

A Preliminary Analysis of Trends in the Fisheries of the Bahamas Based on the Fisheries Census (1995)

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ABSTRACT

The government of The Bahamas with the assistance of FAO has recently conducted a fisheries census in an effort to generate data for the formulation of an effective management plan for utilization of the fishery resources and the development of a socio-economic fishery policy for The Bahamas. This paper will present and discuss a summary analysis of the preliminary data obtained from the data obtained from the census, and its role in the future trends of management practices, socio-economic development and jurisdictional aspects of the fishery resources of the Bahamas.

THE COUNTRY

The Commonwealth of the Bahamas is formed of 19 major islands with an total area of 5,382 sq mi (13,935 km²) and a few thousand cays. These islands and cays are spread over a shelf area of about 45 000 n mi² (153,000 km²) of shallower water and are located on 16 banks separated from Florida, Cuba and Hispaniola by depths of 200-2,000 fth (366-3660 m). The edge of such banks where depths fell abruptly has an estimated length of 2,500 mi (4,022 km). If overlaid over the eastern Caribbean islands, The Bahamas would stretch from south of Puerto Rico to Trinidad and Tobago.

Preliminary results of the 1990 Population Census gave a population of 254,685 national residents. About 83% of the population was living in the islands of New Providence and Grand Bahama. Prior to this Fisheries Census the Department of Fisheries had estimated that around 3,500 persons were employed in the fishery sector.

Information on the fishery sector of The Bahamas is far from complete in spite of the efforts that were made during the last decade. Despite the fact that studies have shown that catches can be increased without seriously affecting resources, promotion of the development and expansion of fisheries activities are being hampered by the limited data base that was available on the fishing sector.

The limitations affecting the available information are particularly serious in respect to some sectors of the fishing industry, such as small boats (which are not required to be licensed) and foreign sport vessels that could be making a significant contribution to the economy of some of the Family Islands.

In 1992, in order to improve the information available, the Government of the Bahamas requested assistance from FAO to develop and plan a fisheries census. The Department of Fisheries conducted the census operations during April and May, 1995.

FISHING

Fishing is carried out in Bahamian waters by Bahamian fishermen and also by non-Bahamian residents and visitors who participate in sport fisheries (a legal activity). There is also a significant poaching problem in Bahamian waters. Catches by Bahamian fishing boats are by far the most important. Recorded commercial fishery product landings (by weight and value) have increased during the period 1981 - 94. The recorded figures of fishery products landed in 1994 (which cover most of the landings from the licensed commercial fleet and some from the small unlicensed boats) amounted to 9.9 million lb (4.5 thousand metric tons) with an ex-vessel value of B\$ 64.5 million. The most important species is spiny lobster which represented 56.5% of the total weight and 88.8% of the total value of the recorded commercial landings during 1994. Other important statistical categories are conch (15.5% of the weight landed in the same period), groupers (9.0%) and snappers (5.7%). Minor categories are jacks, grunts and sponges.

Catches of sport fisheries are mostly composed of medium to large migratory pelagic fish such as dolphin, barracuda, wahoo, blue and white marlins and tunas.

Commercial fishing within the 200 mile Exclusive Fishery Zone is reserved for Bahamians. There were 354 boats of 20'-90' (6-27 m) length licensed for commercial fishing operations in 1994. Also active in this period was an unknown number of smaller boats fishing for pleasure, subsistence or commercial purposes and also an unknown number of charter boats and private non Bahamian vessels engaged in sport fishing. Most of the commercial fishing boats participate in the spiny lobster fishery. The primary fishing methods for harvesting spiny lobster are trapping using standard Florida wooden traps and compressor-assisted divers operating from dinghies. The number of spiny lobster boats using exclusively traps or divers is not known, but the number of permits for trapping has been declining during the last ten years. Some of the commercial vessels fish for deep water snappers using hydraulic or electrical reels. Conchs are harvested primarily by divers while scalefish are caught by traps, nets and hook and line gears.

Small boats use a variety of fishing methods and gears such as fishpots made of "chicken" wire, hook and line, diving with Hawaïing slings, conch hooks and nets (gill nets and seine nets).

Main landing areas for large commercial fishing vessels are New Providence, followed by Abaco and Eleuthera. However there are some

differences in respect to species landed in these areas. Most of the spiny lobster was landed in Abaco, followed by Nassau and Eleuthera.

Over the last ten years the main fishing areas for the licensed commercial fishing vessels landing at Nassau (New Providence Is.) have been the statistical areas of the Berry Islands and South Andros, where more than a half of the recorded effort exerted has taken place. Due to being the main population and business center, New Providence has historically been the main landing and marketing site for fishery product landed in The Bahamas. Further, much of the product landed in the Family Islands are shipped to New Providence processing plants as freight from buying stations.

Live scalefish and live conch are usually sold directly to the consumer at the landing point. Frozen scalefish is sold to retailers and some 23 processing plants. Live conch is also sold in groups of 100 to retail vendors. Frozen conch are sold to the processing plants and also to restaurants, while spiny lobster is mainly sold to processing plants that sell to the local catering industry or export the product.

The preferred areas for sport fishermen are Bimini - Cat Cay, Abaco and Berry Islands. Marinas situated in New Providence and Grand Bahama represent nearly 94% of the slips available in the country, but these cater mainly to cruising yachtmen and not the sportfishing enthusiasts.

ECONOMIC ROLE OF THE INDUSTRY

The local fishing industry makes a significant contribution to the economy of The Bahamas with local vessels owners and operators earning in excess of B\$ 64.5 million during 1994. Over B\$ 63 million in fishery resources and products were exported during the same period. The fishery sector contributes around 2% to the Gross Domestic Product each year.

Despite the fact that the numbers of small scale fishermen and boats are not known, it is felt that this type of fisheries make a significant contribution to the Family Islands economy.

In addition, sport fishing also makes an important contribution to the Bahamian economy. Many tournaments are held each year and more than 6,000 permits are issued annually to foreign vessels to engage in sport fishing.

FISHERIES ADMINISTRATION

The Department of Fisheries is responsible for the administration of the fishing industry and for the management and development of fisheries. The Department's objectives for fisheries management and development are the optimum utilization of the resources, the promotion of the development of local fisheries and the improvement of the technical capabilities and well-being of the local fishermen. The Department faces several limitations in the execution of this mandate. These include the fact that the Department is centralized in the capital city of Nassau. Also, the Department has limited manpower resources

and therefore limited extension capabilities. Further, the archipelagic nature of The Bahamas makes access to all areas of the country somewhat expensive.

WHY A FISHERY SURVEY?

In its broadest sense, the purpose of a statistical survey is to collect data to satisfy a definite need. Needs come from various fields of human activity such as population (total number of persons, age and sex composition, education level, etc.), labour (number of persons working and idle, wages, etc.), industry (number of factories, production capacity, energy consumption, etc.), agriculture (areas dedicated to different crops, production, degree of mechanization, etc.), fisheries (number of fishing sites, boats and fishermen, processing plants, etc.). All this information is required to assess the state of advancement of a particular sector and determine its future needs in order to allocate national resources to promote its development.

In the case of fisheries, data are required on the characteristics of the fishery sector, especially on the location and size of fishing sites (as given by number of boats, fishermen and plants) in order to design suitable schemes to collect data on fish catches, fishing efforts, cost to obtain and process the catches, and the benefits resulting from fishing. Catch and effort are the basic data required for sound management of a fishery and for its development. Incorrect information on catch and effort could result in underexploitation or overexploitation of available resources, both of these cases result in reduced opportunities to obtain the maximum potential benefits from a fishery. Data on fishing sites are collected through a fishery survey which provides the frame to design sampling schemes to obtain the information required for suitable fishery development and management.

Also a survey is useful to create a data base to serve as a frame for other types of surveys to improve figures such as amounts landed, efforts exerted and the costs and earnings of fishing operators.

OBJECTIVES OF THE SURVEY

The immediate objective of the fisheries survey was to collect data on a number of basic characteristics needed to assess the size and structure of the fishing industry.

The medium term objective is to create a data base to serve as a frame for future surveys that will improve the understanding of the fisheries sector and thereby the management schemes implemented by the Department of Fisheries. This information is also required to assess the state of advancement of the sector and determine its future needs in order to allocate appropriate national resources to promote its development.

METHODS OF DATA COLLECTION

The fisheries survey of The Bahamas covered all areas of the country known from various sources as areas where some type of fishing takes place. Some of their characteristics were ascertained by complete enumeration (census) while others were collected from samples. For survey purposes the country was divided in two main strata, big and small islands. Big islands are more populated and economically more developed where commercial, subsistence and sport fisheries coexist. Small islands have populations below 1,000 people each, are less developed and present small scale fisheries only. Each area stratum was subdivided in smaller units, each one comprising a main island, adjacent smaller islands and cays (Appendix 1).

Determination of characteristics of the fishery sector through a survey presupposes the division of the statistical sector (population) into a finite number of distinct and identifiable units known as the sampling units. For our purposes the smallest unit in our population was the Fishing Site, a place where we could find Fishing, Processing and Buying Units. A Fishing Site is the geographical point where landings are taking place or sport fishing activities are based. In case of landings a Fishing Site consists of one or more identifiable landing places. A Fishing Unit is composed of a fishing vessel, fisherman (men) and fishing gears; a Processing Unit is composed of a processing plant and their operators and a Buying Unit includes cold storage facilities and their operators.

Despite the fact that other survey approaches could appear more suitable to the particular characteristics of The Bahamas (aerial and interview), their disadvantages and the fact that most of the fishing sites in the main islands are connected by relatively good roads and/or boat services made the ground/water approach the most convenient method for data collection during the survey.

Every identified fishing site in the country was visited during the survey. A preliminary list was prepared from various sources to guide and assist census recorders in the identification of fishing sites. Information on number of vessels, processing plants and buying stations at each site was to be collected by the census approach (complete enumeration). Other characteristics such as type and number of fishermen and fishing gears, catching, processing and marketing habits and revenues was collected by interview from selected Bahamian vessels. Survey vessel samples were selected by probability sampling proportional to the number of vessels present at the site.

The census was conducted simultaneously as far as possible throughout the country. It was decided that the best period of the year to conduct the survey was during the spiny lobster closed season (April-July) when most of the commercial fishing boats would be expected to be in port.

The fishery survey was checked for possible errors through a Coverage Check Survey (CCS). The main purpose of this coverage check survey was to detect and estimate the magnitude of the errors which occurred during field operations of the fisheries census. CCS are intensive studies based on relatively small samples carried out with the maximum possible efficiency at the end of field operations of such surveys. The CCS was intended to detect omissions and erroneous inclusions of fishing sites and other characteristics measured during the survey.

A CCS was conducted in two selected areas of big islands stratum and one of small islands stratum, representing a coverage of about 30%. The areas where the CCS were conducted were selected with proportional probability to their number of fishing sites.

RESULTS

The preliminary results of the fisheries census indicate that there are approximately 4,050 local boats used for commercial fishing in the country. It was found that 652 of these vessels were larger than 20 feet in length. Also, almost 1,500 smaller boats (dinghies) were used in conjunction with these larger vessels. This 652 vessels compares with the 354 vessels larger than 20 feet in length that were licenced in 1994 for commercial fishing operations. It was found that 69.3% of the large vessels were between 20 and 39 feet in length, and 22.1% were between 40 and 59 feet in length. It was also noted that the vessel catch and effort profiles that are in use by the Department of Fisheries take on a whole new significance with the acquisition of this data. It is now possible to have a stronger assurance in the Department's statistical reports.

The census has also given the Department of Fisheries a very clear indication of the number of smaller vessels used for commercial fishing in the country for the very first time. This information is of tremendous significance when the Department's role as manager of the nation's fishery resources is considered.

Further, there were an additional two thousand vessels in the country at the time of the census that were used for sport fishing. Most of these vessels are foreign owned but a few are locally owned charter vessels available for hire.

The importance of the lobster aggregating devices (casitas or condominiums as they are called in The Bahamas) to the Bahamian spiny lobster fishery is evident. It was estimated that there were approximately 650,000 of these artificial habitats being used by the fishermen. Also, used by the fishermen were about 105,000 lobster traps, 11,300 fishpots, 25,000 stone crab traps and 1,000 fishing reels of various types.

The labour force estimates from the fisheries census indicate that there are about 7,600 persons employed in the commercial fishery sector. This compares with the previous Department of Fisheries estimates of about 3,500 persons

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Fishermen comprise about 93% of this total, numbering about 7,100. The remaining persons are employed mainly are workers in either processing plants or buying stations throughout the country.

APPENDIX 1. Fisheries Census: Areas for data collection purposes

<u>Stratum</u>	<u>Includes</u>
<u>Big Islands</u>	
ABACO	Abaco, Grand and Green Turtle Cays and Moore's Is.
ANDROS NORTH	Joulter Cay - Behring Pt
ANDROS SOUTH	Wood Cay - Mars Bay
BIMINI	North and South Bimini
CAT ISLAND	Cat Island
ELEUTHERA	Eleuthera and Current Is.
EXUMA	Great and Small Exuma
GRAND BAHAMA	Grand Bahama, Deepwater and Sweeting Cays
LONG ISLAND	Long Island
NEW PROVIDENCE	New Providence
<u>Small Islands</u>	
ACKLINS CROOKED	Acklins, Crooked Is and Long Cay
BERRY	Berry.
INAGUA	Inagua
MAYAGUANA	Mayaguana
RAGGED	Ragged Island.
SAN SALVADOR	San Salvador
