large-scale operations, one (1) farm exists. This is Fresh Catch Belize Limited with a proposed production area of 150 acre and a production capacity of 2.6 million pounds per year. As of December 2002, pond construction activities have been completed and the initial stocking of broodstock was commenced in October with additional stocking in the nursery system in December. This operation is based on the farming of red tilapia and the silver tilapia.

In relation to the small scale farms, there are currently twenty-two (22) farms in operation, with a total acreage of 15.4 acres. There has been much interest in this area with twenty-seven (27) potential farmers that have approached the Fisheries Department. Most of the interests and participation thus far has been in relation to the Mennonite Community in the Orange Walk District.

The species being farmed in inland freshwater situations include a number of indigenous cichlid species such as the Crana (*Cichlasoma urophthalmus*), the Bay Snook (*Petenia splendida*) and the Tuba (*Cichlasoma synspilum*), as well as the Tilapia.

Support/Extension Services

The AQUIF Unit offers a number of services to the public. These includes species protection in the form of enforcement, technical advise on the husbandry aspects of aquaculture, and information communicated both in the from of organized forum such as community meetings as well as the use of the mass media, especially the radio and newspapers. The AQUIF Unit expends approximately 320 to 350 man-hours per month.

In relation to the protection of species in the environment, the AQUIF Unit organized a public forum to solicit the views and opinions of stakeholders in regards to the draft “Freshwater Fisheries Legislation”. A report of this forum has been completed and the “Draft Freshwater Fisheries Legislation” has been finalized and is ready for submission to the Solicitor’s General Office.

In addition to the advisory and enforcement services, the AQUIF Unit is also involved with the production of seedstocks or fingerlings for fish farmers. In 2002 the AQUIF Unit produced and sold 6,000 fingerlings to small farmers with earnings of \$1,500.

Institutional Strengthening

The AQUIF Unit embarked on a major initiative to train its officers in 2002. This was mainly in the form of short-term overseas training. In this regard the AQUIF Unit organized training for four of its officers in locations such as Egypt, Taiwan, China, Malaysia and Mexico [See table III].

TABLE III - SHORT-TERM TRAINING (OVERSEAS)

NAME	TIME FRAME	DESTINATION	TRAINING PROGRAM
Rigoberto Quintana	27/05/02-02/06/02	Mazatlan-Mexico	Shrimp Disease and Diagnostic Methods
	12/07/02-22/08/02	Malaysia	Shrimp Hatchery Operation and Management
Normando Perez	8-21/07/02	Taiwan	Technology & Management of Aquaculture
Olive Hyde	28/09/02-13/12/02	Egypt	General Freshwater Fish Husbandry
Wilfredo Pott	25-29/09/02	China	International Water Conference

Constraints

Although the AQUIF Unit did accomplished a fair amount of outputs in assisting the development of the aquaculture sector in 2002, the work of the unit was in some measure constrained by limitations in financial and material resources. Important in this regard have been the availability of vehicles and the sufficiency of fuel to execute the functions of the unit. One of the major program activities that has been impeded by resource constraints is fingerling production. The Biscayne Fingerling Production Facility has the potential to be financially viable and self-sufficient. The facility has the capacity to produce 350,000 fingerlings per annum with minor investments in infrastructure such as the construction of an aquifer with year-round water supplies and the rehabilitation of twenty (20) existing broodstock ponds.