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INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS

CONTRACTING PARTIES

(as of December 31, 2002)

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FOREWORD

The Chairman of the International Commission for the Conservation of Atlantic Tunas presents his compliments to the Contracting Parties of the International Convention for the Conservation of Atlantic Tunas (signed in Rio de Janeiro, May 14, 1966), as well as to the Delegates and Advisers that represent said Contracting Parties, and has the honor to transmit to them the ***"Report for the Biennial Period, 2002-2003, Part I (2002)"***, which describes the activities of the Commission during the first half of said biennial period.

This issue of the Biennial Report contains the Report of the Final Session of the 17th Regular Meeting of the Commission (initially held in Murcia, Spain, in November 2001 and continued in Bilbao Spain in October-November 2002), the Report of the 13th Special Meeting of the Commission (Bilbao, Spain, October 28-November 4, 2002) and the reports of all the meetings of the Panels, Standing Committees and Sub-Committees, as well as some of the Working Groups. It also includes a summary of the activities of the Secretariat and a series of National Reports of the Contracting Parties of the Commission, relative to their activities in tuna and tuna-like fisheries in the Convention Area.

The Report for 2002 has been published in three volumes. ***Volume 1*** includes the Secretariat's Administrative and Financial Reports, the Proceedings of the Commission Meetings and the reports of all the associated meetings (with the exception of the Report of the Standing Committee on Research and Statistics -SCRS). ***Volume 2*** contains the Secretariat's Report on Statistics and Research and the Report of the Standing Committee on Research and Statistics (SCRS) and its appendices. ***Volume 3*** contains the National Reports of the Contracting Parties of the Commission.

This Report has been prepared, approved and distributed in accordance with Article III, paragraph 9, and Article IV, paragraph 2-d, of the Convention, and Rule 15 of the Rules of Procedure of the Commission. The Report is available in the three official languages of the Commission: English, French and Spanish.

MASANORI MIYAHARA
Commission Chairman

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[1] Reports received and distributed for the 2002 ICCAT annual meetings. Many Reports submitted to the Commission append detailed information in the appendices. For reasons of economy, these appendices are not included in this publication, but can be requested from the Secretariat in the original language. In addition, Compliance Reporting Tables have been extracted from the National Reports and the information contained therein has been assimilated into the Compliance Tables (Appendix 7 to ANNEX 10 of the 2002 Commission Report).

NATIONAL REPORTS OF CONTRACTING PARTIES

NATIONAL REPORT OF ALGERIA[1]

1. Information on the national fisheries

The tuna fisheries in Algeria date back to ancient times. The observance of historical indices on the existence of the traps in Roman times confirms, in effect, the ancestral dimension of these fisheries. However, proof of the generalization of activity in this sector dates back to the last colonization. Since then, this fishery has undergone irregular development in Algeria in terms of catches, due more for reasons to the socio-political situation of the country than to the bio-ecological aspects of the tuna stocks.

Notwithstanding, this situation has undergone an important, qualitative change in recent years and it need to be more focused on all aspects in the near future: improved knowledge of the resource, a coherent and ambitious development program, a rehabilitated administration, an improved training system, more involvement of the scientists, or simply improved organization of the fishing activity, which has been long marginal and undervalued.

Table 1 shows the tuna catches in 2001. This catch was made due to the involvement of a fleet of 855 artisanal vessels, measuring between 6 and 24 m and with 9 to 800 Hp engines, as well as to an industrial fleet of seven foreign flag longline vessels (1,200 to 1,500 Hp engines and 600 GRT). The length of the longline used by these vessels was 120 km.

These catches were taken during a period between 28 to 35 days fishing by the longliners and throughout the year by the other vessels.

As concerns the artisanal fishery, purse seine and longline were the major gears used. The size of the individuals observed (2,963 fish) varied between 80 and 315 cm; weight ranged between 8 and 350 kg.

Compared to 1996, 1997 and 2000 (since the foreign longliners did not fish in 1998 and 1999), the catches per vessel and per day fishing are quite good, although slightly less than those in 2000.

2. Research and statistics

The scheme in effect for the collection of statistical data in Algeria dates back to the 1970s and thus needs to be improved.

This scheme is based on officers that collect statistics at the structured ports, transmit these data periodically to a central location for processing, analysis and consolidation of the information. These officers collect information in two different manners:

- By their presence at the landing ports of the products, where they check on site;
- By proceeding to carry out calculations and extrapolations based on fishing effort (number of active vessels, theoretic capacity, average catch). Crosschecks are often made with the information provided by the agents who list the amounts and the species landed and sold.

This procedure affects all the species, not only tunas. It also affects the traditional fishery since the process developed in 1994 that specifically concerns tunas is based on another method that consists of having two controllers on board each tuna vessel to complete the statistical document derived from the ICCAT measures and recommendations. This involved forms that have to be collected to inform the administration on the fishing areas, the number of individuals, the species, sizes, weights, and sexes of each fish caught, the period of the catch.

[1] Original report in French.

These data are processed by the administration in collaboration with the scientists and, since three or fours ago, some comparative studies are carried out. This scheme still needs to be perfected and decisions in this sense have been made since the last reorganization of the fishing sector (creation of a specific ministerial department).

It should be noted that in the past, the procedures applied for the collection of statistical data did not distinguish between tunas and other species. This made it difficult for the scientists to monitor and analyze the results relative to this resource.

The Algerian fisheries are characterized by the total lack of the reporting of discards. As regards by-catches, these mainly concern sharks.

To improve the reliability of the information on statistical data, some measures have been taken to adopt the current procedures to changes introduced in this area, using as a reference the measures and recommendations of regional and specialized international organizations (i.e. the General Fisheries Commission for the Mediterranean, ICCAT and FAO)

In this sense, the ICCAT Bluefin Tuna Statistical Document is being implemented.

The research that is being carried out in the fishing field is due to university students.

The analysis of the results of the trips carried out to assess the developed fisheries and aquatic resources and the planning of new trips will permit improvement of our knowledge on these fisheries and thus improve catches.

3. Implementation of conservation and management measures

Before considering to be become a member of ICCAT, Algeria opted for a policy of rational exploitation of all its resources and adopted legislation and a regulation that reflects this option.

Thus, based on the measures and recommendations of FAO, the General Fisheries Commission for the Mediterranean and ICCAT, the Algerian fishing sector has tried to adopt all measures aimed at the conservation and protection of the natural resources.

For example, we hereby cite the ordnance on the general fishing laws of 1976, the legislative decree of 1994 and, more recently, the law on fishing and aquaculture.

The major objective of these texts is to regulate:

- Fishing zones and seasons;
- Fishing gears;
- Conditions for carrying out fishing;
- Market sizes of the species fished;
- Hygienic conditions, and healthiness of the species, etc.

Notwithstanding, some difficulties have arisen in implementing these measures and pertinent international recommendations, notably as concerns the fishers´ compliance with the conservation and management measures linked to the minimum market sizes, to the fishing areas and fishing seasons, etc.

In this respect, Algeria has in recent years has made considerable effort in terms of reinforcing the organization, means and effectiveness of existing control mechanisms.

4. Inspection schemes and activities

The inspection activities of foreign flag vessels, regulated by Executive Decree No. 95-38, have proven to be quite effective since controllers from the Administration are present on board these vessels during the fishing trips.

On the other hand, the monitoring and inspection scheme foresees controls before the start of the fishing operation (at the port), during the fishing operation (with surveillance from the maritime police), and at the end of the fishing operation.

However, as regards the traditional fishing activity, the difficulties of monitoring are more marked, particularly due to the extensive the maritime area to inspect (7.5 million hectares), the number of small vessels fishing these fish in an incidental manner, and the lack of sufficient presence by the Administration and the monitoring organisms at the landing points.

One of the priorities of the Ministry of Fishing and Fishery Resources consists mainly in remodeling the monitoring and control mechanisms through a program to implement adequate structures for such monitoring, the organization of the fishing activity and the reinforcement of specialized human means.

5. Other activities

The principal activity that has been carried out by the fishing administration for some years now has been a campaign to evaluate the fishery resources aimed at adopting a policy of durable exploitation and management of these resources.

Another notable aspect within this framework is a more marked association of the scientific community with the national program to develop fishing.

As concerns on-going actions, the Ministry has initiated a project to adapt some regulatory texts to the ICCAT measures and recommendations. In this sense, a first experience has been developed with the implementation of the ICCAT Bluefin Tuna Statistical Document during the first fishing trip of the current year.

Some coordination activities aimed at increasing the effectiveness of the conservation measures have also been started with the structures concerned with the import/export of tunas (customs, coast guard, etc.).

Table 1. Algerian catches of tunas in 2001

Species	*Catches (t)*
Bluefin tuna	2,407
Swordfish	1,081
Atlantic bonito and others	1,207
Total	**4,697**

NATIONAL REPORT OF BARBADOS[1,2]

1. National fisheries information

1.1 The fishing fleet

The Barbados pelagic fishing fleet is comprised of three types of decked vessels: The "dayboats" (so named as fishing trips are generally completed during the daylight hours of a single day), "iceboats" and "longliners". In 2001 a total of 483 pelagic fishing vessels were registered with the Barbados Fisheries Division **(Table 1)**. Dayboats are mainly wooden hulled (around 70%), between 18' to 40', overall length and are propelled by 15 to 300 HP engines. Iceboats are also mainly wooden hulled (70%), between 33' to 55' overall length and are propelled by 25 to 450 HP engines. Only 5% of the longliners have wooden hulls, are between 38' to 90' overall length and are propelled by 160 to 680 HP engines. No foreign owned vessels are registered in the Barbados fishing fleet.

As previously mentioned dayboat trips do not exceed a day in length. Iceboat trips last between 5-10 days. Longliner fishing trips do not usually exceed a maximum of two weeks in duration and are mainly conducted within a radius of 500 km of the island. The only two longliners greater than 24m in length still registered in the Barbados fleet have been inactive for at least the last three years **(Table 1)**.

Large pelagic species are potentially taken on hand and trolling lines by any of the pelagic fishing vessels. However, the greatest portion of tunas and swordfish are taken by the longline vessels, which specifically target these species.

1.2 Landing sites

There are about 30 fish landing sites around Barbados with various facilities, not all of which are used year round. These are categorized as primary (markets), secondary (sheds) and tertiary (beaches) based on the type of physical infrastructure present.

The majority of catches are landed at the six primary landing sites - Bridgetown Public Market, Oistins Fish Market, Speightstown Fish Market, Weston Fish Market, Skeetes Bay Market and Consett Bay Market, which are characterized by market buildings and other facilities such as chill or cold storage, ice, lockers, haul-out area. Bridgetown has a fishing harbour. Oistins and Speightstown have jetties. Sheds and slabs for cutting fish characterize the secondary sites. There are also many beach and bay areas or tertiary sites, without physical infrastructure, where boats are moored or beached and fish landed. Some sites have data collectors visiting regularly or employed continuously.

The amenities needed for the operation of longliners and the iceboats are presently only available at the island's two main fishing ports, the Bridgetown Fisheries Complex and the Oistins Fishing Complex. As a result, these vessels are forced to land their catches at these sites exclusively. Overall most fish are also landed at these two markets. Landing activities at these two sites are monitored on a 24-hour basis by market staff. In 2001, for example, around 66% of the island's catch (all species based on landed weights i.e. including the dressed weights of the large pelagics) were landed at the Bridgetown Fishing complex and 21% at Oistins.

1.3 Transshipment activities

The transshipment of fish from foreign-based (mainly U.S. registered) long-liners through Barbados is allowed only with the written permission of the Chief Fisheries Officer. To obtain general permission for the vessel to trans-ship through Barbados, local agents must provide the Chief Fisheries Officer with detailed descriptive information on each vessel, including the state in which the vessel is flagged, its identification markings, and a photograph of the vessel. The period over which the proposed trans-shipments will occur must also be provided.

[1] Original report in English.
[2] Fisheries Division, Ministry of Agriculture and Rural Development

The local agents are also required to report specific dates and times for each transshipment operation within at least 24 hours of the vessel's arrival. The trans-shipment operations take place within the Bridgetown Port under the supervision of the Customs Department and Port officials and an official of the Fisheries Division. No transshipments at sea are permitted within Barbadian waters. Copies of the weigh-out sheets and set logs must be forwarded to the Fisheries Division within 30 days of the respective fishing trip following the trans-shipment operation.

2. Research and statistics

The Fisheries Division, and departments of the University of the West Indies (UWI) do fisheries and fisheries-related research in Barbados. The Fisheries Division conducts only applied research, whereas the UWI does both applied and academic research. The UWI has recently concluded work on the genetic structure of wahoo in the Caribbean and continues to collect length frequency data on billfish landed during recreational fishing tournaments for submission to the Enhanced Billfish Research Program.

Fish landings have been recorded at the island's markets since the early 1950s. Tolls are paid based on the quantity and types of fish landed at the market. At the market, fish are placed into broad taxonomic groupings and weighed for the calculation of the tolls payable. The name and registration number of the fishing vessel is recorded with the respective landings information. Fish landing statistics are recorded on standard data summary sheets and periodically submitted to the Fisheries Division.

The quality of fish landings statistics was greatly improved under the CFRAMP programme that started in Barbados in 1993. A key feature of the improved data collection programme was the addition of data collectors and a data entry operator to the staff of the Fisheries Division. The main duties of the data collectors are to:

- Obtain estimates of the quantities and types of fish landed at tertiary sites through regular, scheduled visits to the sites. The sites are visited on a rotational basis for the collection of catch and effort data.

- To gather basic morphometric data on certain key fish species and to gather more detailed information on fishing operations (e.g. types of gear used to catch the fish, length of fishing trip, approximate location of fishing activities, etc.). Currently this information is only collected dolphin, wahoo and yellowfin tuna. Most of this data is collected from the main markets, the Bridgetown Fishing Complex (BFC) and Oistins.

In 1993 Barbados started using the Trip Interview Programme (TIP) to electronically record local fish landings data. Basic vessel information (type, length, engine power etc.) is recorded in the Licensing and Registration System (LRS). By integration of the two databases (TIP and LRS), catch per unit effort data may be obtained by vessel types, vessel size, engine power etc. However, neither the number of unsuccessful fishing trips, unsuccessful fishing days nor the number of days spent fishing on multi-day fishing trips are recorded. This type of effort data is therefore not currently accessible.

2.1 ICCAT species

All tunas and swordfish are weighed and the dressed weights recorded by market staff. Barbados did not start recording swordfish landings as a separate category until 1994. Prior to this time, swordfish catches were included in the wider category of "billfishes". Currently the weights of tunas and billfishes are not recorded at the individual species level.

Starting in 2002, to provide estimates of tuna landings by species, a data collector with the Fisheries Division made dockside visits to randomly selected longline vessels and counted the number of each species of tuna as they were being offloaded. The proportion of each species by number in this sub-sample of the total catch was converted to proportion by weight by multiplying by the mean weights of the respective species. The proportions of each of the species estimated on a weight basis in the sub-sampled catch, was then used to estimate the proportion of each of the three tuna species for the island's total annual catch. The estimated landings of tuna by species are presented in **Table 2**. It is recognised that this system of estimating catch by species is inaccurate and cannot be applied to the billfishes as experience has shown that it is very difficult to identify these animals to species level from the landed carcasses.

To improve landings statistics especially for large pelagic species, the Fisheries Division has already designed logbooks that will be introduced on a trial basis to both the longline and iceboat fleets later this year. In addition market staff have already been advised that large pelagic species must be processed at the species level and a training program for staff in species identification will be started shortly. It must be noted that these measures are new to both local fishers and market staff and it will take some time before they are fully integrated into the data collection system **(Table 2)**.

3. Fisheries legislation

3.1 Local fisheries legislation

Most of the legislation related to the management of the fisheries of Barbados is presently consolidated into the Fisheries Act (1993, amended in 2000). The Act is based on the Organization of Eastern Caribbean States (OECS) harmonized legislation and covers formulating and reviewing fisheries management and development schemes. It vests the Minister responsible for fisheries with the responsibility of making regulations relevant to the management of fisheries. The Act also establishes a Fisheries Advisory Committee (FAC) consisting of representatives of the harvest and post-harvest sectors of the fishing industry as well as government representatives. The role of the FAC is to advise the Minister on the development and management of the island's fisheries. Topics such as fisheries access agreements, local and foreign fishing licensing, sport fishing, registration of fishing vessels, construction and alteration of fishing vessels, fisheries research, fisheries enforcement and the obligation to supply information are included in the Act. Specification of conservation measures such as prohibiting the use of any explosive, poison or other noxious substance, closed seasons, gear restrictions, creation of marine reserves fall under the mandate of the Act.

Other local legislation that impacts on the fishing industry includes:

- **Markets and Slaughterhouses Act** (1958): registration of fish vendors, operation of fish markets, collection of fish tolls.
- **Barbados Territorial Waters Act** (1977): defines territorial and internal waters
- **Marine Boundaries and Jurisdiction** Act (1978): defines waters of EEZ
- **Defense Act** (1979): control and surveillance in the EEZ and territorial waters
- **Shipping Act** (1994): registration and inspection of large vessels
- **Coastal Zone Management Act** (1998): coastal resource management and planning
- **Marine Pollution Control Act** (1998): prevention, reduction and control of marine pollution

Legislation related to the activities of fishing vessels on the high seas is currently being drafted.

3.2 Regional and international instruments

Barbados has become party to the U.N. Fish Stocks Agreement (22 September 2000), FAO Compliance Agreement (26 October 2000) and the Tuna Convention establishing ICCAT (13 December 2000). This was in order to properly manage the resources in the EEZ and to secure equitable shares of resource allocations through provisions that recognize the special circumstances of small-island developing states (SIDS).

Also relevant to international considerations are the SIDS Plan of Action, Convention on International Trade in Endangered Species (CITES), Convention on Biological Diversity (CBD), Specially Protected Areas and Wildlife (SPAW) Protocol, International Convention on the Prevention of Marine Pollution from Ships (MARPOL). Barbados is also party to all of these.

4. Implementation of ICCAT management measures

The first suite of fisheries regulations under the Fisheries Act (1993) were enacted in the Fisheries (Management) Regulations (1998). Regulations specific to ICCAT species include prohibiting landing yellow fin or bigeye tunas of less than 3.2 kg live weight. The maximum penalty for breaking any of these regulations is a fine of $50,000 Bds and/or two years imprisonment.

From June 1999, the United States required that a Certificate of Eligibility (COE) should accompany all shipments of swordfish (*Xiphias gladius*) entering the United States. The Fisheries Division has duly complied with this stipulation. Potential exporters advise the Fisheries Division that they have swordfish for export to the United States and an officer from the Fisheries Division inspects the fish to ensure that it conforms with the U.S. requirements and if appropriate issues the COE.

Table 1. Registered Barbados pelagic fishing fleet by vessel type, 1997-2001

	Year				
Vessel type	*1997*	*1998*	*1999*	*2000*	*2001*
Launches	303	276	288	290	289
Iceboats	123	146	149	156	163
Longliners	22	25	30	31	31
Total	448	447	467	477	483

Table 2. Estimated total weights of large pelagic species landed at Barbados in 2001

Species	*Whole weight (t)*
Albacore	2
Bigeye tuna	6
Yellow fin tuna	142
Billfishes (mixed species)	85
Swordfish	19

NATIONAL REPORT OF BRAZIL[1, 2]

1. Fisheries information

In 2001, the Brazilian tuna longline fleet consisted of 124 vessels registered in the following ports: Itajaí (8), Santos (18), Cabedelo (45), Natal (48), Recife (2), Belém (1) and Rio Grande (2). Of these 124 longliners, 55 were national and 69 were foreign leased vessels. There was a 39.3**%** increase in the total number of vessels from 2000, when 89 vessels were operating. The number of baitboats operating in 2001 was 39 and these vessels worked out of the same ports as in the previous year: Rio de Janeiro, Itajaí, and Rio Grande. All baitboats are national.

The Brazilian catch of tunas and tuna-like fishes, including billfishes, sharks, and other species of minor importance (*e.g.* wahoo and dolphin fish) was 45,211.8 t (round weight), in 2001 **(Table 1)**, representing a decrease of about 14.0% from the catch in 2000 (52,601.4 t). The majority of the catch was taken, this time, by longline (23,248.8 t; 51.4%), with albacore being the most abundant species (6,239.9 t), accounting for 26.8% of the longline catches. Yellowfin tuna, accounting for 21,0% of the catches, was the second most caught species with a total of 4,883.4 t. Swordfish was the third most species caught in 2001 with 4,074.8 t, representing 17.5% of the total catch of longliners and an increase of 16.0% from 2000, when 3,512.0 t was caught. A total of 3,899.5 t of sharks was caught as by-catch as well as a target species. The most caught species was the blue shark, *Prionace glauca*, which represented 55.7% of the shark catch **(Table 1)**. The amount of small tuna catch was 4.7t.

As concerns skipjack caught by baitboats, catches of this species presented a decrease, falling by 6,152.6 t from 2000. Yellowfin tuna was the second dominant species in this fishery with a total catch of 900.3 t.

2. Research and statistics activities

Catch and effort data from Brazilian tuna fisheries are regularly collected via the use of log sheets which skippers are required to complete after each set. Because leased and national vessels have exactly the same rights and obligations under Brazilian law, for the purposes of this report, all reference to Brazilian boats includes both categories of vessels. In addition to log sheets, supplementary information on landings is provided by fishing companies.

The responsibility for all issues relating to highly migratory species in Brazil (including data collection and submission to ICCAT) pertain to the Fisheries and Aquaculture Department of the Ministry of Agriculture (MADPA), which prepared and submitted Task I and Task II data. Three institutions directly assisted the Ministry of Agriculture in processing and analyzing relevant data from 2001: *Universidade Federal Rural de Pernambuco* (Federal Rural University of Pernambuco - UFRPE), located in the northeast, *Instituto de Pesca* (Fishery Institute), located in the southeast, and *Universidade do Vale do Itajaí* (Itajaí University - UNIVALI), located in the south. These institutions, together with many others, including the *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis* (Institute of Environment and Renewable Natural Resources – IBAMA), continued to conduct several other research activities on tuna species caught by Brazilian boats. Further, since 1996, due to the growing interest in swordfish, biological and morphometric data have regularly been collected and analyzed. In Southern Brazil, species composition of the pole and line fishery and age and growth of skipjack tuna have also been studied by reading of growth rings in the dorsal spine.

Several studies continued to be developed as part of the Brazilian Program for the Assessment of the Living Resources in the Economic Exclusive Zone (EEZ), termed REVIZEE (*Programa de Avaliação do Potencial Sustentável dos Recursos Vivos na Zona Econômica Exclusiva*). REVIZEE is the largest national research program on marine science and fisheries ever done in Brazil and encompasses a broad range of surveys in oceanic areas off the south, southeast and northeast coasts. The Ministry of the Environment (MMA) coordinates this research program, at national level, under the operational coordination of IBAMA.

[1] Original report in English.
[2] Ministério da Agricultura e do Abastecimento. Secretaria de Apoio Rural e Cooperativismo.Departamento de Pesca e Aqüicultura

Data have also been collected from several recreational fisheries based off southeast and northeast Brazil and mainly in the Rio de Janeiro- RJ, Ilhabela- SP and Fernando de Noronha Island where sport tournaments are conducted by local yacht clubs. In Southeast Brazil, tag and release procedure have been adopted since early nineteen's in the sport fishing tournaments of Santos and Rio de Janeiro. Besides, nowadays almost all marlins and sailfishes caught are released.

3. Implementation of ICCAT conservation and management measures

As already previously indicated, in order to adequately comply with ICCAT recommendations, the Brazilian government has implemented several fishery regulations.

These include a new Rule (*Instrução Normativa nº 35*) regulating Brazilian tuna fishery that was published on April 5, 2002, establishing the following:

- A catch limit for swordfish of 4,720 t. Although this limit was established, the catch of swordfish of all leased vessels, including those that were allowed to catch the species, will be reduced to only 15 % of the total catch, per fishing cruise, when the catches attain 3,304 t;

- Prohibition of swordfish catches at North of 5°N;

- A catch limit of 52 t of white marlin and 253 t of blue marlin was established for all boats. Although these limit were established, when the catches of these species attain 47 t and 228 t respectively, their commercialization will be forbid. The release of all specimens that are still alive by the time of boarding was also made mandatory;

- Leasing contract of foreign boats will not be authorized to vessels included in the ICCAT and CCAMLR IUU list. When foreign fishing boats suspend temporarily their operations in Brazil, the company leaseholder will must to declare that the boats operated in accordance with the norms of the ICCAT, also having declared its catches to this commission.

Furthermore, on July 1, 2002, the Brazilian Government established a new fishery regulation forbidding the commercialization of white marlin and blue marlin from July 1 to December 31, 2002.

Table 1. Brazilian catches in 2001 (t round weight; effort in number of hooks for longline and in days of fishing for baitboats and purse seine)

Species	*Longline*	*Baitboat*	*Purse seine*	*Unspecified methods*
Bluefin tuna	0.20	0.07	--	--
Yellowfin tuna	4,883.37	900.30	8.31	70.85
Albacore	6,239.92	436.62	3.50	--
Bigeye	2,533.80	88.56	--	--
Blackfin tuna	--	--	--	148.50
Frigate tuna		63.69	34.00	
Skipjack	--	18,538.03	108.16	--
Small tunas	--		4.70	
Swordfish	4,074.77	--	--	7.00
Sailfish	411.87	--	--	--
White marlin	171.50	--	0.03	--
Blue marlin	779.90	--	--	--
Spearfish	56.20	--	--	--
Other billfishes	--	--	--	1.80
Other fish	207.77	--	1,080.69	458.20
Blue sharks	2,173.39	--	--	--
Other sharks	1,716.07	--	10.10	--
Total	**23,248.76**	**20,027.28**	**1,249.48**	**686.35**

NATIONAL REPORT OF CANADA[1]

C. J. Allen[2], M. Calcutt[3] and J. M. Porter[4]

1. National fisheries information

1.1 Bluefin tuna

Bluefin occur in Canadian waters from July to December over the Scotian Shelf, in the Gulf of St. Lawrence, in the Bay of Fundy, and off Newfoundland. In adherence with the ICCAT Recommendation, the Canadian quota for the 2001 calendar year was 553.0 t (573 t allocated quota minus 20.0 overrun from 2000). The Canadian nominal landings of Atlantic bluefin tuna in 2001 were 523.7 t **(Table 1)**. In addition, an estimated 13.2 t were discarded dead from the swordfish longline fleet **(Table 2)**. Canada has 5.6 t of the overall allowance for dead discards from ICCAT Recommendation 98-7. When this and the 29.5 t uncaught quota are included, Canada was 21.7 t under its allocated TAC (including the estimate of dead discards) in 2001 that will be added to the 2002 quota (573 t plus 21.7 t = 594.7 t).

Catches in 2001 throughout the Gulf of Maine, Bay of Fundy and Atlantic coast of Nova Scotia were similar to previous years with the exception of 2000. The major fishery since 1988 has been the tended line fishery in the Hell Hole between Browns and Georges banks (180 km southwest of Nova Scotia), though in recent years its importance has decreased substantially. In 2001, the Hell Hole (182 t) constituted 35% of the Canadian landings **(Table 2)**. The landings in the Gulf increased continuously from 1997 (101 t) to 2000 (236 t), but declined in 2001 (149 t) so that 28% of the Canadian catch came from the Gulf of St. Lawrence in 2001. This is similar to the level of harvest generally seen there during the 1990s. The Gulf of St. Lawrence fish weigh about 400 kg (round), on average. Fish captured in the Hell Hole fishery weigh about 200 kg (round), on average. CPUEs in the Gulf of St Lawrence have increased since 1997 so that the 1999-2001 values are higher than all but two years since 1985. On the other hand, catch rates for the year 2000 in southwest Nova Scotia were the lowest of the time series, with 2001 generally similar to the mid- to late 1990s (SCRS/2002/081).

Additional catches **(Table 2)** were also taken from the St. Margaret's Bay traps (16 t), from the rod and reel fishery off northeastern Nova Scotia (25 t), and from coastal fishing areas off Halifax and Liverpool, Nova Scotia (61 t). In the Bay of Fundy, 20 t were taken by electric harpoon, and an additional 11 t were taken by traditional gear. In 2001, 51 t were taken in the tended line fishery on the Tail of the Grand Banks of Newfoundland; this fishery has shown marked fluctuations in recent years **(Table 2)** due primarily to decreased effort in the groundfish fishery and irregular presence of fishing vessels in the offshore fishing grounds. The offshore longline vessel, which directs for tuna other than bluefin in the northwest Atlantic, caught 7 t of its 20 t by-catch limit in 2001.

In 2001, 468 licensed fishermen actually participated in the directed bluefin fishery, one offshore longline license was authorized to direct for other tuna with a small bluefin by-catch provision, and four fish-trap license holders in St. Margaret's Bay used 11 bluefin tuna trapnet licenses **(Table 3)**.

1.2 Swordfish

Swordfish occur in Canadian waters from April to November, primarily on the edge of Georges Bank, the Scotian Shelf and the Grand Banks of Newfoundland. The ICCAT recommendation for the Canadian swordfish quota for 2001 was 1018 t, plus the underage from the 2000 quota of 31.4 t giving a Canadian quota of 1049.4 t. The Canadian nominal landings of swordfish in 2001 were 1078.9 t **(Table 1)**, and resulted in a 29.5 t overage in

[1] Original report in English; appendices available from the Secretariat.
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[4] Fisheries and Oceans Canada, Biological Station, 531 Brandy Cove Road, St. Andrews, New Brunswick, E5B 2L9.

quota that will be subtracted from the 2002 quota (1018 t less 29.5 t = 988.5 t[5]). Landings of undersized swordfish were as close to zero as possible (~ 0.5%). In 2001, Canada had a dead discard allowance of 60 t. Based on data from at-sea Observers on the swordfish longline fleet, 26.4 t of swordfish were estimated to have been discarded dead **(Tables 4, 5)**, leaving 33.6 t left in the Canadian dead discard quota, 10% of which gets rolled back into the Canadian swordfish quota in 2003.

In 2001, 958 t were taken by longline (or 89% of the catch), while the tonnage taken by harpoon was 121 t **(Table 4)**. The mean weight (round) of longlined and harpooned swordfish was 69 kg and 102 kg, respectively (Table 4). The recent trend in catch rates for the mature fish shows higher levels than the historic low in 1996, and shows a generally increasing trend (SCRS/2002/106). If the Canadian longline CPUE time series are in fact indicative of relative abundance of swordfish in Canadian waters (the assumption made when catch rates are used to calibrate the VPA), then the relative abundance of swordfish has increased since the historical low in 1996. This might imply that the drastic cuts in quota taken in 1997-2001 in the North Atlantic, as a result of ICCAT regulatory Recommendations, have had a positive effect on swordfish abundance.

Only 63 of the 77 licensed swordfish longline fishermen landed fish in the 2001 fishery **(Table 4)**. This is in marked contrast to 1993-1996 when all, or nearly all, of the swordfish longline licenses were active **(Table 4)** due to the decline of groundfish stocks. The reduced effort in recent years is a result of a combination of factors including the reduced quota, increased opportunities for fishing other species (especially crab and shrimp in Newfoundland), and relatively low prices. Although a total of 1,316 fishermen are eligible for harpoon licenses, only 84 were active in 2001 as harpooning swordfish is usually an opportunistic activity conducted during other fisheries. In addition, one offshore longline license was issued for tunas other than bluefin with a swordfish by-catch provision.

1.3 Other tunas

The other tunas (albacore, bigeye and yellowfin) are at the northern edge of their range in Canada, and they are found along the edge of the Gulf Stream and Georges Bank, the Scotian Shelf and the Grand Banks (and beyond) throughout the year. Canadian catches of these species have traditionally been a minor portion of the overall Canadian catch. However, with the reduction in swordfish quota, much more attention has been given to fishing for these species, especially bigeye (241 t in 2001). In 2001, pelagic longline vessels directed for bigeye early and late in the season, and fished to the geographic limit of their license (42ºW, the boundary of NAFO Division 3). In addition to bigeye there were also catches of albacore (51 t) and yellowfin (125 t; **Table 1**). Catches of the other tunas by the Canadian swordfish and tuna longline fleet represented almost 30% of the overall catch of the fleet in the year 2001.

One Canadian offshore longline vessel has been authorized to direct for other tuna species with a bluefin tuna by-catch, and the 77-vessel swordfish/other tunas longline fleet has been permitted to direct for other tunas with no bluefin tuna by-catch. In addition, bluefin tuna vessels are authorized to catch and retain an incidental by-catch of other tuna while fishing for bluefin.

1.4 Sharks

Porbeagle is the only shark species for which there is a directed longline fishery. Historically, blue shark and shortfin mako have been a by-catch of the Canadian swordfish and groundfish longline fisheries although small amounts are also landed from other fisheries. It is believed that the by-catch for these two shark species is larger than reported because of discarding and live releases. A Management Plan for all shark species was first implemented in 1995. The 2001 porbeagle stock assessment resulted in a new 5-year management plan for sharks beginning in 2002, including a 75% quota reduction for porbeagle and closure of the porbeagle mating grounds in order to facilitate stock rebuilding. Total reported landings in 2001 were 499 t of porbeagle, < 1 t of blue shark and 69 t of shortfin mako **(Table 1)**.

[5] For the 2002 Canadian swordfish quota calculation, 10% of the 2000 unused discard quota (30.1 t) will be rolled back into the Canadian quota as well (988.5 + 3.0 = 991.5).

In 2001, 55 exploratory shark fishing licenses were authorized to land porbeagle and/or blue shark, with all other sharks, including shortfin mako restricted to a by-catch **(Table 3)**. However, a decision has been made to reduce the number of exploratory shark licences by attrition of inactive licences for 2002, and the number of licences that will be issued will be substantially reduced. In addition, there were >1200 recreational shark licenses restricted to hook and release only **(Table 3)**, except for a small number of approved derbies that allow for retention of catch.

2. Research and statistics

The Canadian Atlantic statistical systems provide real time monitoring of catch and effort for all fishing trips. In 1994, an industry-funded Dockside Monitoring Program (DMP) was established in Atlantic Canada, according to Department of Fisheries and Oceans (DFO) standards, for the swordfish longline fleet and the majority of bluefin landings. Since 1996, this system has applied to all fleets (including sharks), and included monitoring of all trips even when no fish were caught. At the completion of each fishing trip, independent and certified Dockside Monitors must be present for off-loading, and log record data must be submitted by each fisherman to the Monitoring Company that inputs the data into a central computer system. Log records contain information on catch, effort, environmental conditions (e.g., water temperature) and by-catch. Log records from trips with catch must be received from fishermen before they can proceed with their next fishing trip (log records from zero catch trips can be mailed in at a later time). Ideally, this ensures 100% coverage of properly completed log records and individual fish weights. Prior to the implementation of the Dockside Monitoring Program, even though the submission of logbooks was compulsory, less than 50% of trips were represented by useable log records and information on individual sizes of fish (see **Table 4** for swordfish). The effectiveness of this system was thoroughly reviewed in 1998 and 1999, and appropriate changes implemented, as necessary. Problems such as by-catch and highgrading are assessed through Observer Programs and at-sea surveillance on the domestic fleet. License holders who fail to comply with the domestic regulations and conditions of license are liable to prosecution that may include fines, and suspension of license privileges.

2.1 Bluefin tuna research

Canada fully supports research that improves the basic inputs and approaches of the Atlantic bluefin stock assessments. Canada (government scientists and managers, and industry) has supported and participated in recent state-of-the-art bluefin tagging studies that have raised the possibility of a previously unknown spawning area in the central Atlantic. As the management implications of possible spawning of bluefin tuna in the central Atlantic are enormous, Canada fully supported the 2001 and 2002 exploratory research cruises to sample spawning size bluefin tuna and larvae in the central North Atlantic through both cash and in-kind contributions (as per the ICCAT Recommendation).

The 2001 scientific research program at the Biological Station (St. Andrews) was as follows:

1) Continued a collaborative (Canada/USA/Science/Industry) high-tech satellite tagging project (SCRS/01/53).

2) Member of Central North Atlantic Bluefin Tuna Research Steering Committee, conducted exploratory fishing in the central north Atlantic in 2001 using Canadian commercial vessels, and presented progress report on exploratory fishing research activities to ICCAT committees (SCRS/01/31).

3) Updated Canadian bluefin tuna CPUE series for use in the stock assessment (cooperative with the NMFS SEFSC; SCRS/2002/81).

4) Dockside Monitoring for all bluefin tuna landed in Canada, and data entry by the Monitoring Companies or Regional Statistical offices. Since 1996, there has been monitoring and data entry for all trips even when no fish were landed. In 2001, biologists provided training to the monitors, and to fisheries officers.

5) Collected bluefin blood and tissue samples for a NMFS (USA) research project on bluefin sexual maturity and genetics.

2.2 Swordfish research

The 2001 scientific research program at the Biological Station (St. Andrews) was as follows:

1) Updated age- and sex-specific CPUE for Canadian swordfish longline (1988-2001) for fish 2-9+ (SCRS/2002/106).

2) Dockside Monitoring in place for all longline swordfish landed in Canada and data entry conducted by the Monitoring Companies or Regional Statistical offices. Since 1996, there has been dockside monitoring for both the longline and harpoon fleets.

3) Provided preliminary estimates of dead swordfish and bluefin discards based on Observer coverage of the domestic large pelagic longline fleet.

2.3 Other tunas

Sampling of the domestic fleet consisted of submission of tally sheets and logs, and 18% Observer coverage. Data on catch, size and nominal CPUE have been provided to ICCAT. Dockside Monitoring is in place for the other tuna fisheries.

2.4 Sharks

1) An intensive research program on porbeagle, conducted and funded in collaboration with the shark fishing industry since 1998, was completed in 2001. The program collected detailed catch, sex and length composition information from all fishers, as well as allowed an on-board scientific presence for detailed biological sampling. The collaborative program resulted in a relatively complete biological understanding of porbeagle, including publications on porbeagle population dynamics, age and growth, maturity and reproduction, migration patterns, diet and temperature preferences. In addition, a reconstruction of past population trends was integrated with estimates of current population status to form an updated analytical stock assessment, which was presented to the fishing industry and fisheries management in 2001. This assessment resulted in a new 5-year management plan for sharks beginning in 2002. The new management plan includes a 75% quota reduction and closure of the porbeagle mating grounds in order to facilitate stock rebuilding.

2) The primary directed fishery for blue sharks is recreational. Therefore, catch-effort, maturity, diet, and sex and size composition data were once again collected from all shark derbies in eastern Canada. These data will soon be used to assess the impact of derby catches on population abundance.

2.5 Incidental catch

1) Reviewed Canadian Observer data to determine what is known about incidental catch of all species on longline in the Canadian Atlantic pelagic fishery, and to make recommendations for future research and industry-driven mitigation measures.

2) Collaborative research with NMFS to collate and analyze historical research cruise data.

3) The Canadian longline industry initiated a study on sea turtle incidental catch using increased Observer coverage to collect data.

2.6 Precautionary Approach

Canada strongly supports the Precautionary Approach and assigns a high priority to its implementation in fisheries management domestically as well as in the context of ICCAT. Recognizing that ICCAT stocks are currently not information rich, Canada fully supports new research aimed at improving stock assessments. Furthermore, as the Precautionary Approach is not limited to the development of reference points, Canada also strongly promotes the use of appropriate fisheries management and compliance measures to ensure the rebuilding and safeguarding of the resource.

1) Member of ICCAT *Ad Hoc* Working Group on Precautionary Approaches.

3. Implementation of ICCAT conservation and management measures

For bluefin, swordfish, sharks, and the other tunas (bigeye, yellowfin, and albacore) Canada has issued multi-year management plans prior to the opening of the respective fishing seasons. Details of management measures and their enforcement are provided in Appendix A. These plans are compiled in consultation with the fishing industry and incorporate all relevant ICCAT regulatory recommendations. They are implemented under the *Fisheries Act of Canada*. The necessary ICCAT regulatory recommendations are either specified in the *Atlantic Fishery Regulations* (1985) (made pursuant to the *Fisheries Act*) or are handled as written Conditions of License (issued pursuant to the Fishery (General) Regulations), both of which are legally binding on fishermen.

3.1 Catch limits and minimum sizes

Bluefin tuna. Canada has implemented the ICCAT regulatory recommendations that apply to bluefin tuna in the Canadian Atlantic Bluefin Management Plan (Appendix A). The 2001 quota was set at 553.0 t (573 t of allocation minus 20.0 t of overrun; see 1.1 above), and no person shall have in his possession any bluefin weighing less than 30 kg. In addition, Canada has limited entry into the fishery; and restrictions on the amount and type of gear used, vessel replacement, management fishing areas, and license transfer requirements.

Swordfish. Canada has implemented the ICCAT regulatory recommendations that apply to swordfish in the Canadian Atlantic Swordfish Management Plan (Appendix A). The 2001 quota was set to 1049.4 t (1018 allocation plus 31.4 t of underage; see 1.2 above), and there is a prohibition on the taking and landing of swordfish less than 119 cm LJFL (no tolerance). In 2002, a restructuring of the fleet, combined with individual quotas and a system of daily hails from sea during the latter portion of the fishery are proposed to ensure the quota is not overrun. In 1998-2001, landings of fish <119 cm LJFL were reduced to as close to zero as possible.

Other tunas. In 1998-1999, the first Canadian Atlantic Integrated Fishery Management Plan was issued for bigeye, yellowfin and albacore. Measures adopted in that plan remained in effect for 2000 and 2001. Fishing effort is restricted by limiting entry into the directed fishery to vessels having a swordfish/other tunas longline license and to one offshore vessel with an other tuna longline license. No person shall have in their possession any bigeye or yellowfin weighing less than 3.2 kg.

3.2 Closed seasons

Swordfish. In addition to the ICCAT regulatory recommendations, Canada has limited entry into the fishery, strict by-catch provisions, time-area closures to minimize by-catch, and gear restrictions. In an effort to protect large (spawning stock) swordfish, the industry initiated a closure of a substantial portion of the Scotian Shelf for the past six years from early autumn to the end of the season. Since 1995, a relatively large portion of the southwestern part of the Scotian Shelf has been closed to swordfish longline gear for a period of up to two months to minimize by-catch of bluefin tuna.

3.3 Observer programs

Canada has had an excellent Observer Program since 1977. Observers collect biological data, and monitor compliance with fishing regulations. In 2001, there was 17.6% Observer coverage (by trip) on the fleet fishing for other tunas, exceeding the requirement of the ICCAT Recommendation. Data from the Observer Program are used to estimate dead discards, and document incidental catch of non-target species.

3.4 Vessel monitoring

Although Canada has few large pelagic vessels over 24 meters in length, and most fishing is conducted within the 200 mile zone, in 2001 Canada had five vessels equipped with a VMS system as per the recommendation adopted by ICCAT.

3.5 Inspection schemes and activities

Canada has a Port Inspection Scheme consistent with the ICCAT Regulatory Recommendation that entered into force on 13 June 1998 (see section 4).

3.6 Measures to ensure effectiveness of ICCAT Conservation and management measures and to prohibit Illegal, Unreported and Unregulated fisheries

Canada participates in the Bluefin Tuna Statistical Document Program and supports the development of similar programs for swordfish and bigeye tuna. Programs for swordfish and bigeye tuna will be implemented in 2002.

3.7 Other recommendations

Bluefin Tuna Statistical Document. Prior to the implementation of the ICCAT Bluefin Tuna Statistical Document Program, Canada developed a system of uniquely numbered tags to be attached to all bluefin tuna landed in Canada. Since 1995, it has tracked the utilization of these tags through a computerized system and can cross reference data from this system with the information on the Bluefin Tuna Statistical Documents once copies are returned from Japan.

4. Inspection schemes and activities

Canada has a Port Inspection Scheme consistent with the ICCAT Regulatory Recommendation that entered into force on 13 June 1998. Canada uses a comprehensive enforcement protocol that involves a combination of the Dockside Monitoring Program (see section 2), and shore and sea-based patrols of Department of Fisheries and Oceans Fisheries Officers to ensure compliance with domestic regulations (which include ICCAT regulatory recommendations; see section 3).

In addition to the Dockside Monitoring Program to ensure complete coverage of the catch and effort of the Canadian fleet (see 2 above), aerial and vessel surveillance are used to monitor the fleets at-sea. Shore-based patrols monitor routine landings, watch for illegal landings and conduct airport and border surveillance. Observer coverage is used periodically to monitor specific important management questions in the commercial fishery. Test fisheries are established to define areas and times to minimize the catch/by-catch of restricted species or undersized targeted species.

Table 1. Canadian landings (tonnes round weight) of large pelagic fish species, 1992-2001

Species	*Landings*									
	1992	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Swordfish	1546.5	2233.7	1675.7	1609.2	739.1	1089.5	1115.1	1118.5	967.8	1078.9
Bluefin tuna	443.5	458.6	391.6	576.1	598.0	504.5	596.0	576.1	549.1	523.7
Albacore	1.0	8.7	32.2	11.5	23.9	30.8	23.2	38.8	121.7	51.0
Bigeye tuna	67.5	124.1	110.5	148.6	144.0	165.7	119.6	262.8	327.0	241.2
Yellowfin	25.5	71.5	52.3	174.4	154.5	100.1	56.6	21.8	105.2	125.3
tuna	3.2	9.1	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0
Unspec. tuna	101.1	20.8	112.5	137.8	11.8	10.9	4.5	53.5	18.4	0.4
Blue shark	115.9	152.2	157.2	111.2	67.4	110.1	69.5	70.4	77.8	69.3
Shortfin	717.9	832.0	1544.9	378.0	1015.4	1339.4	1007.8	958.2	902.3	498.6
mako	49.0	22.7	107.1	38.4	12.7	42.5	37.3	17.6	10.7	19.7
Porbeagle	0.0	0.0	4.4	4.4	8.3	8.3	7.9	4.8	5.3	3.2
Unspec. sharks										
Marlin[1]										

[1] Prior to 2002, marlin catches were reported as white marlin, although the ability to distinguish between white and blue marlin is not clear. This has been addressed for 2002.

Table 2. Canadian bluefin tuna landings and discards (tonnes round weight) by fishing area, 1990-2001

Bluefin fishing area (west to east)	*Year*											
	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Bay of Fundy	0	0	0	0	34	43	32	55	36	38	18	31
Hell Hole	254	302	289	223	165	211	147	101	152	182	74	182
St. Marg's Bay	2	0	1	29	80	72	90	59	68	44	16	16
SWNS	0	0	0	0	0	0	60	84	106	93	113	61
(coastal)	28	14	29	45	39	61	41	69	82	26	7	25
NE Nova	15	43	61	111	61	175	111	101	115	164	236	149
Scotia	120	105	56	26	5	10	95	30	21	10	71	51
G of St.	29	13	8	25	0	4	22	6	16	18	13	7
Lawren.	1	5	-	-	7	-	-	-	-	1	1	<1
Newfoundland	**448.9**	**481.7**	**443.5**	**458.6**	**391.6**	**576.1**	**598.0**	**504.5**	**596.0**	**576.1**	**549.1**	**523.7**
Offshore	-	-	-	-	-	-	-	6.0	16.3	10.7	46.0	13.2
Year-end adj[1]	*573.0*	*573.0*	*573.0*	*587.5*	*510.0*	*654.0*	*613.5*	*552.6*	*600.7*	577.7	*569.5*	*553.0*
Total landings												
Discards[2]												
Canadian quota												

[1] e.g., seized, or Bermuda fishery.

[2] Discarded dead from swordfish longline fishery: no estimates prior to 1997; 1997 actual tonnage observed by at-sea Observers; 1998-2001 estimate for entire fishery based on Observer coverage (see SCRS/99/77).

Table 3. Distribution of tuna, swordfish longline and shark fishing licenses by region and species[1] in 2001

Region	*Number of licenses*[1]							
	Bluefin		*Swordfish (LL)*		*Other tuna (LL)*[4]		*Sharks*	
	Total	*Active*	*Total*	*Active*	*Total*	*Active*	*Explor.*	*Rec.*
Gulf	606	354	0	0	0	0	19	60
Newfoundland	55[3]	24	8	4	8	0	10	10
Scotia-Fundy	42	40	69	54	69	32	24	11-1200
St. Margaret's Bay[2]	24	11	-	-	-	-	-	-
Laurentian	54	39	0	0	0	0	2	0
Total	781	468	77	58	77	32	55	>1200

[1] Bluefin tuna, swordfish, other tunas, and sharks (exploratory longline licenses) are regulated by limited entry. Recreational shark licenses are restricted to hook and release only, and the number varies from year-to-year, depending on demand.

[2] Four fish trap license holders with 6 bluefin trapnet licenses each.

[3] 38 of these licenses are subject to a reduced level of fishing activity and restricted to NAFO Divisions 3LNO.

[4] Restricted to tunas other than bluefin (albacore, bigeye, yellowfin).

Note: Active fishermen are those that picked up their licenses, license conditions and tags, and submitted log records.

Table 4. Summary of 1992-2001 swordfish vessels landing fish, landings (tonnes round weight), discards[1], average weight of fish (kg round) by gear, percentage of small fish by number[2], and percentage of catch sampled for size.

	1992	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Number of vessels landing fish										
Longline	46	75	74	77	77	60	49	53	61	63
Harpoon	72	72	32	97	112	105	109	66	92	84
Landings (t)										
Longline	1486	2206	1654	1421	646	1000	875	1101	873	957.6
Harpoon	60	28	22	188	93	89	240	18	95	121.3
Total	1546	2234	1676	1609	739	1089	1115	1119	968	1078.9
Discards (t)[1]	-	-	-	-	-	5.0	51.7	34.6	49.9	26.4
Average weight (kg)										
Longline	57	56	63	68	69	70	61	56	58	69
(# sampled)	(5904)	(19469)	(26279)	(20247)	(9077)	(14438)	(13447)	(19630)	(12991)	(13,611)
Harpoon	67	129	120	122	161	131	126	109	111	102
(# sampled)	(136)	(151)	(83)	(1131)	(561)	(652)	(1911)	(147)	(830)	(1,287)
% small fish by number landed[2]										
<125 cm	**16**	**15**	**11**	**9**	3	5	3	3	3	2
<119 cm	7	9	6	4	**<1**	**2**	**<1**	**<<1**	**<<1**	**<1**
% of catch sampled	23	50	99	94	97	100	95	100	100	100

[1] Discarded dead from swordfish longline fishery: no estimates prior to 1997; 1997 actual tonnage observed by at-sea Observers; 1998-2001 estimate for entire fishery based on Observer coverage (see SCRS/99/77).

[2] Minimum size under regulation in bold: <25 kg round weight or <125 cm LJFL with 15% tolerance (by number) from 1991- 1995, and <119 cm LJFL with no tolerance since 1996.

NATIONAL REPORT OF CHINA[1]

Dai xiaojie[2], Xu Liuxiong[2], Zhao Liling[3]

1. Fishery Information

Longline is the only fishing gear for tunas by the fishing fleet of China in the Atlantic Ocean. The total number of tuna longliners operating in the Atlantic Ocean was 54 in 2001, with a total catch of 9,370.4 t of tunas and tuna-like species, slightly higher than that of 2000. **Table 1** shows the species composition of the catch in the total Atlantic since 1993.

1.1 Albacore

Albacore were caught by the Chinese longline fleet as by-catch in the Atlantic Ocean. The total catch of this species in 2001 was estimated at 82.7 t, a decrease of 21% as compared to that of previous year (104.7 t).

1.2 Bluefin tuna

Bluefin tuna were targeted by the Chinese longline fleet in the northern Atlantic Ocean. The total catch in 2001 was 68.1 t, a decrease of 14% from the previous year (79.6 t in 2000).

1.3 Tropical tunas

Tropical tunas, including bigeye and yellowfin tunas, are caught in the Atlantic Ocean. The total catch of bigeye tuna in 2001 amounted to 7,210 t, 9.8% higher than that in 2000 (6,563.5 t), and did not exceed the 7,300 t of autonomous limit, while the catch of yellowfin tuna was 1,055.8 t, 37% less than that in 2000 (1,674.2 t).

1.4 Swordfish

The total catch of swordfish in 2001 was 302 t, a 17% decrease from the previous year. Of this amount, 101.7 t (21.6 t in 2000) were caught in the North Atlantic Ocean and 200.3 t (344 t in 2000) were caught in the South Atlantic Ocean.

2. Research and statistics

Shanghai Fisheries University (SHFU) is in charge of the data collection and compilation of Atlantic tuna fishery statistics. The compiled data including Task I and Task II, as well as the number of fishing vessels, have been routinely reported to the ICCAT Secretariat.

In accordance with the Commission's recommendation on the bigeye tuna observer program, adopted in 1997, China started carrying out a tuna observer program in ICCAT Convention waters in 2001. Three observers were sent to the Chinese Atlantic tuna longline fishing fleet. The area covered by observers was 17ºN-8ºS, 12ºW-43ºW. A summary report, including data collection, size measurements and the biological sampling of tunas and other fishes, was presented to the 2002 SCRS meeting.

In order to support the tag research program on tunas, posters of tag information in Chinese were prepared by Shanghai Fisheries University and distributed to all Chinese fishing boats in the Atlantic Ocean.

[1] Original report in English.
[2] Shanghai Fisheries university, 334 Jungong Road, Shanghai 200090, P. R. China.
[3] Division of Distant Water Fisheries, bureau of Fisheries, Ministry of Agriculture, No. 11 Nongzhanguan Nanli, Beijing 100032, P.R. China.

3. Implementation of ICCAT conservation and management measures

3.1 Catch quota and minimum size limit

In order to comply with the catch limits established by ICCAT on bigeye tuna, eastern bluefin tuna, northern and southern swordfish, blue marlin and white marlin, the Chinese fishery administration authority required all the fishing companies operating in the Atlantic Ocean to report their catch monthly to the Tuna Working Group in Shanghai Fisheries University.

It is recalled that 4,000 t of bigeye tuna quota were allocated to the tuna fleet of China for 2002 by the Commission, without the participation of the Chinese delegation in such a decision. However, this catch quota does not meet the minimum demand of the Chinese fleet for subsistence. The fishery administration authority of China requires that the catch of bigeye tuna by the Chinese fleet should not exceed the autonomous limit.

In order to implement conservation and management measures for bigeye tuna, the fishery administration authority of China urged part of tuna fleet operating in the Atlantic Ocean to shift their fishing grounds to the Indian and Pacific Oceans.

The Chinese tuna fleet strictly followed the minimum size criteria set by the ICCAT Commission in order to protect young tunas.

3.2 Tuna Statistical Document Programs

Since July 2002, all bluefin tuna, bigeye tuna caught by the tuna fleet of China and exported have been accompanied by Bluefin Tuna Statistical Documents and Bigeye Tuna Statistical Documents, as required by the resolution and recommendation adopted by ICCAT.

3.3 Fishing vessel management

It is noted that on December 1, 2002, the Government of China will issue fishing licenses to all Chinese fishing vessels operating in the high seas of world´s oceans. Each license should specify the type of fishery, fishing grounds, targeted species and quota etc. This will facilitate fishing port inspection and also help the Government of China to effectively supervise its fleet.

A Vessel Monitoring System (VMS) is being implemented. In two years, this scheme will cover all Chinese large longliners operating on the high seas of the world´s oceans. Once the scheme is implemented, the fishing position can be monitored simultaneously.

3.4 Observer program

A scientific observer program shall continue to be implemented in 2002.

Table 1. Catches of tunas and tuna-like species (in round weight, t), 1993-2001

Species	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Bluefin tuna	--	97.4	136.9	92.8	48.7	85.3	103	79.6	68.1
Yellowfin tuna	139.0	155.9	200.0	124.3	83.6	698.3	2190	1674.2	1055.8
Bigeye tuna	70.1	428.3	475.7	519.8	427.1	1502.9	7347	6563.5	7210
Swordfish	72.5	85.7	104.2	131.9	39.6	365.3	838	365.6	302
Albacore	--	14	8	20	--	--	60	104.7	82.7
Skipjack	--	--	--	--	--	4	--	--	--
Unspecified sharks	--	--	--	--	--	5	31	--	--
Short mako	--	--	--	--	--		--	152.8	--
Spearfish	--	--	--	--	--	2.4	--	--	--
Blue marlin	--	--	--	--	--		--	23.2	91.6
White marlin	--	--	--	--	--	3.6	--	2.4	19.8
Sailfish	--	--	--	--	--	--	--	7.4	8.1
Other	41.0	68	76.0	80	90	--	415	234.2	532.4
Total	**322.6**	**849.3**	**1000.8**	**968.8**	**689.0**	**2666.9**	**10984**	**9207.6**	**9370.4**

NATIONAL REPORT CÔTE D'IVOIRE[1]

N. Ngoran, J.B. Amon Kothias[2]

1. Introduction

Côte d'Ivoire, which does not have tuna fishing vessels, plays a very important role in the management of Atlantic tunas. The *Centre de Recherches Océanologiques* (CRO) is in charge of the research work on marine and high seas fisheries. This center is responsible for the research and statistics on tunas landed regularly at the fishing port of Abidjan. As in previous years, during the course of 2001, the industrial tuna fishery has been monitored by the CRO, together with the *Institut de Recherche pour le Developpement* (IRD) and the *Instituto Español de Oceanografia* (IEO). The costs (operation, equipment and personnel) are covered by the three centers that benefit from three sources of funding:

- General Operating Budget (BGF) of Côte d'Ivoire;
- FAC financing within the framework of a joint CRO-IRD program;
- European Union (EU) within the framework of a joint IRD-IEO program.

In addition to the industrial fishery, there is an artisanal fishery that also lands mainly small tunas and billfishes (marlins and swordfish) and sharks. The monitoring of this fishery has been reinforced due to the ICCAT Billfish Program that helped the person in charge of the monitoring the landings in Côte d'Ivoire through a subsidy that enabled contracting a sampler.

This report summarizes the data relative to the large pelagics, in particular tunas, at the fishing port of Abidjan through the activities of the tuna vessels (mainly French and Spanish) and the canoe fishery using driftnets along the Ivorian coasts. With regard to the industrial tuna fishery, the importance of the fishing port of Abidjan is demonstrated by the total landings and tuna species and the number of tuna vessels that visit this port. While there are lists of all the vessels (including Spanish vessels) that landed or transshipped at the port of Abidjan in 2001, the catch data that are calculated here do not include the Spanish surveys, which are processed by our Spanish colleagues. Also noteworthy are the important quantities "false tuna" landed. This type of fish contributes in large measure to the diet of the low income population in Côte d'Ivoire. With regard to the artisanal driftnet fishery that targets large pelagics, this report shows the nominal and weighted catches of the various fish caught, as well as the fishing effort deployed.

2. Tuna landings at the fishing port of Abidjan

Tuna landings at the port of Abidjan in 2001 were mainly made by French and Spanish purse seiners. In addition to these vessels, there were some vessels flying flags of other countries. In total, 62 boats landed or transshipped at the fishing port of Abidjan in 2001 **(Table 1)**. These are broken down as follows: 25 Spanish vessels, 18 French, 16 Ghanaian, 1 Seychelles and 3 St. Vincent vessels.

A scientific team comprised of 14 persons contracted by the three centers were in charge of the collection, data entry and processing of statistical data in 2001. This team is comprised of the following: 3 research scientists (2 CRO and 1 IRD), 4 high level technicians (I CRO, 2 IRD and 1 IEO), 1 data entry technician (from the partnership), and 7 samplers (all from the partnership).

The landings are monitored daily by this team of scientists. **Table 2** shows the catches, by tuna species, landed by the vessels that visited the port in Abidjan in 2001, with the exception of the Spanish vessels whose data are processed by the delegate from the Secretariat of Fisheries of Spain. These total landings that amounted to 57,514 t are comprised, in descending order, by yellowfin, skipjack, bigeye and albacore. These vessels (38) made 184 trips for 109,512 hours at sea and 53,609 hours fishing, i.e. 48.9% of the time at sea was dedicated to

[1] Original report in French.

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fishing. These catches are overall identical to those of the previous year (54,402 t) and similar to those of previous years **(Table 3)**. In addition, there were 10,000 t of reported catches of ¨false tuna". Consumption of these "false tuna" is increasing more and more in Côte d'Ivoire. This has increased since 1990 due to the fishing under floating objects **(Figure 1)**. These catches are mainly comprised of Atlantic skipjack and frigate tuna.

3. Artisanal catches of large pelagics in Côte d'Ivoire

There is an artisanal fishery off the Ivorian continental shelf that exploits tunas and other large pelagics. This is a driftnet canoe fishery that started in 1984. Since 1988, this artisanal fishery has been regularly monitored. The monitoring of the landings on land by the CRO has improved within the frameworkk of ICCAT Billfish Program. The principal groups of fish landed are: billfish (sailfish and marlins), swordfish, sharks and small tunas. The fishers use canoes to fish at night using driftnet close to Abidjan from where they can easily sell their catches. The fishing zone is located 5 to 10 miles from the coast, beyond the continental shelf, which is not very extensive. The net sets last one night and the fish are directly sold every morning at the port of Abidjan.

As concerns the large pelagics caught by the canoes, the most abundant billfishes in the catch are as follows : blue marlin *(Makaira nigricans)*, white marlin *(Tetrapturus albidus)*, sailfish *(Istiophorus albicans)*, and swordfish *(Xiphias gladius)*. Shark catches are comprised mainly of silky sharks *(Cacharhinus falciformis)*, smooth hammerhead sharks *(Sphyrna zygaena)*, scalloped hammerhead sharks *(S. lewini),* and mako sharks *(Isurus* spp.*)*, are second in importance **(Table 4)**. Tunas, such as yellowfin *(Thunnus albacares)*, skipjack *(Katsuwonus pelamis)*, frigate tuna *(Auxis thazard)*, and Atlantic black skipjack *(Euthynnus attetteratus)* are next in importance. As by-catch, the canoes also catch large fish such as bigeye *(Thunnus obesus)*, rays *(Manta* spp.*)*, wahoo *(Acanthocybium solandri)*, dolphin fish *(Coryphena* spp.*)*, sea turtles *(Chelonia mydas, Dermochelys coriacea)* and some dolphins. **Table 4** shows the total annual catches (nominal and weighted) of large pelagics (billfishes and sharks) taken by the driftnet canoe fishery. About 500 t of large pelagics (billfish and sharks) are caught annually by this fishery, as are small tunas and other fish species. It is noted that these catches have decreased since 1998.

4. Conclusion

The tunas that are landed or transshipped annually at the fishing port of Abidjan supply the three large canneries of Abidjan and consequently sustain an important source of employment and an impressive economic activity. The regular monitoring of statistics of these landings by the CRO contributes to the improvement of ICCAT's knowledge of the Atlantic tuna fisheries.

The analysis of the data from the surveys carried out on the artisanal driftnet fishery shows the importance of this fishery both in terms of the quantities landed and in the diversity of the species. The importance of the landings of billfishes and swordfish by the Côte d'Ivoire artisanal fishery is only a reflection of the artisanal catches of these fish off the coasts of the Gulf of Guinea. Therefore, the monitoring of this fishery should be developed in the coastal countries of the Gulf of Guinea, Senegal and Gabon. The sampling method and the data processing scheme used by the CRO of Abidjan seem to give satisfactory results. This could be applied in other countries through sub-regional collaboration. Further, the billfish landings off the Gulf of Guinea coasts could be better monitored and coordinated. The development of abundance indices from Ivorian data could serve as indicators of the state of the central East Atlantic stocks.

Note: Correction of Ivorian data

Côte d'Ivoire does not have tuna vessels. The Ivorian data that are transmitted to ICCAT only concern the artisanal driftnet fishery, which targets tunas and tuna-like species, particularly billfishes. Therefore, the industrial tuna landings at the fishing port of Abidjan are essentially made by French, Spanish and Ghanaian purse seiners. Although the data from these vessels are collected at Abidjan, they are transmitted regularly to ICCAT by each of these Contracting Parties. However, a part of the landings of the industrial tuna fishery are comprised of "false tuna", whose quantities and species composition are included in the 2001 National Report of Côte d'Ivoire. It has been found that these data are included by the Secretariat under Côte d'Ivoire, which is not true. For this reason, the yellowfin, bigeye and skipjack tuna catches included under Côte d'Ivoire should be deleted.

Table 1. List of tuna vessels that landed at the fishing port of Abidjan en 2001

No.	*Name*	*Flag*	*No.*	*Name*	*Flag*
1	Afko 105	Ghana	32	Via Avenir	France
2	Afko 203	Ghana	33	Via Euros	France
3	Afko 305	Ghana	34	Via Gwalarn	France
4	Afko 307	Ghana	35	Via Gwalarn	Seychelles
5	Afko 312	Ghana	36	Via Harmattan	France
6	Afko 313	Ghana	37	Via Libeccio	France
7	Agnes	Ghana	38	Via Mistral	France
8	Alamo	Ghana	39	Albacora 10	Spain
9	Avel viz	France	40	Albacora 9	Spain
10	Belouga	France	41	Albacora Caribe	Spain
11	Cap Saint Paul	St. Vincent	42	Alboniga	Spain
12	Cap Saint Paul	France	43	Almadraba Dos	Spain
13	Cap Saint Pierre 2	France	44	Almadraba Uno	Spain
14	Cap Saint Pierre 2	St. Vincent	45	Bermeotarak Dos	Spain
15	Cap Saint Vincent 2	France	46	Bermeotarak Tres	Spain
16	Christophe Colomb	St. Vincent	47	Egalabur	Spain
17	Drago	Ghana	48	Egaluze	Spain
18	Ghako 101	Ghana	49	Germon	Spain
19	Ile Tristan	France	50	Gure Campolibre	Spain
20	Jazmin	Ghana	51	Itxas Bide	Spain
21	Jito	Ghana	52	Izurdia	Spain
22	L. A. Bougainville	France	53	Juan Ma Soroa	Spain
23	Marine 703	Ghana	54	Kurtzio	Spain
24	Marine 705	Ghana	55	Matxikorta	Spain
25	Mervent	France	56	Montecelo	Spain
26	Pere Briant	France	57	Montefrisa 9	Spain
27	Prince de Joinville	France	58	Montelucia	Spain
28	Santa Maria	France	59	Playa de Noja	Spain
29	Sterenn 2	Ghana	60	Txirrine	Spain
30	Marine 707	Ghana	61	Txori Eder	Spain
31	Tulipan 2	Ghana	62	Zuberoa	Spain

Table 2. Landings (t) of tuna by vessels that visited the fishing port of Abidjan in 2001 (excluding Spanish vessels)

Month	*Yellowfin-YFT*	*Skipjack -SKJ*	*Bigeye-BET*	*Albacore-ALB*	***Total***
January	1,461	791	87		**2,339**
February	2,040	2,517	316		**4,873**
March	3,864	695	146		**4,705**
April	6,383	485	148		**7,016**
May	2,881	1,222	312		**4,415**
June	1,356	1,587	54	11	**3,008**
July	3,109	2,395	984	4	**6,492**
August	3,721	1,949	692	5	**6,367**
September	2,645	1,744	271		**4,660**
October	2,582	1,521	343		**4,447**
November	1,644	1,716	287		**3,646**
December	3,092	2,249	223		**5,564**
TOTAL	**34,777**	**18,872**	**3,865**		**57,533**

Table 3. Landings (t) of tunas and "false tuna" at the fishing port of Abidjan (excluding Spanish vessels), from 1996 to 2001

	Total tunas	*"False tuna"*
1996	78,929	10,899
1997	50,334	9,221
1998	46,122	9,168
1999	55,045	11,923
2000	54,399	14,000
2001	57,514	10,000

Table 4. Côte d'Ivoire annual catches (t) of billfishes and sharks by driftnet, from 1988 to 2001

Year	*Effective effort**	*Sailfish (l. albicans)*	*Blue marlin (M. nigricans)*	*White marlin (T. albidus)*	*Swordfish (X. gladius)*	*Various sharks*	***Total***
1988	2,908	65.6	130.3		12.22		**208.1**
1989	2,430	54.5	82.0		6.77		**143.4**
1990	2,920	57.9	88.1		7.52		**153.5**
1991	4,981	38.2	105.1		18.02	55.7	**217.0**
1992	6,196	68.8	79.2		13.05	101.4	**262.4**
1993	7,707	39.5	139.5		14.42	90.1	**283.6**
1994	12,756	54.4	211.6		19.98	110.9	**396.8**
1995	14,141	66.3	176.7		18.78	106.6	**368.4**
1996	14,478	90.6	157.4	0.7	25.76	103.4	**377.8**
1997	12,874	65.1	222.1	1.8	17.66	91.1	**397.7**
1998	10,328	35.3	182.4	0.9	25.12	55.6	**299.3**
1999	15,244	80.1	275.5	5.4	25.72	58.1	**444.8**
2000	12,145	44.5	205.9	1.2	20.1	47.4	**319.1**
2001	13,994	47.0	196.0	2.4	18.9	68.4	**332.7**

* Effective effort = nominal effort in number of trips corrected by the development of fishing power (rate of increase of the size of the nets). The monitoring of sharks catches did not start until 1991.

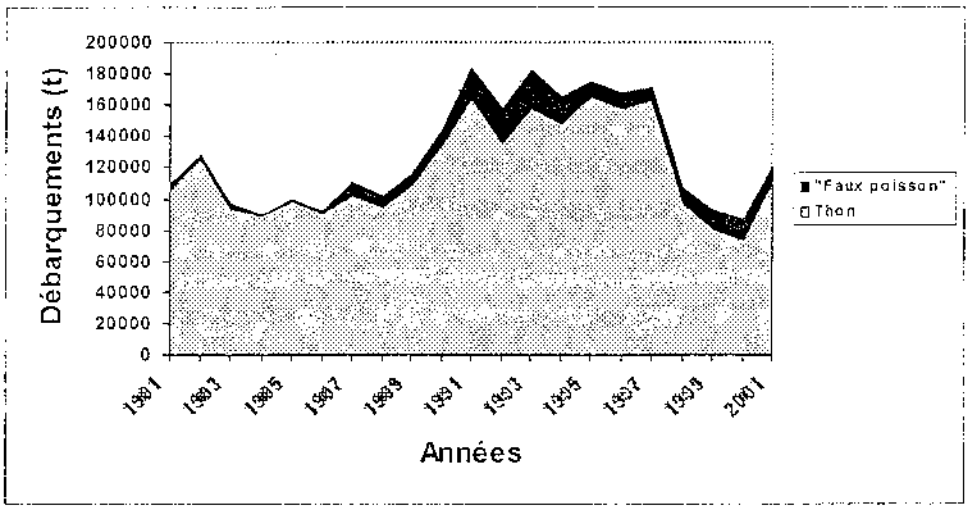

Fig. 1. Total landings of tunas and "false tuna" (for all tuna vessels) at the fishing port of Abidján, 1981 to 2001.

NATIONAL REPORT OF CROATIA[1, 2]

1. National fisheries information

The total Croatian catch of tuna and tuna-like fishes in 2001 was 903 t; 100 % of the catch is bluefin tuna. An estimated 98% of the fish were caught by purse seine, and the rest by longliners and sport fishing (hooks). Almost the total catch is transferred to floating cages for growing and fattening. The growing activity is still increasing and there is a lot of pressure for an increase in the catch quota. The Republic of Croatia is facing considerable difficulties in its desire to fulfill the requirements of the fish farmers as well the fishermen. Croatia is forced to buy other members' quota, and thus 1,100 t of bluefin tuna were imported in 2001.

There are 76 licensed vessels fishing for tuna and tuna like species, of which 30 are active. There are 22 licensed large-scale vessels (> 24 m).

2. Statistics and research

2.1. Statistics

The Croatian bluefin fishery continues to be regulated by quota, season, gear restrictions and size limits. Croatian vessels fishing in the Adriatic Sea in 2001 caught 903 t of bluefin tuna **(Table 1)**. The average size of the fish was 11.69 kg. Small fish (5-10 kg) comprise 72.16 % of total catch **(Table 2)**.

As the official adjustment of quota for 2001 was done after the close of the catch season, it was considered by Croatian regulations as 876 t. The adjusted quota for 2001 is 1,259 t **(Table 3)**. The under-harvest shown in the **Table 1** is a result of the non-applied adjusted quota by Croatian regulations.

The 2001 catch by purse seine was 890 t, by longline 9 t and 4 t were caught by the sport fishery (hooks). The estimated catch of other tuna-like fishes in 2001 is 54 t of bonito *(Sarda sarda)*.

The National Fisheries Information System for the collection of catch data, which was introduced in 1999, provides all the data required but there is still some uncertainty considering that almost the total catch is used for farming purposes; this results in contradictions between catch and trade data. The technology for tuna farming is developing, which results in a growing period of one, two and even three years. Such technology is causing even more contradictions between catch and trade data.

2.2 Research

As was indicated in Croatia's last report, research activities have been carried out to analyze catch-at-size data for 1999 through 2001 (SCRS/01/091), indicating an increased proportion in the number of small bluefin tuna in the catches compared to data of previous years. These data raise questions about the efficiency of the ICCAT recommendation on the closure of the purse seine fishing in the Adriatic Sea from May 1 to 31 to protect juveniles.

Due to the increased activities on bluefin tuna growing and fattening and the uncertainty in catch-trade data, preliminary research has been carried out on the growth rates of bluefin tuna from the Adriatic Sea when reared in the floating cages (SCRS/01/092), providing some very important preliminary indices. As this will be considered a very important issue in the future, a study has been initiated this year within the framework of the Bluefin Year Program (BYP) on the growth rates of small bluefin tuna when reared in the growth-out floating cages. The principal objective of this study is to attain better knowledge on the growth patterns of bluefin tuna when reared in the growth-out floating cages. This should also include a study on feed-biomass conversion factors as well as a study on conversion factors to convert the tuna product weight (originating from the cages) in round weight of the fish.

[1] Original report in English.
[2] Ministry of Agriculture and Forestry, Fisheries Directorate

Notwithstanding the recommendation to use dead fish from this study for the stock structure and maturity sampling program, no fish were sampled this year for this purpose, due to lack of any instructions or detailed sampling protocol.

Considering the supplemental recommendation by ICCAT on bluefin tuna research in the Atlantic Ocean (Ref. 01-8), Croatia suggests that small bluefin tuna fished for this research purpose also be exempt from Commission conservation measures during the research, such as for the participants in bluefin tuna research in the central North Atlantic.

3. Implementation of ICCAT conservation and management measures

3.1 Recommendation on Changes of Closed Season for the Purse Seine Fishery for Bluefin Tuna in the Mediterranean Sea (Rec. 98-6)

As Croatia is still facing the same problem, the pertinent part of the 2000 Report is reiterated. This recommendation was introduced in 1999 prohibiting purse seine fishing in the Adriatic Sea during the period from May 1 to 31 instead of from July 16 to August 15 that has been adopted for the other parts of the Mediterranean Sea to protect juveniles. Based on the analysis of bluefin tuna catch-size composition during the period from 1999 through 2001 (SCRS/01/091) it has been concluded that an increased proportion in the number of small bluefin tuna in the Adriatic Sea has been fished. Data for 2001 are showing 72.16% of small tunas (5-10 kg) in the total catches **(Table 2)**. It seems that this recommendation has not achieved its purpose of protecting juveniles. In practice, it has resulted in the relocation of fishing effort from and into the Adriatic Sea, thus decreasing the effectiveness of the earlier recommendation to protect juvenile bluefin tunas within the Mediterranean fishing area.

Croatia proposes that this Recommendation be changed in order to establish the closed season for the bluefin purse seine fishery during the same period over the entire Mediterranean fishing area.

3.2 Recommendation Concerning Bluefin Tuna Catch Limits in the East Atlantic and Mediterranean (Rec. 00-9)

The decrease in the catch quota was unfairly harmful to the Republic of Croatia. In 2001 Croatia's catch quota was only 876 tons whereas during the same period Croatia underwent rapid development of the tuna growing (fattening) activity followed by an increase in the number of fishing licences. The Republic of Croatia is facing considerable difficulty, as it desires to fulfil the requirements of the fish farmers as well as those of the fishermen. Croatia is forced to buy other members' quota, such that 1,100 t of bluefin tuna were imported to Croatia in 2001.

Croatia requests that the current bluefin tuna quota for the Republic of Croatia be corrected in favor of the 1994 reference year amount.

3.3 Recommendation Concerning a Limit on Bluefin Tuna Size and Fishing Mortality (Rec. 74-1)

As almost the entire catch of bluefin tuna is used for growing activities, there is no landing of fish. Thus, Croatia is facing problems to apply this recommendation and more precise instructions are needed.

4. Inspection schemes and activities

Croatia has no details to report at this time regarding inspection schemes and activities.

Table 1. Croatian catch statistics for 2001

Species	*Gear*	*Catch limit*	*Catch*	*Est. catch over/under catch limit*	*Catch of Age 0*	*Estimated catch over 15% tolerance of fish <6,4 kg*
Bluefin tuna	PS, LL, Hooks	1,259	903	- 356*	0	0
Bonito	PS	--	54	--	--	--

* The catch quota has been adjusted after the close of the fishing season, so that under Croatian regulations it was considered as 876 t. .

Table 2. Weight structure of the Croatian bluefin tuna catch in 2001

Year	*< 5 kg*	*5-10 kg*	*11-20 kg*	*21-50 kg*	*51-100 kg*	*> 100 kg*
2001	0	72.16 %	19.37 %	7.47 %	0.86 %	0.11 %

Table 3. Croatian quota corrections for bluefin tuna

	Quota	*Catch*	*Difference*	*Corrections*
1997	1,410	1,105	-305	
1998	1,057	906	-457	1,363
1999	950	970	-437	1,407
2000	876	930	-383	1,313
2001	876	903	-356	1,259

REPORT OF THE EUROPEAN COMMUNITY[1]

1. Information on the fisheries

The various fleets of the European Community fish all the major species that are under ICCAT competence in the Atlantic and Mediterranean.

The total catches of tunas and tuna-like species obtained by these various fleets in 2001 amounted to 202,788 metric tons (t), a reduction as compared to 2000.

Section I of the national reports of the various Member States of the European Community, which provide details and technical aspects on the various fisheries, by species as well as by fishing gears, have already been transmitted to ICCAT for analysis during the SCRS meeting.

2. Research

All the Member States of the European Community have national research institutes or regional laboratories that, in some cases, are supervised by the major universities of the country. A detailed description of the research activities carried out by the Member States of the Community, and which are shown in Section 2 of the national reports, has already been transmitted to ICCAT.

As concerns the tropical tuna fisheries, the Member States work in close collaboration with the research institutes of third countries in which the fleets land all or part of their catches.

In 2002, scientists of the European Community and its Member States regularly participated in the scientific meetings organized by ICCAT.

The European Community totally or partially finances research programs on large migratory species, which are implementation jointly with the Member States directly concerned. The major studies carried out in 2002 within the framework of the European programs were as follows:

Bluefin tuna
- Biological parameters (BFTMED Program, in collaboration with the FAO/COPEMED Project)
- Time-area dynamics (STROMBOLI Program)
- Abundance indices of spawners in the Mediterranean
- Sexual maturity, through hormonal and histological analyses
- Tagging.

Swordfish
- Analysis of the structure of the Atlantic and Mediterranean stocks by nuclear DNA (FAIR Program)
- Observers on board longliners (juvenile catches, analysis of by-catches and discards, SHKLL Program)

Tropical tunas
- Improvement of fishing data by time-area strata (oceanographic data) and by fishing type; analysis of a multi-species sampling scheme (BIOTHON Program)
- Analysis of the association between fish schools and fishing vessels (baitboats)
- Analysis of by-catches
- Study of sub-surface environmental conditions (Gulf of Guinea)
- Observers on board purse seiners (analysis of bigeye catches, BETYP Program)
- Revision of the current databases, in the framework of the future creation of an European laboratory for research on tunas (TESS and ORDET Programs)
- Development of fishing power of the tropical purse seiners (ESTHER Program).

[1]Original report partially in French and partially in English; appendices available from the Secretariat.

Other tunas
- Biological parameters and the impact of the purse seine fishery directed at clupeids on the catches of small tunas.

Parallel to Community programs, some Member States finance research programs that are carried out jointly with other Member States or with third countries. In general terms, significant effort are made within the framework of national programs aimed at improving the collection of data, particularly that relative to fishing effort, biology of the species, target species and by-catches:

Bluefin tuna
- Relationship between biological parameters and the recruitment area of juveniles.
- Analysis of trap abundance indices (in the framework of the ICCAT Bluefin Year Program).

Albacore
- In the Atlantic:
  Size structure, analyzed by sampling of the landings
  Relationship between biological parameters and surface fishery yields
  Reading of water temperatures by teledetection.

- In the Mediterranean:
  Analysis of a probable homogeneity of the stock

Swordfish
- Analysis of the ICCAT Task II criteria and sexing of fish
- Tagging cruises.

Tropical tunas
- Analysis of the associations between schools and tuna baitboats
- Monitoring of environmental conditions in the Gulf of Guinea
- Analysis of the causes for the increase in purse seine bigeye catches
- On-board scientific observers
- Bigeye tuna tagging cruises.

3. Statistics

In 2001, the European Community, as well as its Member States, continued their close collaboration with the SCRS.

The European Community already has a mandatory regulation in force on its Member States, applicable to all the fleets involved in the fishing of highly migratory fish species in their various areas of activity. This provision applies the ICCAT recommendations.

This regulation is aimed at responding to the ICCAT Task I and II requirements. The instruments used (logbooks, landings reports, etc.) and the possibility of cross-checking data, should result in improved, faster and more precise monitoring of the catch data.

Since 1 January 2000, the fishing sheets established by the Member States have been replaced by a Community fishing logbook, in accordance with ICCAT rules, and which is already mandatory for all the fishing areas. Furthermore, for even more precision and more homogeneity in the collection of fishery statistics, the European Community adopted common provisions in 2000 relative to the collection and processing of data needed for the Community fishing policy (EC Council Regulation No.1543/00).

Besides, the Member States have adopted national regulations which, in some cases, complement the Community provisions, in order to take into account the specific characteristics of the national fisheries.

The European Community finances programs aimed at improving fishery statistics, such as:

- Sampling programs and logbook correction
- Collection of data from landings of bluefin tuna in the Mediterranean (BFTMED Program)

The Member States have also developed networks for the collection and processing of catch data from the various fleets concerned.

One Member State has implemented specific measures to monitor the sport fishery.

Within the framework of its Action Plan for durable fishing in the Mediterranean, the European Community intends to improve the quality of the scientific advice and will soon present a plan of action aimed at improving the availability of scientific advice for fisheries management in the Mediterranean.

4. Implementation of ICCAT conservation and management measures

After each plenary session of ICCAT, the European Community incorporates the conservation measures adopted into its regulations, so that these are binding on the nationals of its Member States within the time frames for the entry into force established by ICCAT.

All the technical conservation measures in force on highly migratory species have been assembled in EC Council Regulation No. 973/01, which establishes the technical measures for the conservation of specific stocks of highly migratory fish (J.O. L137/1 of 19 May 2001).

The monitoring measures adopted by ICCAT have also been transposed in Community law by EC Council Regulation No. 1936/01, for which monitoring measures are established that are applicable to the fishing activities of specific highly migratory fish (J.O. L 236/1 of 3 October 2001).

These two regulations were the object of a procedural modification in the Council to adapt them to the new conservation and management measures adopted within regional fishery organizations (RFOs), particularly those of ICCAT.

The ICCAT recommendations aimed a establishing a statistical document program for bigeye tuna, on the one hand, and for swordfish, on the other, are being incorporated within the framework of a proposed Council regulation that establishes statistical monitoring programs in the Community. It should be noted that the recommendations adopted previously by ICCAT concerning the bluefin tuna statistical document have been incorporated in Community law through EC Council Regulation No. 858/94 dated 12 April 1994. This should be repealed and the pertinent provisions included in the aforementioned proposal, for study by the Council.

Until the entry into force of this Regulation, the Member States have implemented these programs.

The measures relative to the catch limits concerning bluefin tuna, northern swordfish, north and south albacore bigeye tuna, and while marlin and blue marlin have been incorporated in Council Regulations that establish TACs and quotas.

In 2001, the European Community complied with the recommendation relative to the moratorium on fishing under floating objects in the Gulf of Guinea, particularly as concerns the coverage rate of the fleet by observers. The Community regrets that the other Contracting Parties that fish in the area have not followed this commitment with the same determination.

In addition, the Member States are making important efforts on the national level to comply with ICCAT´s requirements, in terms of limiting fishing effort (capacity/number of vessels), catch limits (management of the quotas), the monitoring of the landings of third country vessels and, above all, that concerning vessels flying flags of convenience. In this respect, the fight against illegal fishing (IUU) of one of the priorities of the Community, with:

– On the one hand, a communication from the Community on this subject, concerning the implementation of the FAO Plan of Action.
– On the other hand, a Community plan of action for the Mediterranean Sea (Annex 2). In this plan of action, the Commission proposes:

- To adopt a concerted approach in the establishment of protection areas of fishing
- To make the management of fishing effort the principal instrument of this policy

- To perfect fishing techniques in order to reduce their negative effects on the resources and on the marine environment
- To intensify the monitoring and implementation of these measures
- To improve the quality of scientific advice
- To reinforce participation of the fishing sector in the consultation process
- To encourage international cooperation

5. Supplemental conservation and management measures

The European Community and its Member States have implemented a program of structural adaptation that is aimed at limiting capacity and fishing effort of the fleets, based on the state of the targeted resource. For bluefin tuna, this imposed a 20% reduction in capacity before 2002 on all the Member States concerned.

The European Community has established a monitoring regime applicable to Community fishing policy that imposes obligations on the Member States in monitoring matters. To this effect, each Member State controls, inspects and monitors, in its own territory and in the maritime waters under its sovereignty or its jurisdiction, all the activities of the fishing sector, in particularly, the fishing, transshipment, landing, commercialization, transport and storage of the fishing products as well as the reporting of the landings and sales (EC Council Regulation No. 2847/93 of 12 October 1993, establishing a monitoring regime applicable to the common fishing policy, JOCE No. L261of 20 October 1993, p. 1).

Besides these mandatory provisions, the Member States concerned adopted more stringent provisions for certain species than those imposed at the Community level or by ICCAT. These provisions, adapted to their national situation, are always aimed at the rational management of the fisheries as well as more exhaustive monitoring of the fisheries, up to the commercialization phase of the catches. According to the States or the fishery concerned, the following instruments are noteworthy: annual fishing plans, specific mandatory annual licenses (special fishing permits), limits on the number of licenses, withdrawal of the license in case of an infraction, detailed fishing sheets, scientific observers on board vessels, notification of entries and exits from the ports and fishing areas, limits on by-catches, fishing vessel quotas.

Some Member States are studying the future application of new measures aimed at monitoring the fishing activities of highly migratory fish and to protect the resources. The objective of these measures is to reinforce supervision of the trajectory of fish, from capture up to their commercialization.

The European Community has created specific programs for some species and gears:

– Driftnets for fishing albacore: A 40% decrease since 1998 in the number of vessels authorized to use this gear, in relation to the average of the vessels that used this gear during the 1995-1997 period; limit on the length of the nets to 2.5 km per vessel; prohibition of this gear starting on 1 January 2002; mandatory Community fishing logbook.
– Scientific observers on board longliners (juvenile catches)
– Monthly transmission of catches of all the species under TAC and quotas and quarterly reporting for other species
– Prohibition of purse seiners that fish under floating objects in the Gulf of Guinea
– Mandatory satellite tracking of vessels over 24 meters.

Furthermore, the European Community has reinforced its monitoring regime in three areas considered as priorities: more control after landing, the monitoring of third country vessels that operate in Community waters, and cooperation among the Member States and the European Commission.

6. Inspection schemes and activities

6.1 Member States

6.1.1 On-land and at-port inspection

Land-based inspections by the Member States are generally carried out at the landing port and/or when the fish are sold, at the time of the auction. Inspections can also take place during transport or at the central markets.

These controls are centered essentially on the amounts landed, the size, age and weight of the fish, and compliance with the closed fishing seasons. In some cases, they can also take place during commercialization to crosscheck data.

Some Member States have established an information network among the various landing ports, to better supervise the movements of the vessels.

These systematic controls are also carried out on the landings of tropical tunas by Community vessels in Africa, by inspectors of third countries and by the observers from the scientific institutes.

These controls at the port are also carried in case of the transshipment of the catches, including foreign vessels, from ICCAT Contracting and non-contracting Parties.

6.1.2 At-sea and aerial inspection

In addition to the terrestrial means, the Member States have maritime and aerial means to monitor fishing activities and the compliance of Community vessels with the technical and administrative conditions imposed on each fishery. Aerial and maritime monitoring campaigns are organized during the fishing seasons and these can be can regular or random.

It should be noted that the responsible administrations of some Member States have many practical difficulties to effectively monitor the often very high number of landing points located within their own territories.

Since 1 January 2000, the satellite tracking of vessels that is mandatory for vessels over 24 meters has improved at-sea surveillance.

6.1.3 Means in place and results (2001)

- Spain:
  - 71 inspectors
  - Patrol vessels from the Navy; 1 plane; 3 helicopters; 30 vehicles
  - Results at the port:
    - Atlantic: 178 vessels inspected (42 infractions)
    - Mediterranean: 71 vessels inspected (33 infractions)
  - Results at sea:
    - Atlantic: 11 vessels inspected (4 infractions)
    - Mediterranean: 58 vessels inspected (13 infractions)
  - Aerial controls: 45 in the Mediterranean (0 infractions); 18 in the Atlantic (1 infraction)
  - Tropical tunas: On-board observers during the period from 1 November 2000 to 31 January 2001, to assure compliance with the moratorium in the Gulf of Guinea.

- France:
  - Human and navel means pertaining to different administrations
  - Bluefin tuna (Mediterranean): 3 motor boats – controls of minimum sizes/weights from landing to all the stages of commercialization; comparison of data from the logbooks and those of the landings in Spain.
  - Albacore (Atlantic): 2 patrol vessels + 1 auxiliary boat; 6 inspectors; monitoring of fishing gears and by-catch; 30 days at sea; aerial controls and satellite tracking; and on-land controls
  - Tropical tunas - Placement of observers during the period from 1 November 2000 to 31 January 2001, to assure compliance with the moratorium in the Gulf of Guinea
- Italy:
  In the framework of the development of the Community monitoring regime, which includes the monitoring of ICCAT measures, Italy has deployed the following means:

  - Human, maritime and aerial means (different administrations)
  - Important development of training of inspector (specialization in fishery matters)
  - Patrol vessels
  - Aerial inspections

  - On-land controls, from landing to commercialization
  - At-sea controls (fishing gears)
  - Infractions detected for non-compliance with Community regulations

- Portugal:
  - Human, maritime (Marines) and aerial means
  - Aerial surveillance missions
  - At-sea inspections
  - 15 on-land inspections on swordfish (1 infraction)
  - Rigorous on-land controls (swordfish, tunas) from landing to commercialization (minimum sizes, value, statistics, etc.); obligation to go through the auction (fresh fish)

- Greece:
  - Human, maritime and aerial means: 270 inspectors, with 184 monitoring vessels and 7 planes
  - 350 controls of tuna vessels
  - 2 joint missions (Italy/Greece) at sea (control of driftnets – bluefin tuna and swordfish)

- United Kingdom:
  - Human and maritime means
  - 3 patrol boats
  - On-land inspections

- Ireland:
  - 24 inspectors based on land. All the landings are inspected at port to assure the vessels' compliance with the regulations.
  - 6 patrol boats that carried out inspections during different periods
  - 147 on-board inspections
  - 40 inspection days
  - 4 alleged infractions detected at sea
  - 2 surveillance planes also carried out missions

- Other Member States

In addition, the other Member States also carry out controls in accordance with Community regulations to assure compliance with ICCAT conservation measures.

- Satellite tracking centers

The Member States, in accordance with Community legislation, have created surveillance centers to manage the satellite tracking systems aimed at monitoring Community fishing vessels measuring over 24 meters in total length.

6.2 European Commission

At the same time, the European Commission has an Inspection Unit comprised of 25 fishery inspectors whose function is to supervise the inspection and control activities carried out by the national services of the Member States.

In 2001, 26 inspection missions, or 28% of the overall missions carried out, centered on the surveillance of the tuna fisheries, particularly those of bluefin and albacore, respectively, in the Mediterranean and in the northeast Atlantic, respectively. These missions amounted to 177 inspection days on land and 958 at sea, by national patrol vessels in Community waters and adjacent seas. The major objectives of these missions were:

  - To monitor compliance of Community regulations concerning driftnet fishing in the Mediterranean and in the northeast Atlantic;

  - To monitor the measures taken by the Member States to apply the technical measures in force in the Mediterranean, particularly those derived from ICCAT recommendations;

- To evaluate the mechanisms in place by the Member States to regulate access to the fisheries, especially as regards bluefin tuna, albacore and swordfish;

- To verify the application of Community regulations concerning the reporting of catches and landings of highly migratory fish;

- To evaluate the control mechanisms in force by the Member States;

7. Other activities

Some technological trials are being carried out with financial support from the European Community, aimed at the conversion of the fleets equipped with driftnets. The use of this gear to catch highly migratory fish has been definitively prohibited in the Community since 1 January 2002.

S*atellite based VMS established by the European Union*

The European Union has introduced a satellite based Vessel Monitoring System (VMS) in two phases. In the first phase, which started on the 30 June 1998, vessels over 20 meters between perpendiculars or 24 meters overall length in the following categories were required to be equipped with this system:

- vessels operating in the high seas, except in the Mediterranean Sea,
- vessels catching fish for processing to fishmeal or oil.

In the second phase, which started on 1 January 2000, all vessels over 20 meters between perpendiculars or 24 meters overall length, regardless of where they fish, are subject to the VMS system.

There is, however, an exception for vessels operating exclusively within 12 nautical miles of the baselines of the flag Member State, and for vessels that operate at sea for less than 24 hours.

The satellite tracking devices fitted on board the fishing vessels shall enable the vessel to communicate its geographical position to the flag state and to the coastal Member State simultaneously. In practice position reports are retransmitted in nearly real time from the flag state to the coastal state.

The data obtained from VMS shall be treated in a confidential manner.

Tampering with VMS has been defined as a serious infringement[2].

An obligation is placed on Member States to establish and operate Fisheries Monitoring Centers which will be equipped with the appropriate staff and resources to enable Member States to monitor the vessels flying their flag as well as the vessels concerned flying the flag of other Member States and third countries operating in the waters under the sovereignty or jurisdiction of the said Member State.

Member States shall take the necessary measures to ensure that the position reports received from fishing vessels to which a VMS applies are recorded in computer-readable form for a period of three years. The European Commission shall have access to these computer files on the basis of a specific request.

Each FMC receives a substantial amount of position reports. Although not an explicit requirement, it is commonly considered a good practice to analyze incoming reports automatically in order to detect "events" which may be of interest for MCS activities. Such "events" include:

- a vessel failing to report on schedule,
- a vessel reporting a position which is inconsistent or not credible compared to previously received reports,
- a vessel entering or leaving a specific area,
- a vessel travelling at, above or below a given speed,
- a vessel landing abroad.

[2] Council Regulation (EC) No 1447/1999 of 24 June 1999 establishing a list of types of behaviour, which seriously infringe the rules of the common fisheries policy.

Sophisticated VMS software may be capable of detecting complex events that might be a combination of those referred to above (for example, a vessel of a particular type, travelling below a given speed in a defined geographical area). Furthermore, with VMS the time of arrival in port, the time of arrival on a specific fishing ground can be predicted.

The detailed rules for the implementation of VMS are contained in Commission Regulation (EC) No. 1489/97 laying down detailed rules for the application of Council Regulation (EEC) No. 2847/93 as regards satellite-based vessel monitoring systems.

The main provisions concern:

– the requirements for the satellite tracking devices,
– the frequency of position reporting,
– the format for transmission to the coastal Member State,
– the procedures in case of technical failure,
– access to computer files by the European Commission, and
– a number of administrative arrangements between Member States and the Commission.

Several satellite systems exist that can meet the requirements of the EU Regulations. Neither the Council nor the Commission has imposed a particular system. Therefore any solution that meets the requirements is acceptable, and different vessels may be equipped with different systems.

VMS has not replaced conventional enforcement tools such as patrol vessels and aircraft; it nevertheless improves the efficiency and effectiveness of their deployment.

Besides monitoring fisheries in Community waters, the European Union is also responsible for a significant number of its vessels operating in different parts of the oceans.

Outside Community waters, fishing must take place with due regard to the management measures adopted by the competent international and regional bodies, and by the coastal states. Furthermore, where applicable, masters of Community fishing vessels must comply with the national laws and regulations governing the waters of the coastal state, as well as with the specific provisions contained in the fisheries agreements.

The European Union is anxious to ensure that its vessels respect the various rules applicable in waters of third countries and on the high seas.

Since the satellite tracking devices installed on board EU fishing vessels must be operational at all times, wherever the vessels operate, the control of the fleet operating outside Community waters is being increased significantly by the introduction of VMS. Indeed, the flag Member State knows at all times where its vessels are operating. Therefore the European Union is endeavoring to use VMS in bilateral fisheries agreements with third countries and in the framework of regional fisheries organizations such as the North East Atlantic Fisheries Commission, more commonly referred to as NEAFC. NEAFC was established in 1953. At present, there are 6 Contracting Parties, among which the European Union. NEAFC took the responsibility to regulate a number of species, such as oceanic redfish, blue whiting, Atlanto scandic herring and mackerel. These regulatory measures are complementary to those within the national fishing zones.

In 1998, the Contracting Parties agreed upon a Joint Control and Enforcement Scheme to be applied in the Regulatory Area[3]. This Scheme entered into force on 1 July 1999.

VMS is one of the key elements of the Scheme. Under the Scheme, Contracting Parties shall track their vessels by VMS. Entry/exit reports and position reports are forwarded to the NEAFC Secretariat in computer-readable format (the so-called North Atlantic format). These reports are retransmitted in real time in the same computer-readable format to Contracting Parties with an active inspection presence in the Regulatory Area, in compliance with specific provisions on secure and confidential treatment.

[3] The scheme of control and enforcement in respect of fishing vessels fishing in areas beyond the limits of national fisheries jurisdiction in the convention area ("The Scheme").

In view of the importance of VMS as a means of control, the European Union will review ways of improving the application of the system. In particular, the European Commission has brought forward proposals for the extension of the scope of VMS to vessels measuring less than 20 meters between perpendiculars or 24 meters overall in length.

From a technical point, satellite systems continue to evolve[4] and there may be further developments in the near future regarding the expansion of other applications, such as an interface with an electronic logbook or the linking of VMS with vessel sensors placed in trawl winches, which will allow the enforcement authorities to monitor the vessel more thoroughly. The European Commission is also exploring the potential of remote sensing techniques for fisheries monitoring. A study concerning the NAFO area has clearly shown that space borne synthetic aperture radar (SAR) images could complement VMS[5]. A project is conducted to investigate means to make these images available for operational MCS in nearly real time at an affordable price. It is worthwhile pointing out here that the European Union is already using remote sensing for the control of area-based subsidies to farmers.

Member States will conduct further trials as necessary in order to gain experience with other advanced technologies with a view of promoting their introduction.

[4] The future of satellite systems in European fisheries protection and management, Study in support of the Common Fisheries Policy, Final Report, August 1998 - Navigs s.a.r.l..
[5] SAR - imagery for fishing vessel detection, Final Report, October 2000 - Joint Research Centre (JRC) of the European Commission.

NATIONAL REPORT OF FRANCE (ST. PIERRE AND MIQUELON)[1]

1. Introduction

St. Pierre and Miquelon is a French overseas territory with a population 7,000. Due to its island nature and its geographic location, the socio-economic equilibrium of the overseas territory rests, in large measure, on maritime fishing, a traditional activity and the major economic sector of St. Pierre and Miquelon.

In spite of the general decline in reported fisheries resources in recent years, the fishing industry continues to be an essential activity for St. Pierre and Miquelon. This industry employs more than 250 people on board the vessels and in the companies the transform the sea products.

This situation puts the overseas territory of St. Pierre and Miquelon among the communities that are dependent on fishing.

The overseas territory borders on the areas under mandate of the International Commission for the Conservation of Atlantic Tunas (ICCAT) and participates in the work of this organization. After the adherence of the European Community to ICCAT in 1997, France continues to be a member of the Commission on behalf of the overseas territory of St. Pierre and Miquelon, which is not covered by the provisions of the Treaty of Rome concerning Community fishing policy.

2. Information on national fisheries

The fishing activities of St. Pierre and Miquelon take place mainly on stocks in waters under French jurisdiction or sovereignty, along the coasts of the overseas territory.

These activities fall within the framework of agreements between France and Canada that oversee the common management and conservation of the fishery resources that are found in French and Canadian maritime areas, and which are based on the recognition of the reciprocal rights on the fishing stocks concerned.

The local fishing activities result from regional organizations covering the sectors and the coastal stocks of the territory of St. Pierre and Miquelon. Within this framework, in 1994 France on behalf of the overseas territory of St. Pierre and Miquelon adhered to the North Atlantic Fisheries Organization (NAFO) and, in 1997, to the International Commission for the Conservation of Atlantic Tunas (ICCAT), and since then has participated in the work of these two organizations.

3. Research and statistics

The responsibility for the scientific and fishery research activities for St. Pierre and Miquelon rests on the *Institut Français de Recherche pour l'Exploitation de la Mer* (IFREMER), which has a permanent delegation in St. Pierre and Miquelon. The IFREMER participates in the scientific and research work developed within the framework of NAFO and ICCAT.

The IFREMER also provides technical support for the work on statistical monitoring of the catches that are the competence of the legal administrations of the State that are present in St. Pierre and Miquelon.

4. Implementation of the ICCAT conservation and management measures *(as concerns the bluefin tuna stock relevant to ICCAT)*

The bluefin tuna fishing that is carried out in St. Pierre and Miquelon within the possibilities that ICCAT offers constitutes, up to now taking into account the level of quota available, a supplemental activity for the island´s small artisanal fishing companies that do not fish this species as a target species. This corresponds to a

1. Original report in French.

type of subsistence fishing. However, since August 2002, a more important fishery has been initiated in international waters through the chartering of a Canadian vessel. It should be noted that this activity has generated employment at sea and on land (Details on this activity and the catches will be provided in France-St. Pierre and Miquelon´s report that will be presented on 2002 activities.)

Fishing vessels must have an authorization (license) issued by the competent administrative authorities and in accordance with the pertinent national regulations on maritime fishing. This provision allows for a strict and constant control of fishing effort.

The individual authorizations (licenses) to fish bluefin tuna issued to St. Pierre & Miquelon vessels (10 vessels involved) also establish some technical measures to carry out fishing that refer, in particular, to the characteristics and conditions on the use of the fishing gears. In 2001, only two floating lines equipped with a maximum of two hooks per vessel was authorized. These gears are under constant surveillance of the vessels that deployed them.

The vessel captains are required to report all the catches made to the administration. These reports represent an optimal control of the fishery and a permanent statistical monitoring of the usage of the available quotas.

5. Inspection scheme and activities

All the regulatory measures indicated in section 4 and applicable to the St. Pierre & Miquelon vessels were the object of monitoring on the part of the competent authorities, and are susceptible, in the case of violations, to judicial actions and to the withdrawal or suspension of the fishing authorizations issued.

The services of the State administration present in St. Pierre & Miquelon also exert their competence as regards to ICCAT Resolution 94-9 relative to vessel sighting. The corresponding actions have resulted, in particular, to the collection of information on the transshipments of bluefin tuna products reported at the port of St. Pierre & Miquelon by foreign vessels (10 Japanese vessels in 2001)

The information collected is transmitted to the ICCAT Secretariat in accordance with the provisions of Resolution 94-9.

6. Catches in 2001

The catches of marine fish by the overseas territory of St. Pierre & Miquelon are as follows for 2001:

Under ICCAT (Figures on 2002 activities will be provided in the report to be submitted in 2003)

– 0 t of bluefin tuna

Under NAFO

– 0 t of black halibut - NAFO areas 3L and 3M (international waters)

Under fishing agreements between Canada and France:

– NAFO area 3Ps:
  - Cod: 2,350 t (of which 1,675 t were caught by Canadian vessels and landed and processed at St. Pierre & Miquelon)
  - Rock fish *(Sebastes marinus)*: 129 t (of which 125 t were caught by Canadian vessels and landed and processed at St. Pierre & Miquelon)
  - Gray plaice *(Glyptocephalus cynoglossus)*: 86 t (of wich 68 t wer caught by Canadian vessels and landed and processed at St. Pierre & Miquelon)
  - Canadian plaice *(Hippoglossoides platessoides)*: 112 t (of which 25 t were caught by Canadian vessels and landed and processed at St. Pierre & Miquelon).

– NAFO area 21 3KL:
Black halibut: 312 t (Canadian EEZ)

National stocks - all in NAFO area 3Ps:
Snow crabs: 498 t
Lumpfish: 146 t
Whelk: 99 t
Other species: 338 t

NATIONAL REPORT OF GABON[1,2]

1. The fleet

Tuna catches are carried out by vessels that fish shrimp (32) and trawlers (26) ranging from 200 to 2,300 GRT, as well as by motorized canoes **(Table 1)**.

2. The resources

The major tuna species are: yellowfin tuna (*Thunnus albacares*), bigeye tuna (*Thunnus obesus*), Atlantic black skipjack (*Euthynnus alletteratus*) and skipjack tuna (*Katsuwonus pelamis*) **(Table 2)**.

Yellowfin tuna is by far the most fished species (38%), followed by Atlantic black skipjack (30%) and in almost equal parts by bigeye and skipjack tunas (17% and 14%, respectively) and lastly, by Atlantic sailfish, which can be considered as by-catch.

Table 1. Catches by Gabon (t).

			YFT	*BET*	*SKJ*	*LTA*	*SAI*	
Year	*Gear*	*Area*	*Yellowfin*	*Bigeye*	*Skipjack*	*Atl. black skipjack*	*Atlantic sailfish*	***Total***
1999	GILL	ETRO	0	61	0	116		***177***
1999	SURF	ETRO	0	123	76	43		***242***
1999	UNCL	ETRO	225	0	0	0		***225***
Total			*225*	*184*	*76*	*159*		***644***
2000	TROL	ETRO	2	1	0	0		***3***
2000	SURF	ETRO	160	102	0	290		***552***
2000	GILL	ETRO	0	47	21	11		***79***
Total			*162*	*150*	*21*	*301*		***634***
2001	TRAW	ETRO	259	38	0	187	0.5	***484.5***
2001	SURF	ETRO	11	15	0	14	0	***40***
2001	GILL	ETRO	0	68	101	12	0	***181***
Total			*270*	*121*	*101*	*213*	*0.5*	***705.5***

Table 2. Statistics (in t) from Gabon on catch and canning statistics of tuna (for the calculation of ICCAT contributions)

	1998		*1999*		*2000*		*2001*	
Species	*Catch*	*Canning*	*Catch*	*Canning*	*Catch*	*Canning*	*Catch*	*Canning*
Yellowfin tuna (*T. albacares*)	295	0	225	0	162	0	270	0
Bigeye tuna (*T. obesus*)	0	0	184	0	150	0	121	0
Atl. Black skipjack (*E. alletteratus*)	18	0	159	0	301	0	213	0
Skipjack tuna (*K. pelamis*)	59	0	76	0	21	0	101	0
Atlantic sailfish (*I. albicans*)	0	0	0	0	0	0	0.5	0
Others (*S. tritor*)	85	0	0	0	0	0	0	0
TOTAL	**457**	**0**	**644**	**0**	**634**	**0**	**705.5**	**0**

Source: Cellule des Statistiques, DGPA.

[1] Original report in French.
[2] Cellule des Statistiques, Direction générale des Pêches et de l'Aquaculture.

NATIONAL REPORT OF GHANA[1]

Paul Bannerman[2]

1. Introduction

The Ghanaian tuna industry comprises mainly the Skipjack (*Katsuwonus pelamis*), Yellowfin (*Thunnus albacares*) and Bigeye tuna (*Thunnus obesus*). Baitboats and purse seiners fishing off the EEZ of Ghana exploit these tuna species.

2. The fleet

The total number of vessels fishing tuna resources is 36, comprised of 26 baitboats and 10 purse seiners **(Table 3)**. The gross tonnages of the baitboats range from 250-500 and that of the purse seiners is from 400-1000. (Purse seining was reintroduced commercially in Ghana in 1996).

3. Resources

Tunas are grouped under the large pelagics occurring in Ghanaian waters and are part of a large community in the entire Atlantic Ocean. Skipjack tuna has been the most abundant of catches in the past 10 years followed by yellowfin and bigeye tunas, respectively. Tuna baitboats are the main exploiters of tunas in Ghanaian waters, using anchovy (*Engraulis encrasicolus*) as the main bait for their operations. In addition to the use of anchovy to attract tunas, bamboo rafts ("payaos") are used by the Ghanaian tuna fleet as Fish Aggregating Devices (FADs). Purse seiners of late work in association with baitboats often sharing the catch.

4. Research and catch statistics

The Marine Fisheries Research Division of the Fisheries Department is the Government agency responsible for tuna research and statistics in Ghana. Catches for the year 2001 rose to 88,700 t from 53,000 t in 2000 **(Tables 1 and 3, Figure 1)**. This increase of about 37% was attributed to the increase in effort (though moderate) exerted in the fishery by both the purse seiners and baitboats. Overall effort rose from 4,426 days at sea in 2000 to 4,620 in 2001. A significant influence contributing to the rise in landings can be attributed to the use of more fish aggregating devices in 2001. On average, each vessel now employs 15-18 FADs, which hitherto was about 10 in the year 2000. Baitboats catches amounted to 64% of the overall landings **(Table 3)**. Skipjack tuna landings contributed about 64% followed, by yellowfin (33%) and bigeye tunas (3%). With the exception of bigeye tuna catches from baitboats, which dropped slightly in 2001, all other species recorded notable increases in 2001**(Table 1)**. The percentage of juvenile (small fish less than 1.4 kg) fish landed (i.e., R3) was estimated at 18.2% **(Table 2)**.

Sampling of the three major species of tuna was carried out from the port of Tema to determine, among others, length frequency distribution to be used for stock assessment purposes. Data (Task I, II and III) for 2001 were duly forwarded to ICCAT. ICCAT logbook recovery has improved to about 65% in 2001, with collaboration from scientific counterparts in Abidjan. The size ranges of tunas caught during 2001 are shown in **Table 4**.

5. Bigeye Year Program (BETYP)

ICCAT initiated a Program in 1999 code-named BETYP (Bigeye Year Program), which aims at understanding better the biology and dynamics of the species. As part of the program, a dedicated cruise off the

[1] Original report in English.
[2] Fisheries Department.

southeast Atlantic Ocean was carried out from April-July 2002. Scientific officers from the Marine Fisheries Research Division (MFRD) participated. Over 5000 tuna species were tagged and released with 332 bigeye tuna. As at September 2001, over 200 tagged tuna have been recaptured especially from large purse seiners operating in the equatorial part of the Atlantic Ocean. Preliminary analyses of early recoveries have begun (SCRS/01/099). Another cruise off the southeast Atlantic Ocean is scheduled for June-August 2002.

5. 1 Statistics improvement

With the recent innovation in the fishery with the use of FADs, purse seiners in association with baitboats often share their catch. This collaboration has led to a mixture of varying sizes of fish often landed by the baitboats leading to some problems in stratification by gear. With the help of BETYP and tuna scientists from IRD based in Abidjan, significant efforts at improving sampling have been initiated (SCRS/00/121) and (SCRS/01/100). A final phase aimed at improving sampling will be decided by the end of 2002.

6. Enhanced Research Program for Billfish

Beach sampling of billfishes continued off the western coast of Ghana. Data for 2001 were submitted accordingly **(Table 5)**. These data, including catch and effort as well as length frequencies, are also submitted to ICCAT.

Table 1. Ghanaian landings (t) in 2000 and 2001

Vessel/species	*Yellowfin 2000*	*Yellowfin 2001*	*Skipjack 2000*	*Skipjack 2001*	*Bigeye 2000*	*Bigeye 2001*
Baitboats	8579	15989	23108	39835	421	419
Purse seine	7331	13313	11878	16582	1230	1939

Table 2. Catches (t) of tuna, by size category, 2001

	Baitboat				*Purse seine*			
Skipjack	SKJJUM	SKJR1	SKJR2	SKJR3	SKJJUM	SKJR1	SKJR2	SKJR3
Total	3,352.2	21,938.6	9,530.5	5,013.7	2,141.8	6,847.1	4,360.4	3,232.8
%	3.8	24.7	10.7	5.6	2.4	7.7	4.9	3.6
Yellowfin	YFGG	YFR1	YFR2	YFR3	YFGG	YFR1	YFR2	YFR3
Total	1,512.8	3,903.0	5,571.8	5,002.3	3,112.3	2,917.9	4,406.4	2,877.3
%	1.7	4.4	6.3	5.6	3.5	3.3	5.0	3.2
Bigeye	BEGG	BER1	BER2	BER3	BEGG	BER1	BER2	BER3
Total	235.7	163.3	3.1	16.2	1,206.5	732.4	0.0	0.0
%	0.3	0.2	0.0	0.0	1.4	0.8	0.0	0.0
Overall total	**88,807.0**							

Table 3. Landings (t) and fleet size, 1990-2001

Year	*Ghana production*	*Ghana flag*	*Foreign flag*	*Gear*		*Fishing potential*	
				Baitboat	*Purse seine*	*Baitboat*	*Purse seine*
1990	40803	40803	0	40803	0	33	0
1991	37794	37794	0	37794	0	29	0
1992	30774	27685	3089	27685	3089	28	1
1993	36856	36856	0	36856	0	25	0
1994	36973	36973	0	36973	0	26	0
1995	33905	33905	0	33905	0	30	0
1996	37255	37255	0	33266	3989	31	2
1997	53625	53625	0	38338	15287	28	5
1998	65568	65568	0	43497	22071	27	6
1999	83552	83552	0	47196	36357	25	8
2000	53255	53255	0	32364	20891	26	10
2001	88700	88700	0	56539	32268	26	10

Table 4. Size (cm) ranges of tunas in 2001

	Skipjack	*Yellowfin*	*Bigeye*
Baitboats	31-63	35-72	36-66
Purse seine	33-61	32-141	35-85

Table 5. Ghanaian billfish catches (t) in 2001

Sailfish	*Blue marlin*	*White marlin*	*Swordfish*
275.2	639	7.99	116.54

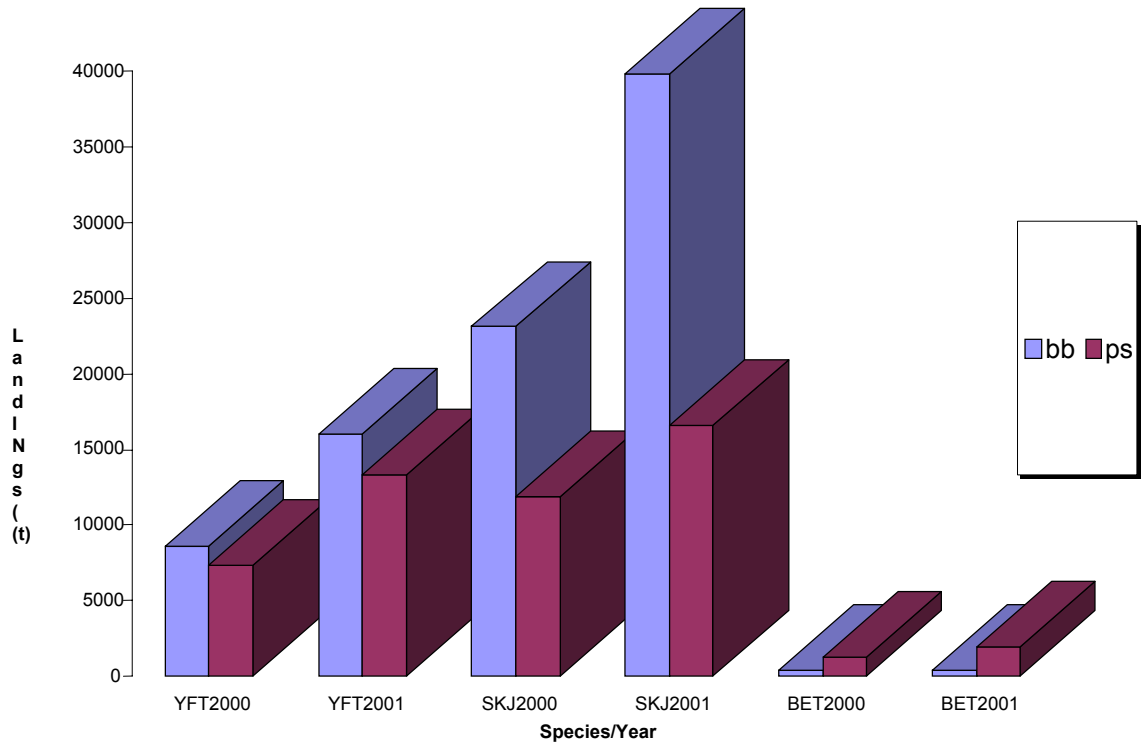

Fig. 1. Comparison of landings of the various species in 2000 and 2001.

NATIONAL REPORT OF JAPAN[1,2]

1. Fisheries Information

1.1 Type of fisheries

Longline is the only tuna-fishing gear deployed by Japan at present in the Atlantic Ocean. Two other fishery types, baitboat and purse seine, stopped fishing in the Atlantic in 1984 and 1992, respectively.

1.2 Statistical coverage

The National Research Institute of Far Seas Fisheries (NRIFSF) has been in charge of compiling fishery statistics from logbooks submitted by the fishermen as well as biological data. The final logbook coverage from the Japanese longline fleet operating in the Atlantic has been very good (90-95%). To reach this level, it takes almost two to three years after the completion of a given calendar year. The current coverage, which completed collation in electronic form for 2001, is estimated to be about 60%. Data processing is well advanced this year because the schedule has been adjusted so that data can be provided at the various SCRS meetings that were scheduled earlier than usual. However, considerable data processing and information for total raising are required before the final statistics are made available. Due to this nature, all catch statistics for 2001 will be subject to a large revision in the future. Caution is required when readers refer to the 2001 figures of catch and effort distribution in this paper, as catch estimates for some species, for example bluefin tuna, were based not only on computerized logbooks but also those not yet entered, while the former simply drew only from computerized data.

With regard to the implementation of conservation measure on North Atlantic swordfish, Japan instructed its fishermen to release all the swordfish caught in the North Atlantic (north of 5°N) since February 2000. Since then, all the catches have been returned to the water. At the same time, the Fishery Agency of Japan (FAJ) requested fishermen to submit the release information in a designated format. In this paper, the estimated discards are given for 2000 and 2001.

All statistics on catch in this paper are raised so that they represent total statistics.

1.3 Trend in fishing effort

The number of Japanese longliners that operated in the Atlantic in 2001 was estimated to be 204 **(Table 1)**. This number is very similar to 2000, which is the lowest since 1988 and corresponds to two-thirds of the highest number recorded in 1981. On the other hand, fishing days in 2001 amounted to 28,000 days, exhibiting a decline of 7,700 days, or more than 20%, from 2000. The fishing days in 2000 turned out to be slightly higher than in 1999 and average fishing days per boat was the highest on record. The most recent value for average fishing days per boat was much lower than that, and this can be an artifact coming from the low coverage rate.

Geographical distribution of longline fishing effort in 2001 and 2000 **(Figure 1)** shows that much of the fishing effort was exerted in the northeastern Atlantic, the tropical eastern Atlantic, as well as waters off South Africa. There is also a tendency of higher concentration of fishing effort in the tropical North Atlantic between 0° and 20°N as well as in the central North Atlantic, North of 25°N. On the other hand, fishing effort seems to be decreasing in the Gulf of Guinea, which used to be the main fishing ground for the Japanese longline fishery during the 1980s and the early to mid-1990s.

[1]Original report in English.

[2]Fisheries Agency of Japan, 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo, 100, Japan and National Research Institute of Far Seas Fisheries Fisheries Research Agency, 5 chome, 7-1, Orido, Shimizu, Shizuoka-pref., 424-8633, Japan.

1.4 Catch trends

The 2000 catch of tunas and tuna-like fishes (excluding sharks) in the Atlantic Ocean and the Mediterranean Sea by the Japanese fishery is estimated to be 36,088 t **(Table 2)**. This is a 2,000 t or 6% increase from 1999. It is worth noting that although the total amount of fishing effort is similar to 1989, whose catch was the highest since 1982, the total catch is only two-thirds of that year. This difference is attributable to a decline in catches of bigeye (by 15,000 t), yellowfin (by 3,300 t) and swordfish (by 3,000 t), as compared to 1989 **(Table 3)**. The 2001 provisional catch of tunas and tuna-like fishes is 27,570 t, and this is a further decline of about 25% as compared to the 2000 figure.

Table 3 provides catch by species for the total Atlantic since 1981. Area breakdown of the catch, by species, is also shown in **Table 4** for the most recent two years (2000-2001). In both years, bigeye tuna, which is the most important species, accounted for about 65% to 70% of the total catch of tuna and tuna-like species. In terms of weight, yellowfin tuna, bluefin tuna and albacore or southern bluefin tuna are the next important species, in this order. The 2000 and 2001 swordfish catch declined in the North Atlantic as all catches of this species were discarded since February 2000. In 2000, the catch by species was similar for most species, except for southern bluefin tuna, swordfish and white marlin. Southern bluefin tuna and white marlin increased by more than 50% while swordfish catches declined by 50%.

The catch by area breakdown (North/South or East/West) in **Table 4** indicates that there is no change in geographical distribution of the catch. The geographical distribution of fishing effort **(Figure 1)** appears similar in the most recent two years.

Geographical distributions of catch by species are shown in **Figure 2** (bluefin tuna), **Figure 3** (bigeye tuna), **Figure 4** (swordfish) and **Figure 5** (blue marlin). In general, the distributions for bigeye tuna and swordfish reflect the geographical pattern of fishing effort between 40°N and 40°S. In contrast, the catches of bluefin tuna and blue marlin are limited to North of 40°N and the inter-tropical area between 20°N and 20°S, respectively.

1.5 New developments or shifts in the fishery

No new development or changes were observed in 2000 and 2001. However, there has been less fishing effort in the Gulf of Guinea due to poor fishing conditions for bigeye tuna. Some increase in fishing effort was also noted in the central North Atlantic north of 25°N, especially in 2001.

Two changes, which took place six to nine years ago, were the introduction of new materials for longline gear and the extension of the bluefin fishing area towards the northeast in the eastern Atlantic Ocean. Information on the material for the main and branch lines indicates that the use of nylon material has widely used and stabilized by the Japanese fleet since 1998 as shown in **Table 5**. The current use of nylon gear for both main and branch lines is about 75-80%, while the percentage that does not use nylon material on any line dropped to 10%. Since others include the combined use of other material and unknown material, the actual use of nylon gear could be higher than this figure.

Bluefin tuna have been caught in similar areas and times in the two most recent years **(Figure 2)**. The major fishing grounds are off Gibraltar and the Mediterranean Sea during April and May, from South of Iceland to South of Newfoundland between August and December moving counter-clock wise.

2. Research and statistics

The NRIFSF has been in charge of the collection and compilation of the Atlantic tuna fishery data necessary for the scientific research on Atlantic tuna and billfish stocks. Required statistical data have been routinely reported to the ICCAT Secretariat and the results of scientific research have also been presented at the regular meetings and inter-sessional workshops of the Standing Committee on Research and Statistics (SCRS).

2.1 Fishery data

The NRIFSF provided almost final 2000 catch, catch/effort and part of size frequency data (Task I, II and biological sampling) of the longline fishery to the ICCAT Secretariat. The compilation of the same data for 2001 is in progress as usual. The preliminary 2001 catch estimates are given in this report. This year, the catch-at-size data for bluefin tuna, bigeye tuna and swordfish were created and used at the SCRS meetings.

In accordance with the 1996 ICCAT recommendation on the bigeye tuna observer program and the 2000 recommendation on the swordfish observer program, seven observer trips on longline boats in the Atlantic were conducted between November 2001 and March 2002. Five observers were put on boats targeting bluefin tuna in the North Atlantic (30°-59°N, 62°W-17°W) and two observers were placed on boats targeting bigeye tuna in the tropical waters off Abidjan (3°-16°S, 11°W-2°E) and Dakar (7°-11°N, 20°-25°W). A total of 310 fishing days and 125 trip days were monitored. The summary report regarding data collection, size measurements and biological sampling on tunas and other fishes, including sharks, from these cruises is presented as a SCRS paper (SCRS/2002/140). Seven more trips are scheduled for later this year.

2.2 Tuna biology and stock assessment

The biological and stock assessment studies carried out by the NRIFSF on Atlantic tunas and billfishes have continued.

Regarding the Bluefin Year Program, Japan sent the R/V *Shoyo-Maru* to the North Atlantic to investigate the possibility of bluefin spawning there. This is a collaborative work among the Central North Atlantic (CAN) Bluefin Research Group (Canada, Japan and United States). A group of seven scientists, comprised of four Japanese, one Canadian and two U.S. scientists, participated in this cruise under the CNA Group. Two other scientists (one from Spain, another from the United States) also participated. Two research legs were conducted, each for a duration of one month. In total, 30 longline operations, 67 ring net tows, 66 bongo net tows and 23 light trap sets were made. The general area of the survey was between 30-40ºN and 40-60ºW. Unfortunately, however, no bluefin tuna were caught on longline sets. Samples from ring net and bongo nets, in which some tuna-like larvae were observed, are now being identified. The light trap was not so effective in collecting small juveniles of tuna-like fishes. The results from this cruise will be presented to the 2003 SCRS meeting. After the completion of its second research leg in late August, the boat traveled to the tropical Atlantic and continued its investigation to study the swimming behavior of swordfish, other billfishes, as well as bigeye tuna. Pop-up tagging is scheduled for fish caught by the longline operation. At the same time, samples for genetic and growth studies will be collected until the end of this cruise in late October.

With respect to the stock boundary of North and South Atlantic swordfish, tissue samples from three additional locations were analyzed, and the results were investigated together with past studies. They indicate that there are at least two distinct swordfish stocks in the Atlantic; one in the North higher than 15°N and the other in the South lower than 10°N, and the allele frequencies are stable within each stock through a somewhat long time (1990 to 2002 in the North and 1994 to 2002 in the South). The recent study indicates that samples collected from 15°N had the same allele frequencies as the stock in the South Atlantic. In order to assess the extent and dynamics of these stocks around the 5°N, which is the line currently separating the North and South stocks, it is highly recommended that an intensive Atlantic-wide sample collection for genetic analysis be made between 10°N and 20°N.

In 2002, the NRIFSF participated in the following ICCAT related meetings in addition to the regular SCRS meetings: GFCM/ICCAT Joint Meeting on Large Pelagic Fishes in the Mediterranean Sea (April 15-19, Malta), ICCAT Stock Assessment Session on White Marlin (May 13-18, Madrid), ICCAT Stock Assessment Session on Bluefin Tuna (July 22-30, Madrid), ICCAT Swordfish Stock Assessment Session (September 9-13, Madrid), and the ICCAT Stock Assessment Session on Bigeye Tuna (September 16-20, Madrid).

3. Implementation of ICCAT conservation and management measures

3.1 Catch quota and management system on the number of bigeye tuna vessels

3.1.1 Reporting by radio

The Fisheries Agency of Japan (FAJ) requires all tuna vessels, except those fishing for bluefin tuna (see section 3.1.2 below), operating in the Atlantic Ocean to submit the following information every ten-day period (early-, middle- and late-period of a month) by radio or facsimile to the FAJ:

i) Position (Longitude and Latitude) of each vessel in order for FAJ to know the movement of all vessels operating in the Atlantic Ocean.

ii) Catch weight of bluefin tuna, swordfish, blue marlin, white marlin and bigeye tuna (Ministerial Order of April 2, 1975, supplemented on December 13, 1991 for swordfish, February 20, 1998 for blue marlin and white marlin, and July 30, 2001 for bigeye tuna).

3.1.2 Reporting via VMS

About 100 Japanese longline vessels fishing for bluefin tuna in the Convention area are required to report their catches and vessel positions in real time. The current satellite monitoring devices onboard, which started to be installed in 1992, have become old and cause malfunction on some vessels. The FAJ is in the process of renewing the system and seeks to have all the Japanese vessels in the Convention area equipped with the new system.

3.1.3 Catch quotas management

i) Catch quotas

The FAJ sets catch quotas for western and eastern Atlantic bluefin as well as for northern and southern Atlantic swordfish, blue marlin, white marlin and bigeye tuna, respectively, by a Ministerial Order in accordance with the relevant ICCAT recommendations.

ii) Fishing year

The FAJ sets the "Fishing Year (August to July)" for the purpose of proper quota management for bluefin tuna, swordfish, blue marlin, white marlin and bigeye tuna. The 2001 quotas for these tunas are applied to the 2001 Fishing Year, which started on August 1, 2001 and ended on July 31, 2002.

3.1.4 Number of fishing vessels

The FAJ has submitted the list of all the tuna fishing vessels that are licensed to fish for tuna and tuna-like species in the Convention area based on the 2000 *Recommendation by ICCAT Concerning Registration and Exchange of Information of Vessels Fishing for Tuna and Tuna-like Species in the Convention Area*. The FAJ collects data on the exact number of vessels actually fishing for bigeye tuna in the Convention area by means of a mandatory check in/out reporting system via radio, as well as by VMS, based on the 1998 *Recommendation by ICCAT on the Bigeye Tuna Conservation Measures for Fishing Vessels Larger than 24 Meters Length Overall*.

3.2. Minimum size limits

In accordance with ICCAT recommendations, the FAJ prohibits the catch of undersized fish with an exemption of a certain percentage of tolerance, by a Ministerial Order. The catch prohibition of undersized bluefin and yellowfin was established by a Ministerial Order on April 2, 1975 and the FAJ amended this

Ministerial Order several times to cover undersized bigeye, swordfish, etc. The latest amendment of this Order was in the spring of 1997 to implement the 1996 ICCAT recommendation on bluefin weighing less than 1.8 kg.

All the Japanese pole and line vessels reluctantly ended their operations in the Convention area to observe the 1972 recommendation that prohibits any taking and landing of yellowfin tuna weighing less than 3.2 kg because of their high by-catch rate.

3.3 Time and area closure

As a domestic measure, the FAJ has prohibited Japanese longline vessels to operate in the Mediterranean from June 1 to July 31 by Ministerial Order, in accordance with the 1993 ICCAT recommendation.

The FAJ also has prohibited Japanese longline vessels from operating in the Gulf of Mexico.

3.4 Prohibition of import of Atlantic bluefin tuna, swordfish and bigeye tuna

Japan prohibited the import of Atlantic bluefin tuna and its products in any form from Belize and Equatorial Guinea on September 3, 1997 and August 1, 2000, respectively, the import of Atlantic swordfish and its products in any form Belize on August 1, 2000, and the import of Atlantic bigeye tuna and its products in any form from Equatorial Guinea on August 1, 2001, from Belize, St. Vincent and the Grenadines, and Cambodia on October 15, 2001, and from Honduras on February 14, 2002, in accordance with ICCAT recommendations. The import prohibitions on Atlantic bluefin tuna from Panama and Honduras were lifted on April 3, 2000 and on June 5, 2002, respectively. The import prohibition on Atlantic swordfish from Honduras was lifted on June 5, 2002. Japan conducts DNA examination against imported tunas to prevent false import.

3.5 Implementation of the ICCAT Bluefin Tuna Statistical Document (BTSD) Program

From January 1 to December 31, 2001, Japan collected 7,281 BTSDs (7,037 BTSDs for fresh/chilled product and 244 BTSDs for frozen product). Of these documents, 2,043 BTSDs (or 28% of the total) were validated by non-Contracting Parties. By product weight, 2,081 t of 16,888 t (or 12% of the total) were imported from non-Contracting Parties. There were 4,337 t of farmed bluefin tuna imported from Spain (3,518 t), Croatia (817 t) and Italy (2 t). (There is a possibility of imports of farmed bluefin tuna other than from the above). There were 1,068 t of re-imported tuna.

3.6 Implementation of the ICCAT Bigeye Tuna Statistical Document (BETSD) Program

As of July 1, 2002, the Japanese Government started collecting BETSDs for frozen product in accordance with the 2001 ICCAT Recommendation.

4. Inspection schemes and activities

4.1 Assignment of patrol vessels

Since 1976, Japan has dispatched patrol vessels to the North Atlantic and/or the Mediterranean every year for a certain period of time to monitor and inspect Japanese tuna vessels. The FAJ dispatched two patrol vessels to the North Atlantic in the 2001 fishing year. These vessels also collected information on activities of non-Contracting Parties.

4.2 Random inspection of landing at Japanese ports

All Japanese tuna fishing vessels that land their catches at any Japanese port must report their landing plans in advance. The FAJ randomly inspects landings of those Japanese longline vessels to enforce the catch

quotas and minimum size limit.

4.3 Management of transshipment at foreign ports

A permit issued by the FAJ is required for any Japanese tuna longline vessels to transship tuna or tuna products to reefers at foreign ports. The FAJ monitors the weight by species, the time and place of each transshipment, and conducts inspection of landings at Japanese ports when longline vessels or reefers return to Japanese ports.

5. Other activities

5.1 Annual catch statistics

Each longline vessel flying the Japanese flag and licensed to engage in tuna fisheries by the Minister of Agriculture, Forestry and Fisheries is legally required to submit a catch report to the Minister within 30 days after the end of cruise or when the vessel has entered a port. Submission of this report is established by a Ministerial Order of January 22, 1963. The above-mentioned catch report includes daily information of the vessel's noon position, the number and weight of the catch by species, the quantities of gear used, surface water temperature, etc. The information on the catch report submitted is examined and compiled into the database by the NRIFSF.

5.2 Collection of biological data collected on board longline vessels

The information necessary for stock analyses, such as length, weight and sex of fish caught, is collected by fishermen as a voluntary measure.

5.3 Collection of the trade data

The Ministry of Finance collects trade data, such as quantity, value, export country, etc. of imported products. Japan improved its Harmonized Commodity Description and Coding System (HS) code in 1993 responding to the 1992 ICCAT resolution to collect all data on the various types of bluefin tuna products, e.g. fillet, meat (round, dressed) etc. and the status of products e.g. frozen, fresh or chilled. Japan also improved its HS code in 1997 and 1998 regarding swordfish to collect more accurate import data on this fish species.

5.4 Effort limitation

The number of longline vessels that can operate in the western Atlantic North of 35ºN and the Mediterranean has been limited to 45 and 35, respectively, in 2001 fishing year. Furthermore, the FAJ requires all the longline vessels operating in the northern part of the East Atlantic Ocean to submit an advance notice of their planned operations to the FAJ, which enables the FAJ to instruct the relevant fishing vessels to shift fishing grounds, if necessary.

5.5 Restriction of re-flagging of vessels

No Japanese tuna longline vessel is authorized to operate on the high seas unless the Government of Japan issues a license. The license is not issued to vessels flying flags of States other than Japan. No Japanese vessel can escape from FAJ’s control even when a vessel is conducting fishing operation in waters far distant from Japan, since a Japanese port is designated as its operation base and all the products are brought into Japan. The export and lease of Japanese longliners and purse seiners are strictly and closely controlled by the FAJ to avoid their use for operations that may diminish the effectiveness of international conservation measures. The Federation of Japan Tuna Fisheries Co-operative Association resolved that the exporting of Japanese longline vessels be prohibited. In support of this industrial initiative, the Government partly financed the industry to scrap second hand tuna longline vessels so that they not become a source of IUU fishing vessels through export.

5.6 Legislation for the enhancement of the conservation and management of tuna stocks

A new law was enacted in June 1996 with the objective of implementing measures necessary to enhance the conservation and management of tuna stocks and to develop international cooperation for the conservation and management of tuna stocks. This law establishes that the Government of Japan may restrict the imports of tuna and tuna products from a foreign country that is recognized by the relevant international organization not to rectify its fishermen's activity and thus is diminishing the effectiveness of the conservation and management measures adopted by the international organizations.

The objective of this law is to support and reinforce ICCAT activities, ensuring the strength of tuna resource conservation and the stability of tuna supply.

Since November 1999, the FAJ has implemented a mandatory reporting system, based on this law, to obtain more information on activities of IUU vessels whose products enter the Japanese market. All importers and persons in charge of transport vessels are required to report detailed information on the fishing vessels that caught and transported their tuna.

5.7 Non-purchase guidance

In accordance with the resolution adopted in 1999 calling for further actions against IUU fishing activities, the FAJ has instructed importers, transporters and other concerned people to refrain from engaging in transaction and transshipment of tuna and tuna-like species caught by IUU fishing vessels, since December 1999. In addition, to ensure the effectiveness of the 1999 IUU resolution, since April 2001, the vessels whose name and/or flags were changed but had records of IUU fishing have also been subject to administrative guidance, unless they are proved not to be engaged in IUU fishing activities any more.

5.8 Scrapping of IUU vessels

To implement the Japan-Chinese Taipei Action Programs to eliminate the IUU fishing vessels, the Government budgeted a total of about US$28 million (32.7 billion Japanese yen) to scrap the IUU tuna longline vessels of Japanese origin. A total of 62 vessels will be scrapped by 2003. Twenty-six (26) IUU vessels were scrapped in 2001 and 8 IUU vessels were delivered to the Organization for Promotion of Responsible Tuna Fisheries (OPRT) for scrapping by October 2002.

5.9 Establishment of OPRT

The Organization for Promotion of Responsible Tuna Fisheries (OPRT) was established in December 2000 in Tokyo, Japan. The organization consists of representatives from fishermen, importers, distributors, processors and consumers. One of the main tasks of the OPRT is to compile and analyze the import data of tunas and provide them to OPRT member flag states as feedback for their verification of the reported catch data. The OPRT’s other task is to inform Japanese retailers and consumers of the products caught by IUU fishing vessels. For this purpose, the OPRT is studying the possible introduction of labeling to differentiate the catches of duly licensed and controlled vessels from IUU fishing vessels in the Japanese market. The representatives from the fishermen of Japan and Chinese Taipei are the founding members of OPRT. The fishermen of Korea, Philippines and Indonesia joined OPRT.

Table 1. Annual number of Japanese tuna boats that operated in the Atlantic and Mediterranean, 1980-2001

Year	*Longline*			*Purse seine*	*Pole-and-line*
	Number of boats	*Fishing days (sets in 100)*	*Fishing days per boat*	*Number of boats*	*Number of boats*
1980	300	247	82	-	12
1981	320	297	93	-	10
1982	269	307	114	1	7
1983	182	175	96	1	4
1984	212	252	119	1	2
1985	205	279	136	2	-
1986	190	208	110	2	-
1987	146	172	118	2	-
1988	183	260	142	2	-
1989	239	345	144	1	-
1990	235	359	153	1	-
1991	242	339	140	2	-
1992	248	292	118	2	-
1993	307	399	130	-	-
1994	240	380	158	-	-
1995	252	399	158	-	-
1996	288	471	164	-	-
1997	280	414	148	-	-
1998	251	402	160	-	-
1999*1	224	339	151	-	-
2000*1	203	354	174	-	-
2001*2	204	277	136	-	-

*1 Almost final.
*2 Preliminary.

Table 2. Japanese catch (t) of tuna and tuna-like fishes by type of fisheries, Atlantic and Mediterranean, 1982-2001. Discards are not included

Year	*Longline (Home-based)*	*Purse seine*	*Pole-and-line*	*Total*
1982	50,794	2,250	10,620	63,664
1983	25,596	2,733	5,577	33,906
1984	39,096	2,906	565	42,567
1985	48,497	5,226	-	53,723
1986	33,241	5,805	-	39,046
1987	29,300	5,171	-	34,471
1988	47,326	5,887	-	53,213
1989	58,514	4,453	-	62,967
1990	54,930	4,361	-	59,291
1991	46,883	7,516	-	54,399
1992	48,515	2,794	-	51,309
1993	52,917	-	-	52,917
1994	55,063	-	-	55,063
1995	52,495	-	-	52,495
1996	51,537	-	-	51,537
1997	39,320	-	-	39,320
1998	41,572	-	-	41,572
1999*	33,895	-	-	33,895
2000*	36,088	-	-	36,088
2001**	27,570	-	-	27,570

*Almost final.
** Preliminary.

Table 3. Catches (t) of tuna and tuna-like fishes taken by the Japanese longline fishery, 1981-2001

Year	*Bluefin*	*Southern bluefin*	*Albacore*	*Bigeye*	*Yellow-fin*	*Sword-fish*	*Blue marlin* [*1]	*Black marlin*	*White marlin*	*Sail-fish* [*2]	*Spear-fish*	*Others*	*Sub-total*	*Bluefin discards*	*Sword-fish discards*	*Sharks*	*Grand Total (including sharks)*
1981	4,386	2,506	2,298	21,044	4,145	2,233	468		143	94		319	37,636				
1982	3,826	1,135	1,350	32,867	6,062	3,728	1,132		111	173		410	50,794				
1983	3,997	505	1,318	15,141	2,069	1,899	440		44	69		114	25,596				
1984	3,246	1,636	800	24,310	3,967	3,789	833		76	97		342	39,096				
1985	2,523	1,468	1,467	31,602	5,308	4,323	1,090		126	122		468	48,497				
1986	1,664	389	1,209	22,801	3,404	2,660	508		129	99		378	33,241				
1987	2,140	1,120	851	18,575	3,364	2,294	438		134	43		341	29,300				
1988	2,536	548	1,128	31,664	5,982	4,055	823		144	79		366	47,325				
1989	2,523	625	1,214	39,419	6,971	5,593	1,555		146	78		390	58,514				
1990	2,186	1,202	1,324	35,024	5,919	7,307	1,216		126	88		538	54,930				
1991	3,754	1,331	1,346	29,489	4,718	4,688	905		121	88		443	46,883				
1992	3,985	525	1,048	34,128	3,715	3,541	1,017		248	43		265	48,515				
1993	3,858	1,688	951	35,053	3,096	6,386	928		82	60		815	52,917				
1994	3,038	595	1,156	38,502	4,782	4,764	1,524	6	92	53	38	513	55,063			3,221	58,284
1995	5,171	1,409	757	34,222	5,047	3,563	1,365	1	55	52	27	826	52,495			2,149	54,644
1996	4,542	1,219	902	33,171	5,251	3,795	1,680	2	112	51	29	783	51,537			1,364	52,901
1997	3,498	301	838	26,489	3,539	2,765	1,349	1	58	36	31	415	39,320	8		1,304	40,632
1998	4,276	946	864	25,567	5,390	2,513	1,067	2	50	50	40	807	41,572	-	-	1,518	43,090
1999[*3]	3,436	853	979	21,749	3,396	1,866	798	0	41	26	44	707	33,895	-	-	1,037	34,932
2000[*3]	3,523	1,291	1,160	23,812	3,650	893	841	1	84	37	32	764	36,088	-	626	715	37,429
2001[*4]	2,658	467	1,301	19,030	2,760	558	315	1	98	5	20	357	27,570	-	508	955	29,033

[*1] Blue marlin and black marlin was not separated until 1993.

[*2] Sailfish and spearfish were not separated until 1993.

[*3] Almost final figures.

[*4] Preliminary data.

Table 4. Area breakdown of Task I catches (t) taken by the Japanese longline fishery. ICCAT area definition is used for tunas and billfishes. For other species, North and South, and East and West are separated at 5° N and 30° W, respectively. The Mediterranean Sea is separated from both West-East and North-South area division.

2000*

Species	*West*	*East*	*North*	*South*	*Medit.*	*Total*
Bluefin tuna	492	2,895	3,387	0	136	3,523
Southern bluefin tuna	0	1,292	0	1,292	0	1,292
Albacore	646	514	723	437	0	1,161
Bigeye tuna	7,867	15,945	14,025	9,787	0	23,812
Yellowfin tuna	1,507	2,143	2,167	1,483	0	3,650
Swordfish*1	160	733	152	741	1	893
White marlin	24	60	72	13	0	84
Blue marlin	266	575	433	409	0	842
Black marlin	0	2	0	2	0	2
Sailfish	9	28	15	22	0	37
Spearfish	8	24	17	15	0	32
Skipjack tuna	0	0	0	0	0	0
Blue shark	165	358	290	233	0	523
Other sharks	51	142	81	112	0	192
Other fishes	101	663	118	646	0	764
Total	11,296	25,374	21,480	15,192	137	36,807

* Almost final.

*1 Discards of 626 t in the North Atlantic are not included.

2001**

Species	*West*	*East*	*North*	*South*	*Medit.*	*Total*
Bluefin tuna	436	2,090	2,526	0	131	2,658
Southern bluefin tuna	0	467	0	467	0	467
Albacore	862	439	950	351	0	1,301
Bigeye tuna	6,770	12,261	11,593	7,438	0	19,031
Yellowfin tuna	927	1,833	1,997	763	0	2,760
Swordfish *2	57	500	0	557	1	557
White marlin	17	81	38	60	0	98
Blue marlin	86	228	162	152	0	315
Black marlin	0	1	0	1	0	1
Sailfish	0	5	2	4	0	6
Spearfish	4	17	7	13	0	21
Skipjack	0	1	0	1	0	1
Blue shark	398	354	522	229	1	752
Other sharks	83	121	155	49	0	203
Other fishes	45	312	75	282	0	357
Total	9,685	18,710	18,027	10,366	133	28,528

** Preliminary.

*2 Discards of 508 t in the North Atlantic are not included.

Table 5. Annual deployment rate of longline materials for main and branch lines in the Atlantic, 1994-2001

Year	*Main line*	*Branch line*	*Main and branch lines*	
	Nylon	*Nylon*	*Nylon*	*Other*
1994	34 %	41 %	29 %	54 %
1995	61 %	63 %	51 %	27 %
1996	75 %	76 %	66 %	16 %
1997	82 %	82 %	75 %	11 %
1998	86 %	81 %	76 %	10 %
1999*	87 %	82 %	79 %	10 %
2000*	86 %	84 %	80 %	9 %
2001**	86 %	80 %	76 %	10 %

* Almost final.
** Preliminary.

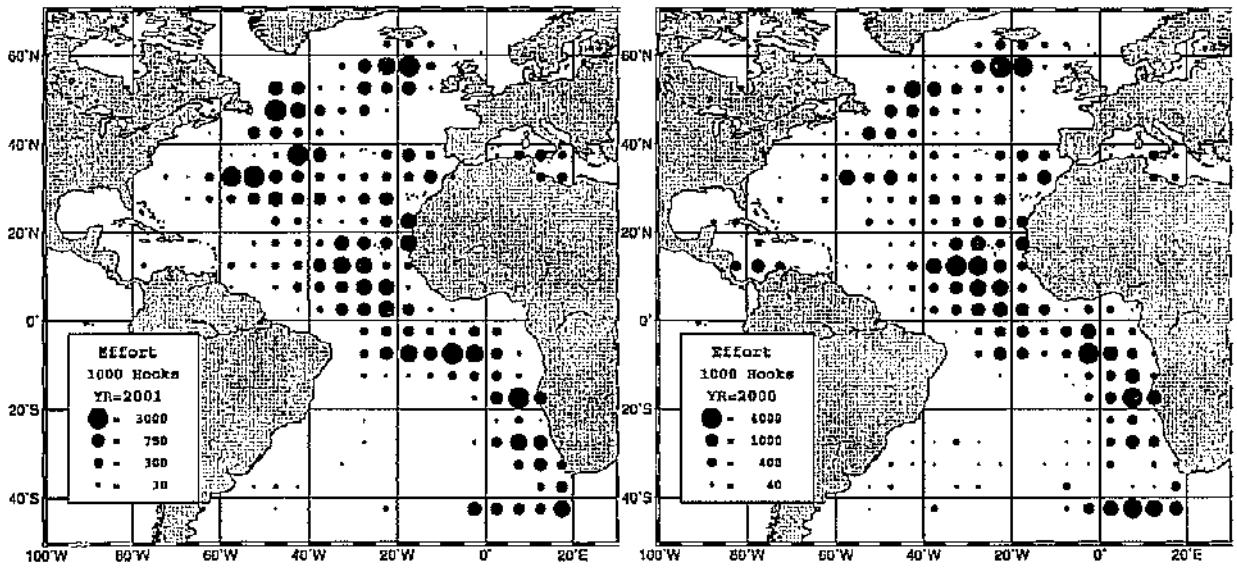

Fig. 1. Geographic distribution of the Japanese longline effort (number of hooks) in the Atlantic, for 2001 (left) and 2000 (right). Coverage for 2001 is much lower than for 2000, especially in the latter half of the year, so that the figure for 2001 should be viewed with caution.

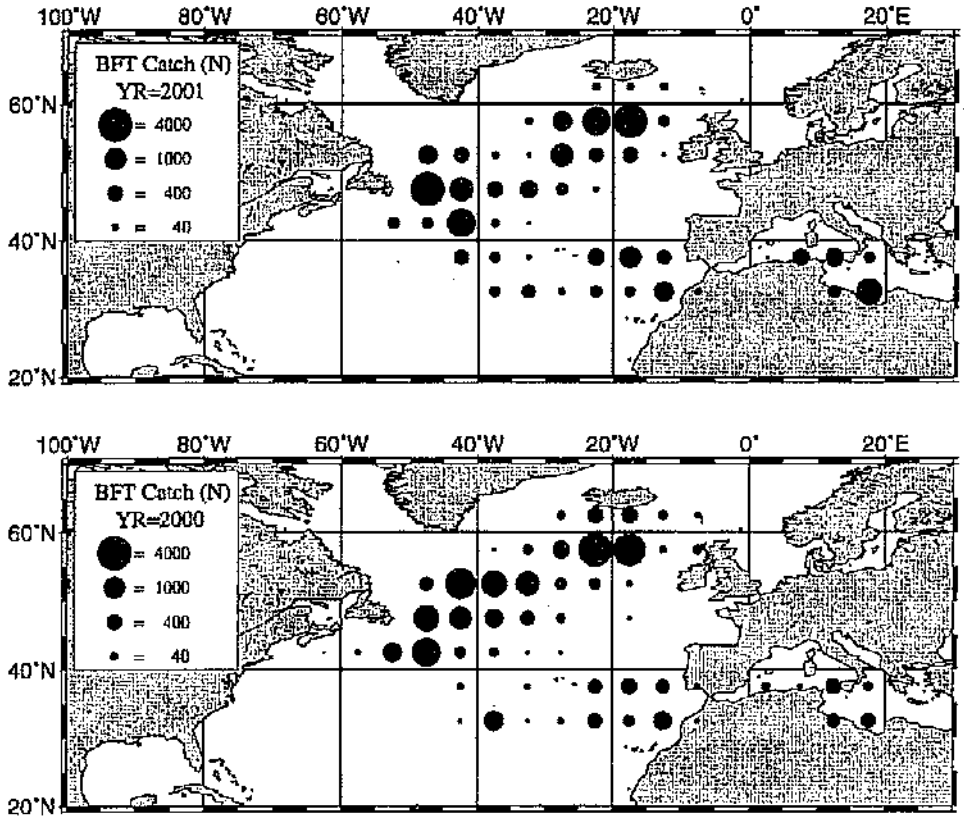

Fig. 2. Geographic distribution of bluefin catches (number) in the Atlantic for 2001 (upper figure) and 2000 (lower figure). Coverage for 2001 is much lower than for 2000, especially in the latter half of the year, so that the figure for 2001 should be viewed with caution.

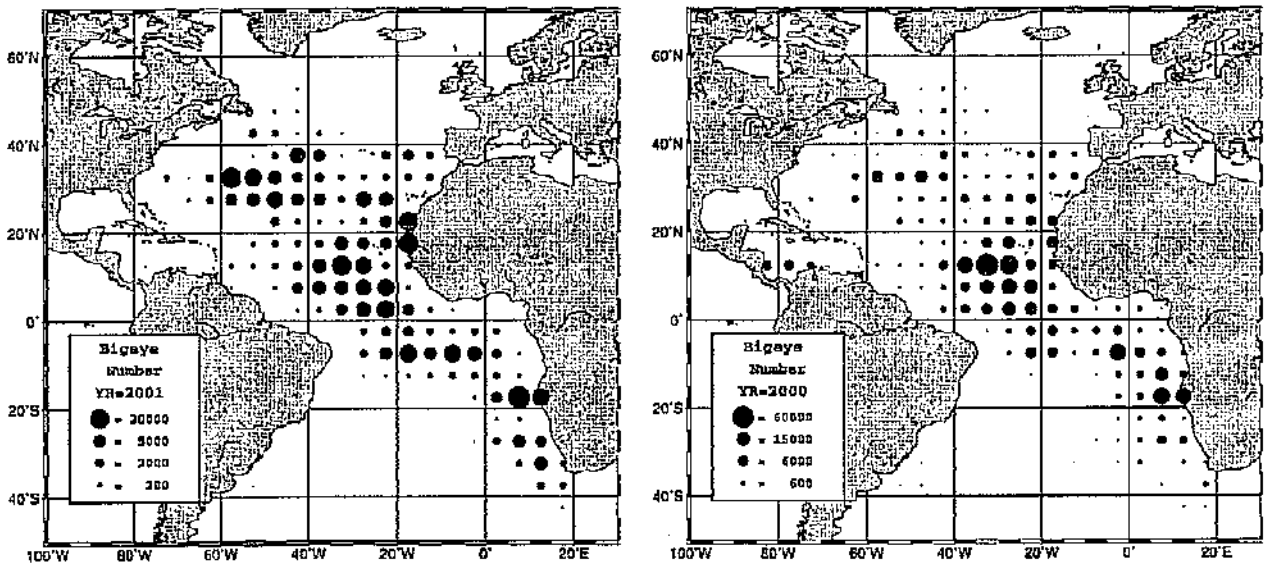

Fig. 3. Geographic distribution of the bigeye catches (number) in the Atlantic for 2001 (left) and 2000 (righ Coverage for 2001 is much lower than for 2000, especially in the latter half of the year, so that the figure f 2001 should be viewed with caution.

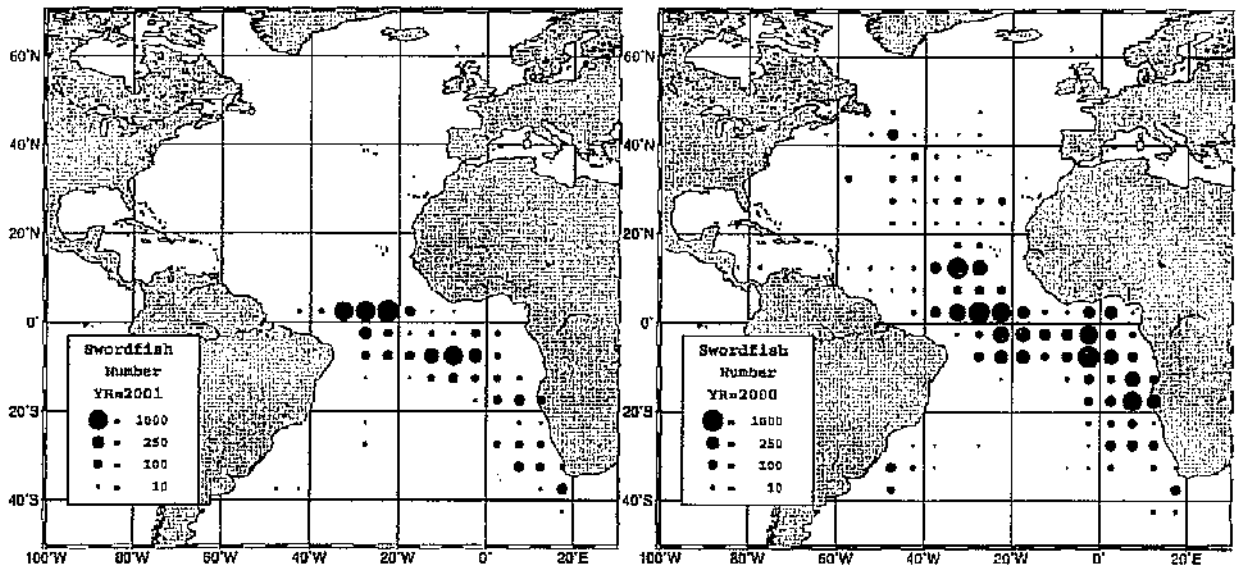

Fig. 4. Geographic distribution of swordfish catches (number) in the Atlantic for 2001 (left) and 2000 (right). Coverage for 2001 is much lower than for 2000, especially in the latter half of the year, so that the figure for 2001 should be viewed with caution.

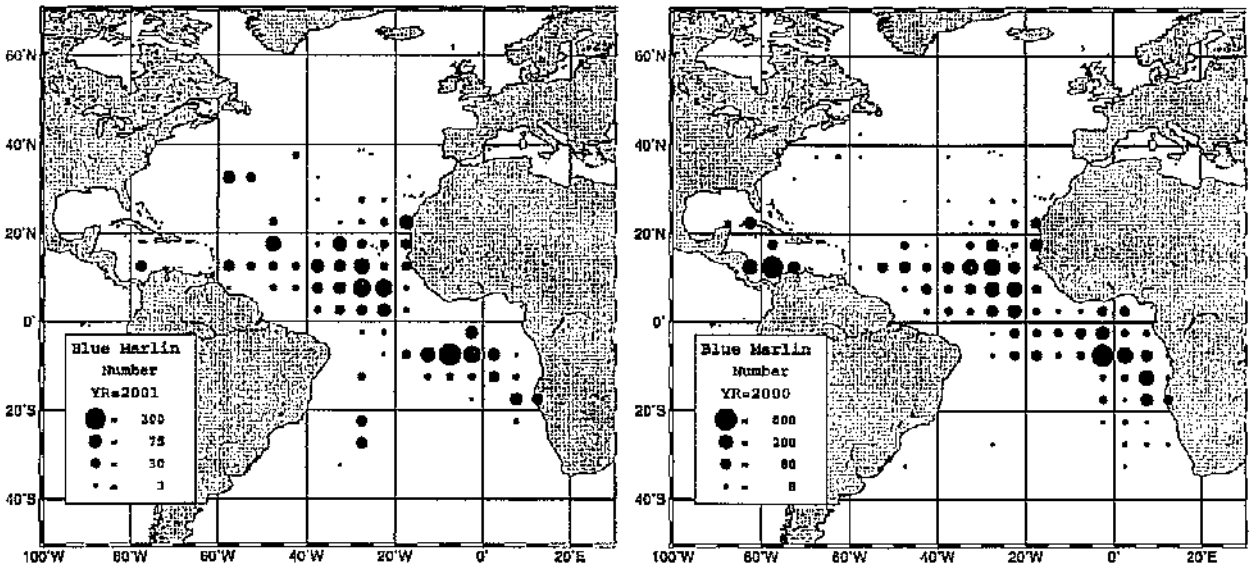

Fig. 5. Geographic distribution of blue marlin catches (number) in the Atlantic for 2001 (left) and 2000 (right). Coverage for 2001 is much lower than for 2000, especially in the latter half of the year, so that the figure for 2001 should be viewed with caution.

NATIONAL REPORT OF KOREA[1,2]

1. Fisheries Information

The Korean longline fishery for Atlantic tunas and tuna-like species has shown a gradual decline year after year since 1985, not only in terms of the number of fishing vessels, but also in its catches. During the 1990s, the average number of Korean tuna longliners active in the Atlantic was less than 10 each year with 1,700 t of annual catch, corresponding to about one-tenth of annual catch of the early 1980s. A further decrease in annual catches was observed from 1998 onwards (**Table 1**). This decrease was mainly due to the shift of the fleet to the Indian Ocean to catch southern bluefin tuna. Accordingly, only seasonal fishing for southern bluefin tuna by Korean longliners in the southern Atlantic Ocean was reported.

In 2001, the annual catch of tunas and tuna-like fishes by the Korean fishery amounted to 192.3 t, representing a decrease of 34% from the previous year's figure. While bigeye and yellowfin tunas made up of a major component of the total Korean catch in past years, the recent retreat of Korean longliners from the Atlantic made southern bluefin tuna a dominant species among the Korean catch of tuna species in this region.

1.1 Southern bluefin tuna

Although most of southern bluefin tuna catch by the Korean fishery was made in the southern Indian Ocean, some catch also was taken by a few longliners in the Atlantic Ocean on a seasonal basis. The 2001 catch of this species was 157.7 t, which accounts for about 82% to the total catch.

1.2 Bigeye tuna

Until recent years, bigeye tuna was the most important tuna species for the Korean tuna longline fishery, not only in terms of production, but also from an economic viewpoint, since the beginning of the 1980s when the deep-longline fishing technique was introduced. Due to the decreased number of longliners, the bigeye tuna catch continuously decreased and remained less than 1,000 t during the 1990s. In addition, the recent retreat of Korean longliners from this area and the change of target species to southern bluefin tuna caused a sudden decrease in the bigeye catch.

1.3 Yellowfin tuna

Yellowfin tuna was the second important target species for the Korean tuna longline fishery in the Atlantic. But owing to similar reasons as indicated for bigeye tuna, only a minor catch of yellowfin tuna was reported in 2001, which can be considered as by-catch.

1.4 Other tunas and billfishes

Albacore, swordfish, and other billfish species were also caught in small quantity.

2. Research and statistics

Routine scientific monitoring work was carried out by the National Fisheries Research and Development Institute (NFRDI) as in past years. This monitoring covers the collection of catch and fishing effort statistics from Korean tuna longliners operating in the Atlantic Ocean. Task I and II data were provided to the ICCAT Secretariat.

The Korean Government initiated a fisheries observer program in 2002 to monitor its distant water fisheries, including those for tunas, and to meet the requirements of regional fisheries bodies. At the initial stage, the size of the observer program will be fairly small to cover the fisheries only, to be implemented urgently, but it will be gradually developed to a larger scale to cover all the required areas of the fisheries.

[1] Original report in English
[2] National Fisheries Research and Development Institute (NFRDI)

3. Implementation of ICCAT tuna management measures

To implement the recommendations adopted by ICCAT, Korea has introduced domestic regulations. Those include a minimum size limit for bigeye, yellowfin, and bluefin tunas and swordfish. With a view to protecting the spawning stock of northern bluefin tuna in the Mediterranean Sea, a new domestic regulation has been effective since 1995.

Table 1. Nominal catch (t) of tuna and tuna-like fishes by the Korean longline fishery in the Atlantic Ocean, 1980-2001

Year	*No. of vessels*	*BFT*	*YFT*	*ALB*	*BET*	*SBT*	*SKJ*	*SWO*	*BUM*	*WHM*	*SAI*	*Others*	***Total***
1980	54	-	5869	1487	8963	-	4	683	94	18	85	1749	***18952***
1981	56	-	6650	1620	11682	-	47	447	126	85	65	1584	***22306***
1982	52	-	5872	1889	10615	-	21	684	50	69	52	1781	***21033***
1983	53	3	3405	1077	9383	-	530	462	131	15	3	1215	***16224***
1984	51	-	2673	1315	8943	-	29	406	344	62	86	927	***14785***
1985	45	77	3239	901	10691	-	20	344	416	372	101	1293	***17454***
1986	28	(156)	1818	694	6084	-	11	82	96	71	16	1093	***9965***
1987	29	(1)	1457	401	4438	-	6	75	152	27	21	1048	***7625***
1988	29	(12)	1368	197	4919	-	3	123	375	19	15	782	***7801***
1989	33	(45)	2535	107	7896	-	6	162	689	135	33	944	***12507***
1990	17	(20)	808	53	2690	-	-	101	324	81	41	240	***4338***
1991	9	(229)	260	32	801	-	-	150	537	57	30	267	***2134***
1992	8	(101)	219	-	866	-	-	17	38	1	1	321	***1463***
1993	4	(573)	180	-	377	-	-	-	19	2	1	308	***887***
1994	4	684	436	-	386	-	-	-	-	91	1	27	***1625***
1995	4	663	453	-	423	-	-	-	61	1	-	114	***1715***
1996	16	683	381	-	1250	-	-	26	199	37	6	156	***2738***
1997	12	613	257	5	796	10	-	33	70	24	1	115	***1924***
1998	5	-	65	-	163	-	-	-	-	-	-	62	***290***
1999	9	-	94	-	124	28	-	-	-	-	-	31	***277***
2000	9	-	143	-	70	62	7	-	-	-	-	10	***292***
*2001	5	0.5	3.4	1.4	1.3	157.7	-	0.1	0.5	-	-	27.4	***192.3***

( ) : estimated by ICCAT Secretariat (ICCAT Report 1994. Vol.2)
* data: NFRDI

NATIONAL REPORT OF MEXICO[1]

1. Introduction

In 2001, the fisheries administration changed from the *Secretaría de Medio Ambiente Y Recursos Naturales* (SEMARNAT) to *the Secretaría de Agricultura, Ganadería, Desarrollo, Pesca y Alimentación* (SAGARPA). Further, the decree that established the National Commission of Aquaculture and Fishing was published in the Official Record of the Federation on June 5, 2001. This National Commission is a separate administrative entity of the SAGARPA, whose objectives are: to administrate, with effectiveness and transparency, the sustainable use of fishery and aquatic resources; to promote the development of the chain of production, distribution and utilization, in support of the integral development of the producing segments of the sector; and to contribute to the improvement of the Mexican diet.

As a result of the creation of the Commission, the regulation of the fishery and aquifer sectors is clearer and favors new methods of operation of the respective programs, carried out within a strategy of sustainable and effective use of the resources, to increase productivity and competitiveness of the activities of the sector.

In addition, there is also the National Institute of Fishing, an independent entity of SAGARPA, which carries out the fisheries research that evaluates the state of the fisheries resources and, based on this information, determines future fishing effort.

2. The Mexican fishery

The Mexican tuna fishery in the Atlantic is carried out in the Exclusive Economic Zone, including the area south of the Gulf of Mexico. The vessels that make up the fleet are the "escamero" or shrimp vessel type adapted for longline fishing, with an average draft of 22 m and an autonomy of up to 30 days at sea. The fishing effort of this fleet is directed at yellowfin tuna *(Thunnus albacares)*. In 2001, there were 29 active vessels, which carried out a total of 342 fishing trips.

In 2001, reported yellowfin tuna catches amounted to 1,084 t, which represented 66% of the reported catch of tuna in 2000. Yellowfin tuna comprise 97% of the total catch of tuna species in the Gulf of Mexico. The major catch of this species is made during the summer months and in early fall. In addition, other tuna species and pelagic fish were caught incidentally. Other tuna species caught (and their relative value of the tuna catch) were as follows: Atlantic blackfin tuna, *T. atlanticus* (1%); bluefin tuna, *T. thynnus* (0.9%); skipjack tuna, *Katsuwonus pelamis* (0.9%). Other tuna species caught incidentally are: bigeye tuna (*T. obesus*), Atlantic bonito (*Sarda sarda*) and some species of small tunas.

In addition to the above, by-catches of billfishes and similar fish were caught, which represented 12% of the total catch of tunas and billfishes. The most abundance species in the by-catches were: white marlin (*Tetrapturus albidus*) with 2,509 individuals caught, followed by sailfish (*Istiophorus albicans*) with 2,024 fish, swordfish (*Xiphias gladius*) with 1,012 fish and, in lesser number, blue marlin (*M. nigircans*).

As concerns the incidental catch of sharks, the following is noted: Of the 1,323 individuals, oceanic whitetip shark (*Carcharhunus longimanus*) represented slightly more than 18%, followed by shortfin mako shark (*Isurus oxyrhinchus*) with 17% and blacktip shark (*C. limbatus*) with 14%. The hammerhead species (*Sphyrna* spp.) and thresher sharks (*Alopias spp.*), each represented close to 9% of the incidental catches of sharks. Lastly, unidentified sharks represented 27% of this by-catch of sharks.

3. Research and statistics

Mexico has had an on-board observer program since 1992. During the initial years, coverage was approximately 33% of the trips; however, since 1994 scientific observers are present on 100% of the fishing trips.

[1] Original report in Spanish.

The objective of this program is to collect statistical information on catches (directed and by-catch), size, fishing effort, gear characteristics, etc. In 2001 this program covered 100% of the fishing trips, thus complying with the Official Mexican Law which regulates tuna longline fishing in the Gulf of Mexico (NOM-023-PESC).

Since the observer program in not a governmental entity, the National Institute of Fishing, as the official entity for carrying out scientific research in fisheries matters, conducted intensive work this year with this program to develop the methods to make the transmission of fishery information more efficient. In virtue of that expressed above and the needs of scientific research on tuna in Mexico, the following two research priorities have been established:

– Development of a database on longline tuna fishing in the Gulf of Mexico. This base includes, in addition to observer program, information obtained from the fishing logbooks. With these two sources, the information collected can be validated.

– Research on the management of tuna longline fishing in the Gulf of Mexico. For this year, the following objectives are contemplated:

  - Evaluation of catch and effort trends, by time and area.
  - Analysis of the size structure of yellowfin tuna.
  - Time and area analysis of billfish and shark by-catches.

4. Implementation of ICCAT conservation and management measures

The ICCAT conservation and management measures are implemented and observed in Mexico through the application of Law NOM- 023PESC, that regulates the longline fishing of tuna species in waters under federal jurisdiction in the Gulf of Mexico and Caribbean Sea and which has been applied since 1997.

The purpose of this rule is to establish a fishing regime that guarantees the optimum use of the yellowfin tuna (*Thunnus albacares*) resources, using vessels equipped with tuna longline, as well as the conservation of this resource and the species susceptible of being caught incidentally.

The subject species of this law is yellowfin tuna (*Thunnus albacares*). The Law also regulates the incidental catch of the following species:

– Bluefin tuna (*Thunnus thynnus*)
– Swordfish (*Xiphias gladius*)
– Sailfish (*Istiophorus albicans*)
– Billfishes (of the *Makaira* spp. and *Tetrapturus* spp. families).
– Sharks

This law establishes that the commercial fishing of tunas using longline gear can only be carried out by vessels whose total maximum draft is 37 meters, using one drift surface tuna longline per vessel.

For each vessel, the annual by-catch rate of bluefin tuna (*Thunnus thynnus*), billfishes (of the *Makaira* y *Tetrapturus* genus), swordfish (*Xiphias gladius*), sailfish (*Istiophorus albicans*) and sharks, overall should not exceed 20% of its nominal catch obtained during a calendar year, (total catch including fish released live)

Bluefin tuna (*Thunnus thynnus*) caught as by-catch can only be retained if the fish weigh a minimum of 30 kg or have a fork length of 115 cms. Fish weighing or measuring less that that established should be released in good condition for survival.

5. Inspection schemes and activities

With the establishment of the National Commission of Fishing and Aquaculture, the General Directorate of Inspection and Surveillance was integrated, and its objective is to monitor compliance of fishery regulations.

Through this unit, the fishing activity is supervised in accordance with established laws. In this exercise, the information that the on-board observers provide facilitates the inspection and surveillance activities.

6. Catch limits and minimum sizes

For yellowfin and bigeye tunas, an Official Mexican Emergency Law (NOM-EM-04-PESC) has been established (published in the Official Register of the Federation on August 21, 2001) whose objective is to promote the maximum utilization of tunas and to reduce the by-catch of juvenile yellowfin and bigeye tunas.

The Law's area of application establishes mandatory observance by those who carry out tuna fishing activities with vessels equipped with purse seine nets that operate in federal jurisdictional waters and by tuna purse seine vessels flagged to Mexico that operate in international waters or in jurisdictional waters of other countries of the eastern Pacific Ocean and the Atlantic Ocean and Caribbean Sea. This law should also be observed, as corresponds, by those involved in processing and distribution, up to the final destination of tunas, their products and sub-products. In addition, observance of this rule is also mandatory for those who commercialize tunas, tuna products and sub-products in the national territory.

This law prohibits the sale of fish if, during the fishing trip, the tuna catch is comprised of more than 10% of juveniles (i.e. fish measuring less than 60 cm).

Since this law was an emergency measure, it was no longer in force after September. Notwithstanding, the permanent application of this law is currently under study.

In the case of by-catches, as indicated above, Law NOM-023-PESC establishes that bluefin tuna (*Thunnus thynnus*) caught by by-catch can only be retained if the fish weigh a minimum of 30 kg or if their fork length is 115 cms.

7. Closed seasons

There are currently no closed seasons applied for catches of yellowfin tuna in the Gulf of Mexico and the Atlantic Ocean.

8. Import prohibitions

As indicated above, up to September 2002, Rule NOM-EM-04-PESC prohibited the sale of tuna in national territory if, during the fishing trip, the catches of juvenile tunas exceeded 10%.

9. Observer program

Since 1997 each longline fishing trip for tuna in the Gulf of Mexico must have an observer on board, as established in the aforementioned Official Mexican Law NOM-023-PESC. This law indicates that the tuna fishing authorities should permit and facilitate the participation of on-board observers authorized by the competent authorities and should support them in their data collection activities, particularly those obtained from fishing, communication and navigational equipment.

10. Vessel monitoring

There is currently no vessel monitoring system applied.

11. Measures to guarantee the effectiveness of conservation and management measures

Mexico takes part in the statistical documentation system followed by the ICCAT SCRS. The mandatory participation in this scheme is also set forth in Law NOM-023-PESC, which establishes that all the vessels trips for bluefin tunas destined for export must, in addition to the documents that accredit their legal precedence, also be accompanied by a "Certificate of participation in the bluefin tuna statistical program", issued by the corresponding authorities.

Due to the recent changes in the fisheries administration of Mexico, updated information on the Mexican officials authorized to issue these certificates will be sent to ICCAT.

In addition to that express above, Mexico has a *Carta Nacional Pesquera* (CNP). The CNP is an integral and updated document that summarizes the research efforts, with ample institutional and citizen participation, as well as participation of academia, the society as a whole and the authorities, to advance in the shared management of the fisheries and aquatic resources and their habitats.

This *Carta Nacional Pesquera* contains information on the maritime and coastal fisheries, on those that include a group of target species and associated species (by-catch) as well as those for a particular species, with or without by-catches.

For management purposes, the *Unidad de Manejo Pesquero*, a new regulatory, unit is being proposed This unit is a grouping of species by habitat affinity, according to that reported in announcements of entry. There are 65 Fishing Management Units involved, 37 of which are located in the Mexican Pacific and 28 in the Gulf of Mexico and Caribbean Sea.

NATIONAL REPORT OF MOROCCO[1]

A. Fahfouhi[2], T. El Ktiri[2] and A. Srour[3]

1. Introduction

Fishing for tunas and tuna-like species has always been an important activity of the maritime fishing sector and occupies an important place in the national economy of this sector.

In effect, due to Morocco's geographic position and its temperate climate, the Moroccan territorial waters constitute the northern limit of distribution of a large number of tuna species, and an area where large tunas must pass on their migrations between the Atlantic Ocean and the Mediterranean Sea.

Tuna fishing is carried out seasonally during the two migrations of tunas along the coasts of Morocco, which take place from the Atlantic towards the Mediterranean between April and June, and from the Mediterranean towards the Atlantic between July and November.

2. Information on the fisheries

2.1 Tuna fishing

The major tuna species caught by Moroccan fishers are bluefin tuna, bigeye tuna, swordfish, yellowfin tuna and small tunas (skipjack, Atlantic bonito, frigate tuna, etc.) as well as other species.

Moreover, some foreign vessels that fish in the Moroccan EEZ, within the framework of bilateral fishing agreements, also target bluefin tuna, bigeye tuna, albacore, yellowfin tuna, swordfish and small tunas.

2.2 Fishing areas

The main fishing areas for bluefin tuna and swordfish are located mainly in the Mediterranean. The major landing ports for these species are: Tanger, El Hoceima, M'diq, Nador and Ras Kebdana.

Bigeye tuna and small tunas (Atlantic bonito, frigate tuna, skipjack tuna) are caught mainly off the Atlantic coast. Likewise, the bluefin tuna catches by the traps are mainly made in the Atlantic.

The major landing ports are: Agadir, Casablanca, Safi, Mohamedia, El-Jadida, Mehdia and Larache.

2.3 Fishing methods

Tunas and tuna-like species are caught essentially by four fishing techniques:

2.3.1 Trap

This gear mainly targets bluefin tuna and small tunas. In 2001, five traps were set in national waters (one in the Mediterranean and four in the Atlantic). This number is identical to that of 2000, which shows that fishing effort has been maintained at the same level.

The period of the trap activity is between the months of April and June in the Atlantic and between June and October in the Mediterranean.

[1] Original report in French.
[2] Ministère de la Pêche Maritime.
[3] Institut National de Recherche Halieutique.

2.3.2 Hand line

This gear is used mainly by an important group of artisanal fishers whose fleet is comprised of about 100 artisanal vessels (lengths less than 5 m and GRT <2 tons).

The fishing activity with this gear targets large-sized bluefin tuna. It is carried out almost the entire year, with a 2-3 month halt in the activity (April to June).

2.3.3 Purse seine

This fishing technique is utilized by about 250 purse seiners that only fish tunas occasionally and as by-catch. This activity is carried out essentially in the Atlantic and the species caught are mainly large tunas, whose sizes and weights are lower than those species caught by the other fishing methods.

It should be noted that this method obtains important quantities of by-catches, almost always of small tunas.

2.3.4 Driftnet

About 300 coastal vessels fish using this gear, of which 60% are based at Tanger and fish in the Mediterranean.

These vessels also fish swordfish during their migrations along the Moroccan coasts during the period extending from April to November.

It should also be noted that these vessels incidentally catch bluefin tuna.

3. Catches

The national fishing statistics on tunas and tuna-like species are shown in **Tables 1-4** and **Figure 1**.

During 2001 the catches of tunas and tuna-like species amounted to 11,761,813 kg (11,761 t), which is 11.5% less than the catches in 2000 **(Table 1)**.

This decrease is mainly due to the decline in catches of small tunas, notably skipjack tuna, Atlantic bonito and bullet tuna.

In terms of weight, bigeye tuna, bluefin tuna and swordfish represent, respectively, 7%, 25% and 30% of the total weight.

As regards small tunas, they represent 30% of the total weight. The other species only represent 6%.

3.1 Bluefin tuna

In 2001, bluefin tuna catches reached 3,008,796 kg, or 3,008 t **(Table 2, Figure 2)**.

The amount caught in the Mediterranean dropped 60% this year as compared to the previous year. This drop is due to severe climatic conditions in this area, which resulted in a decrease in the activities of the fishing vessels at the usual fishing grounds **(Figure 3a)**.

Hand line fishing this year contributed about 195 t, which represented about 6.5% of the total catches of bluefin tuna.

The traps contributed about 87% of the total bluefin tuna catches. Purse seine fishing contributed about 5% of the total catches of this species, which represented a decrease in the activities of these vessels (purse seiners) as compared to the previous year.

During the course of this year, these fishing vessels targeted other species and also exploited other fishing grounds.

3.2 Swordfish

This year, swordfish catches in the Mediterranean showed a 9% decrease as compared to the average of the 1996-2000 period, with catches of 3,026,471 kg (3,026 t) **(Table 3, Figure 3b)**.

The swordfish catches taken in the Atlantic amounted to 524 t, bringing the total catch of this species to 3,550,395 kg (3,550 t) **(Table 3, Figure 3c)**.

The catches taken in the Mediterranean represented 86% of the total swordfish catches by Morocco. The use of driftnets contributed with about 54% of the national catches.

Longline fishing (LL) represents about 29% of the total catches, whereas catches taken by hand line and purse seine represent 11% and 6% of the total catch, respectively.

3.3 Bigeye tuna

Bigeye tuna catches this year showed an increase in catches of about 11% as compared to 2000, from 770,012 kg to 857,443 kg, or 857 t.

This species is caught mainly by coastal fleet vessels operating in the Atlantic in the Moroccan EEZ.

3.4 Small tunas

The catches of small tunas showed a drop this year of about 40%, going from 5,981 t to 3,573,950 kg, or 3,574 t in 2001.

Skipjack tuna catches generally taken by the coastal fishery showed a 78% decrease as compared to 2000.

Atlantic bonito catches also showed a decrease in their catch levels of about 25%.

The catches of these species, by gear and by area, are summarized in **Table 4**.

3.5 Catches by foreign vessels (2001)

Within the framework of a Morocco-Japan fishing agreement, the four tuna fishing vessels that operated in the Moroccan EEZ in 2001 reported catches of 162 t, comprised mainly of bluefin tuna (37 t), bigeye tuna (40 t), and yellowfin tuna (67 t).

4. Implementation of conservation and management measures adopted by ICCAT

4. 1 Minimum size limits

In accordance with the ICCAT Recommendations, the Ministry of Maritime Fishing prohibited the catch of under-sized fish, through a ministerial decree, modifies that of October 3, 1988, which establishes the minimum commercial size of species caught in Moroccan waters.

4.2 Limit on fishing effort

In application of Circular 3887 of August 18, 1992, investments in vessel construction have been suspended since that date in order to assure compatibility between fishing effort and the level of the state of the stocks.

4.3 Monitoring of fishing activities

The major objectives of the monitoring of fishing activities is to oversee the strict application of the regulations in effect, to sanction the offenders and, at the same time, to contribute to the management of the resource, completing the instruments already in place such as the technical measures, and limits on catches and fishing effort.

Strict monitoring is applied to the overall fishing sector and mainly centers on fishing activities, transshipment, landing, commercialization, transport and storage of the fishing products, as well as on the reporting of the landings and sales.

At-sea monitoring consists of verifying the characteristics of the fishing gear (monitoring of the conformity of the gear and the mesh size in relation to the target species and the geographic area), inspection of fishing activities (logbooks, legality of the fishing activity with regard to the fishing period and the quota), and the cargo (minimum size, quantities by species). The statistical information collected during these controls also permits monitoring of the catch levels.

The organization of the monitoring is carried out in the following manner:

4.3.1 At-sea monitoring

This is carried out by the maritime control authorities and by the members of the corps of scientific observers.

The means available to the monitors are: surveillance vessels, planes and satellite monitoring (GPS).

Monitoring is carried out on board the vessels and at the time of the catch. The entries reported in the logbooks are monitored as well as compliance with the technical measures (size, species, gear, fishing area and quotas).

As concerns the traps, it should be noted that there is a scientific observer constantly present whose mission is to monitor the sizes, species, catch amounts, and to collect biological data.

At the end of the fishing season, generally after the lifting of the trap, the observer presents a detailed report on the trap activity.

4.3.2 Land-based monitoring

This is carried out by the delegates from the Ministry of Maritime Fishing, the delegates from the National Office of Fishing and by representatives from the corps of Scientific Observers who make up the Monitoring Commissions.

These inspections can be directed or ramdom. They are carried out at landing, during transport of the product, during transformation and during commercialization.

The documents that can be used for the monitoring are: landings reports, transport documents that are also subject to verification by the authorities that monitor highway traffic, and sales records.

4.4 Spotting scheme and satellite monitoring of fishing vessels (DRS/GPS)

Within the framework of the rational management of the fisheries resources and with an aim towards assuring better monitoring of the fleet over a large geographic area, the Ministry of Maritime Fishing has created a structure for the utilization of data transmission systems by satellite, by GPS as well as for other schemes.

Likewise, and with an aim to contributing efficiently to fight against illegal, unreported and unregulated fishing (IUU) in the ICCAT Convention area, electronic systems already implemented are being completed with supplemental monitoring systems by the authorities in charge of monitoring fishing activities.

Finally, it should be noted that the Ministry of Maritime Fishing is the headquarters of the National Monitoring Center for Fisheries.

4.5 Trade date

With regard to exports, crosschecking is carried out in collaboration with the services of the exchange office and the customs administration, which are under the Ministry of Economy and Finance, to verify the amounts exported for export.

5. Research activities

The National Institute for Fisheries Research, through the its Regional Center of Nador is carrying out various activities in coordination with the COPEMED Project and which are centered on the study of the biology and exploitation of tunas, especially in the Moroccan Mediterranean. These studies are mainly centered on swordfish and bluefin tuna (abundance indices, estimation of fishing effort, population study, etc.).

In addition, a study on the Ksar Sghir fishery was initiated this year. The specific character of this fishery justifies the importance of this program, whose objective is to study the different aspects mainly relative to exploitation and commercialization, as well as socio-economic indicators.

Lastly, it should also be noted that Morocco actively participates in all the scientific and technical activities organized by ICCAT.

Table 1. General fishery statistics (in kilograms, kg).

Species	*Atlantic*	*Mediterranean*	*Atl + Med.*
Bluefin tuna	2,497,281	511,515	3,008,796
Bigeye tuna	857,443	0	857,443
Swordfish	523,924	3,026,471	3,550,395
Small tunas	3,303,772	270,178	3,573,950
Others	734,547	36,682	771,229
Total	**7,888,967**	**3,872,846**	**11,761,813**

Table 2. State of bluefin tuna (BFT) catches, by area and by gear, for the 1992-2001 period (in metric tons, t).

Area	*Gear*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Atl	Trap	94	387	494	210	699	1,240	1,615	852	1,540	2,330
Atl	PS	462	24	213	458	323	828	692	709	660	150
Atl	LL	0	0	0	0	0	0	0	0	0	0
Atl	Gill	6	4	13	10	13	0	34	30	28	17
Med	Hand	0	0	373	816	541	455	634	600	650	195
Med	Gill	4	6	16	92	30	17	18	6	6	9
Med	PS	0	0	0	0	0	0	0	0	0	0
Med	LL	0	0	0	0	0	0	0	0	0	0
Med	Trap	201	73	703	127	15	63	35	30	39	307
Tot-Atl		562	416	720	678	1,035	2,068	2,341	1,591	2,228	2,497
Tot-Med		206	79	1,092	1,035	586	535	687	636	695	511
Total		**768**	**495**	**1,812**	**1,713**	**1,621**	**2,603**	**3,028**	**2,825**	**2,923**	**3,008**

Table 3. Swordfish (SWO) catches, by area and by gear, for the 1992-2001 period.

Area	*Gear*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
Atl	Trap	21	2	11	12	7	5	2	13	3	7
Atl	PS	3	8	5	7	98	10	10	11	22	19
Atl	Gill	4	2	13	32	322	13	179	60	51	233
Atl	LL	41	27	7	28	35	239	0	35	38	264
Med	LL	807	517	527	169	273	245	323	259	205	754
Med	Gill	1,883	2,068	2,109	1,518	2,461	4,653	2,905	2,979	2,503	2,270
Med	PS	0	0	0	0	0	0	0	0	0	0
Med	Hand	0	0	0	0	0	0	0	0	0	0
Med	Trap	2	4	18	9	0	2	0	0	0	2
Tot-Atl		69	39	36	79	462	267	191	119	114	524
Tot-Med		2,692	2,589	2,654	1,696	2,734	4,900	3,228	3,238	2,708	3,026
Total		**2,760**	**2,628**	**2,690**	**1,775**	**3,196**	**5,167**	**3,419**	**3,357**	**2,822**	**3,550**

Table 4. Catch statistics on small tunas, by gear, for 2001 (in t).

Species		*At. black skipjack (LTA)*	*Atlantic bonito (BON)*	*Skipjack tuna (SKJ)*	*Frigate tuna (FRI)*	*Plain bonito (BOP)*	*Total*
Atl	Trap	0	6	0	10	0	16
Atl	Hand	0	0	0	0	0	0
Atl	Gill	18	84	169	27	17	315
Atl	LL	0	0	0	0	0	0
Atl	PS	69	1,610	99	381	813	2,972
Med	Trap	0	5	0	24	0	29
Med	Hand	0	0	0	0	0	0
Med	Gill	0	0	0	232	9	241
Med	LL	0	0	0	0	0	0
Med	PS	0	0	0	0	0	0
Tot-Atl		87	1,700	268	418	830	3,303
Tot-Med		0	5	0	256	9	270
Total		**87**	**1,705**	**268**	**674**	**839**	**3,573**

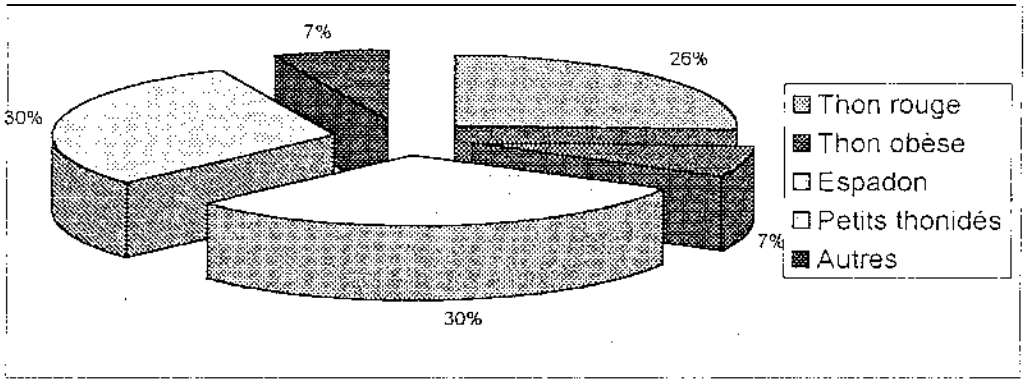

Fig. 1. General statistics on fishing (bluefin tuna, bigeye tuna, swordfish, small tunas, and others), 2001.

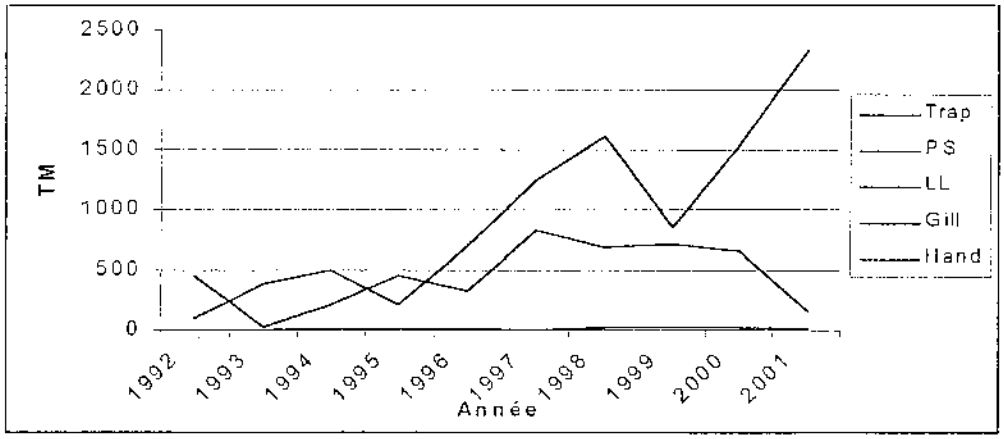

Fig. 2. Bluefin tuna (BFT) catches, by gear in the Atlantic, 1992-2001.

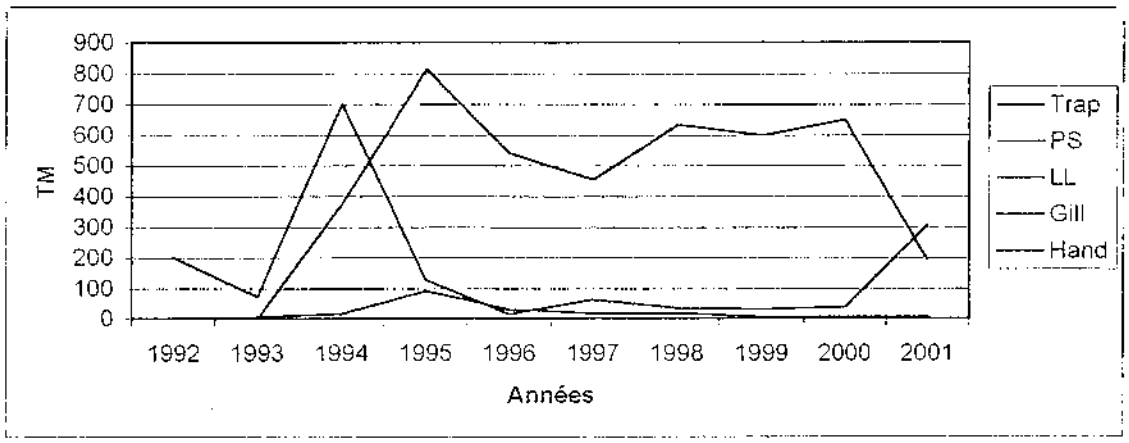

Fig. 3a. Development of bluefin tuna (BFT) catches, by gear, in the Mediterranean.

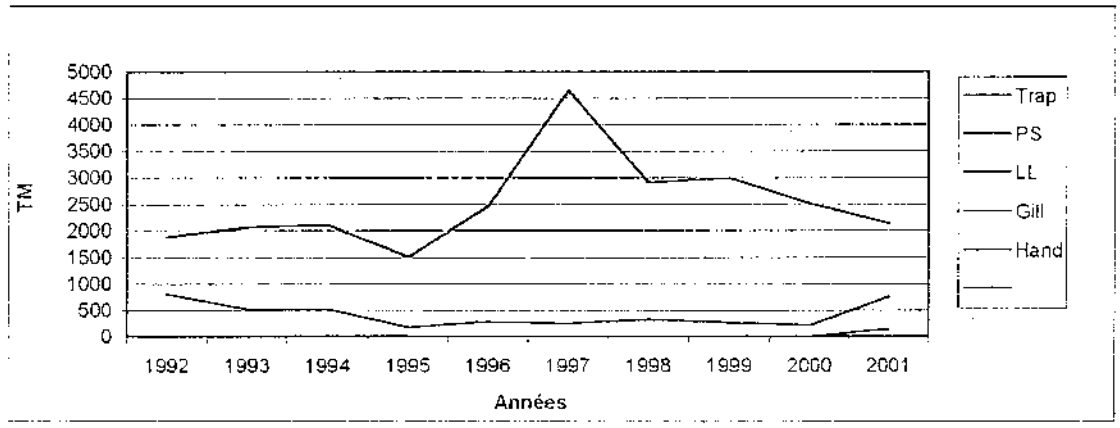

Fig. 3b. Development of swordfish catches (SWO), by gear, in the Mediterranean.

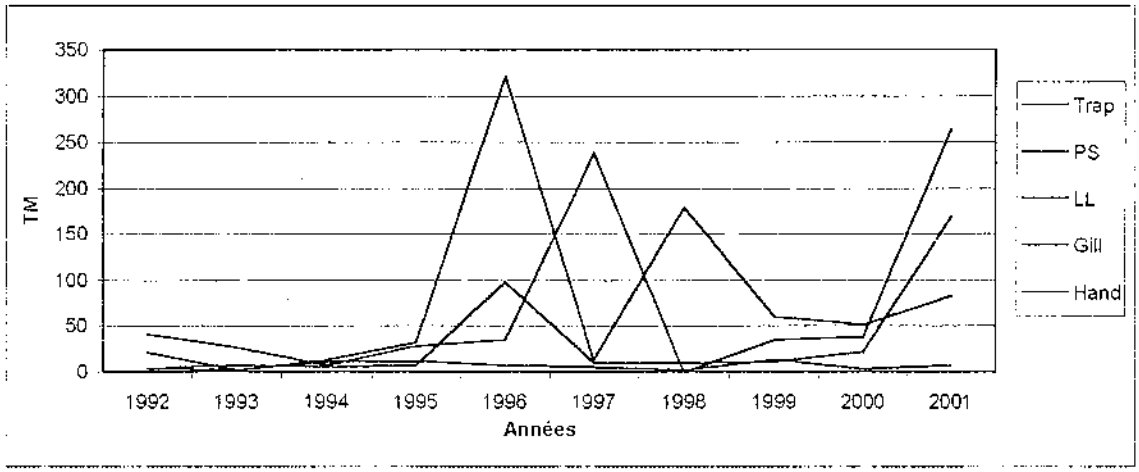

Fig. 3c. Development of swordfish catches (SWO), by gear, in the North Atlantic.

NATIONAL REPORT OF RUSSIA[1]

1. Introduction

In Russia, research work relevant to tunas and related fish species are carried out in the Atlantic Scientific Research Institute of Marine Fisheries and Oceanography (AtlantNIRO), Kaliningrad, and the All-Russian Scientific Research Institute of Marine Fisheries and Oceanography (VNIRO), Moscow. These organizations collect catch and biological statistics and analyze these data, provide operative fishery monitoring, prepare proposals and recommendations required for the operation of tuna vessels. The statistical data in this report are presented on a calendar year basis.

2. The fishery in 2001

No specialized tuna fishery was carried out due to purse seiner repairs. The vessels of the trawling fishery caught 1,053 t of bullet tuna, including 1,028 t in the central eastern Atlantic and 25 t in the southeastern Atlantic Ocean. The bonito catch amounted to 574 t (538 t in the central eastern Atlantic and 36 t in the southeastern Atlantic Ocean).

No tuna purse seiners carried out fishing during the first half of 2002.

3. Research and statistics

As regards skipjack tuna (*Katsuwonus pelamis*), which is presently the object of the world tuna fishery, the possibility of the practical application of environment research in the operative support of the fishing fleet was considered.

The following materials were used in the research work: daily commercial information sent in 1982-2000 from the Russian seiners operating in the open Gulf of Guinea, and the Sierra-Leone and Sao Tomé and Principe zones**.** In addition, data on mean monthly temperature and salinity distribution on the ocean surface and daily maps of sea surface temperature, received from satellites, were used.

An analysis of catch distribution compared to sea surface temperature and salinity was carried out. It was found that catches above 10 t per haul were, as a rule, associated with a temperature range of 24-28ºC and a salinity range of 34-36%. Among the conditions for the formation of aggregations is the availability of thermohaline gradient zones in the specified range, which, in turn, depend on the location of northern and southern tropical fronts and dynamics. An analysis of satellite hydrologic information allows operatively taking into account the developing situation, to predict the areas and time of tuna commercial aggregation formation.

Work on the commercial and biological database on species caught by the Russian tuna fishery from 1959-2000 has been continued in AtlantNIRO. This database includes the data from biological analysis by species, measurements and hydro-meteorological parameters. Materials from 182 trips were processed.

Work was carried out to compile a database on abundance and species composition of whales occurred in tuna scouting and the fishing areas of the purse and longline fishery species. The results of visual observations made on more than 56 trips in the various areas of the Atlantic Ocean during the 1960-1999 period were used. In 5-10% of cases, associated aggregations of tunas and whales were observed in the economic zones of Senegal, Sierra-Leone, Liberia and adjacent waters. The analysis showed that yellowfin tuna (*Thunnus albacares*) of average length (80-100 cm) were reported in association with dolphins, while skipjack, Atlantic black skipjack (*Euthynnus alletteratus*) and *Auxis* spp. were associated with large whales in November-March. In the Gulf of Guinea oceanic skipjack and yellowfin tuna aggregations were associated with large Baleen whales (Balaenopteridae family) in December-February. In the December-January 1976-1977 period, striped dolphin (*Stenella coeruleoalba*) and spotted dolphin (*Stenella plagiodon*), bottlenose dolphin (*Tursiops truncatus*) and pilot whale (*Globicephala melaena*) predominated in the area of Sierra Leone.

[1] Original report in English.

Cetacea distribution in the area was heterogeneous. The major aggregations of striped, spotted and bottlenose dolphins, pilot whale and tunas were concentrated in the northern part of the area (8-9ºN and 13º50'-14º20'W). A significant number of striped dolphins and spotted dolphins (about 200 head) were observed southwards off Sherboro Island. There were up to 60 head of striped dolphins, up to 20 head of bottlenose dolphins, and up to 10 head of pilot whales. Striped dolphins were observed at depths from 20 to 200 m, spotted dolphins from 30 to 40 m, and bottlenose dolphins and pilot whales were distributed in depths of 40 m. During the next season the species proportions changed, with a predominance of bottlenose dolphins, a decrease in the number of striped dolphins, and the absence of pilot whales.

Cetacea aggregations on the Sierra-Leone shelf were associated with the area of the highest biological productivity, due to the peculiarities of the hydrological regime. In this area large aggregations of small tunas and other pelagic fishes (*Trachurus trecae*, *Sardinella aurita*, *Chloroscombrus chrysurus,* etc.) were observed.

4. Implementation of ICCAT conservation and management measures

In the trawl fishery within the areas where tunas and tuna-like species occurred in the catches, ICCAT requirements and recommendations concerning the ban on fishing for species under quotas and restrictions on catches of juvenile yellowfin and bigeye tunas were applied.

NATIONAL REPORT OF SOUTH AFRICA[1]

1. National fisheries information

Early records (mainly from recreational shore anglers) of tuna fishing in South Africa date back to the 1950s. Commercial longlining for tunas started in the early 1960s, but ceased beyond the mid-1960s in favour of other more lucrative developing fisheries. Since the 1970s, the South African tuna fishery has essentially been a surface pole and line fishery that targets tunas (mainly albacore) in near-shore waters off the west coasts of South Africa and Namibia. There have been approximately 100-200 commercial vessels active in this fishery since 1978. In addition, numerous small sports craft (5-8m) fish for albacore and other tunas with rod and reel off the Cape Peninsula.

In the early 1990s the South African authorities received applications to re-develop a local longline fishery. However, policy development regarding the allocation of fishing rights, delayed the issue of permits, and the first permit for experimental longline fishing was issued only in 1995. Thirty experimental longline permits were originally allocated in 1997, but reduced to 25 in 2001. The experimental longline fishery initiated in 1997 was intended as a tuna directed fishery, with swordfish by-catch limited to 15% per landing. However, the vessels are equipped with American mono-filament gear and light sticks, and swordfish have comprised the bulk of their catch. Initially the swordfish contribution to the catch in the experimental longline fishery was high (70% or 467.8 t dressed weight in 1998), but this was reduced to 35% (125 t dressed weight) in 1999 through the implementation of strong measures to limit the swordfish catch. In response to the stringent limits on swordfish catches imposed by the South African authorities, some South African longline vessels moved to Namibia. Catches made by those vessels have been reported to ICCAT as Namibian catch. It is noted, however, that international import figures reflect both Namibian and South African catches for 1999 as South African. During 2000, South Africa lifted the swordfish by-catch limit and declared a country catch limit of 1000 t dressed weight.

During 2001, South Africa issued permits to foreign longline vessels from Japan (69) and Chinese Taipei (28) to fish for tunas (and associated species) within the South African EEZ, in terms of bi-lateral fisheries agreements.

The total reported domestic landings for 2001 per species were as follows: albacore (6 070 t), swordfish (494 t including 229 t in the IOTC Convention area), yellowfin tuna (317 t), bigeye tuna (167 t) blue shark (82 t) and mako (79 t). **Table 1** further divides this information by fishing sector and provides total reported fishing effort. Total reported albacore landings by poling vessels was more than double that for 2000. This large increase in catch in 2001 was probably the result of favourable environmental factors increasing the availability of albacore in nearshore waters. Swordfish landings have doubled since 2000 despite a 20% decrease in the number of hooks deployed. This is possibly attributed to a combination of factors including, fishers being more experienced in targeting swordfish and, secondly, the expansion of fishing effort onto new fishing grounds in the vicinity of the Walvis Ridge (ICCAT region), and the area east of Kwazulu-Natal (IOTC region) in the latter part of the year. The tuna longlining fleet accounted for 24% of the yellowfin and bigeye tuna landed in 2001 as apposed to 69% in 2000. This difference possibly reflects a change in fishing area of the longline fleet and emphasizes the targeting of swordfish.

Size frequency distributions are presented for albacore, swordfish, yellowfin, and bigeye tunas **(Figure 1)**. The mean fork length of albacore landed by the poling fleet was 78.9 cm. Although this is a decrease in mean size in comparison to recent years no trend is discernable as albacore mean size has fluctuated between 77 and 82 cm over the last decade. The mean lower jaw fork length (LJFL) recorded for the swordfish catch in 2001 (171.3 cm) is greater than that recorded for 2000 (166.6 cm), but less than that for 1998 (184.5 cm). The longline fleet expanding its fishing effort onto new fishing grounds as stated above could possibly explain the increase in mean LJFL. The mean fork lengths of yellowfin and bigeye tuna were 146.3 cm and 133.9 cm, respectively.

[1] Original report in English.

2. Research and statistics

2.1 Albacore

Although a logbook system to monitor linefishing vessels (including the tuna fleet) was implemented in 1985, reported catches proved to be unreliable with substantial under-reporting in some years. Consequently dealer returns were used to monitor total catch levels, and to validate catch statistics reported to ICCAT. However, in 1998 it was shown that even with the dealer returns, the estimated annual albacore catch was lower than the Customs and Excise records of the amount of South African caught albacore exported each year for the period 1993 to 1996. Customs and Excise records are probably the most reliable estimate of annual total albacore catch because: a) almost all of the albacore catch is exported, and; b) the amounts of fish exported are precisely known. Therefore, the estimated total tuna catch for the South African fleet reported to ICCAT from 1993 onwards, are based on Customs and Excise data **(Table 2, Figure 2)**. Although catch reporting has improved and there was close agreement between the reported catch and the Customs and Excise records for 2000, the Customs and Excise data will still be reported as the most accurate and reliable reflection of the South African albacore catch.

2.2 Swordfish

The total reported swordfish landings were again under-reported for 2001 as certain longline vessels continued to fish under Namibian permits. A more reliable estimate of the total swordfish landings by South African longline fleet is provided by U.S. trade statistics, which imported 791 t of swordfish from South Africa. The unknown proportion of the catch (i.e. the difference between U.S. trade statistics and total reported South African landings) can be allocated to the ICCAT region, resulting in an estimated catch of 562 t of swordfish in the ICCAT region by the South African longline fleet.

Genetic samples were collected from swordfish caught along the west, south and east coast of South Africa. Preliminary analysis indicate that both Indian and Atlantic swordfish stocks are caught along the south coast of South Africa. Biological samples have been collected since the inception of the experimental fishery with the aim of developing growth curves for males and females as well as to understand migration patterns of swordfish.

3. Implementation of ICCAT conservation and management measures

3.1 Albacore

At the 1998 ICCAT commissioners meeting, the four parties actively participating in the fishery for southern Atlantic albacore (Brazil, Chinese Taipei, Namibia and South Africa), were requested to submit bimonthly summaries of catches to South Africa in order to monitor progress toward filling the ICCAT recommended TAC for southern albacore. This management measure has failed each year since its implementation because of the erratic nature of submitting catch data, and South Africa once again urges the Commission to devise an alternative management measure.

3.2 Swordfish

South Africa was excluded from the sharing arrangement for South Atlantic swordfish and has not been granted a swordfish allocation for the ICCAT Convention area. However, as a developing Nation and coastal state with swordfish in her waters, South Africa has lodged an objection to the sharing arrangement. In addition, only part of the South African EEZ falls within the ICCAT convention area, and there is some evidence to suggest that swordfish caught in the South African EEZ originate from both Indian and Atlantic stocks. South Africa has implemented a self-imposed 1000 t catch limit for swordfish, and has a developing swordfish fishery.

4. Inspection schemes and activities

A total of 2123 albacore were measured during 12 port-sampling trips undertaken in 2001.

An observer scheme was launched in 1998, with the first observer placed on a local longline vessel in November. The scheme was subsequently expanded upon and in 2001 24% observer coverage of 115 domestic tuna longline fishing trips was attained.

South Africa received monthly, summarised catch returns from Japan and six-monthly summarized catch returns from Chinese Taipei with regard to foreign vessels fishing within SA EEZ. However, neither validation of these returns, nor independent evaluation of catches (except for one observer trip aboard a Japanese vessel) was conducted.

Table 1. Catch (t) and effort data reported for the South African poling, sport, tuna and shark longline fleets for 2001 in the ICCAT region

		Catches by species (in t)					
Fishing sector	*Total effort*	*ALB*	*SWO*	*YFT*	*BET*	*BSH*	*SMA*
Poling	6,137 sea days	5587	0	230	104	1	2
Sport	Unavailable	377	0	18	0	0	0
Tuna longline	830,320 hooks	100	265	57	59	39	16
Shark longline	120,213 hooks	6	4	12	4	42	61
	Total	**6070**	**269**	**317**	**167**	**82**	**79**

Table 2. Annual total albacore catch (t) estimated from logbooks and deal returns for 1985-1996 and the total nominal mass (t) of South African caught albacore that was exported per annum 1993-2001.

Year	*Dealer returns*	*Exported*
1985	6697	
1986	5930	
1987	7275	
1988	6570	
1989	6890	
1990	5280	
1991	3410	
1992	6360	
1993	6743	6881
1994	5268	6931
1995	4246	5213
1996	2856	5635
1997		6708
1998		8412
1999		5101
2000		3610
2001		7236

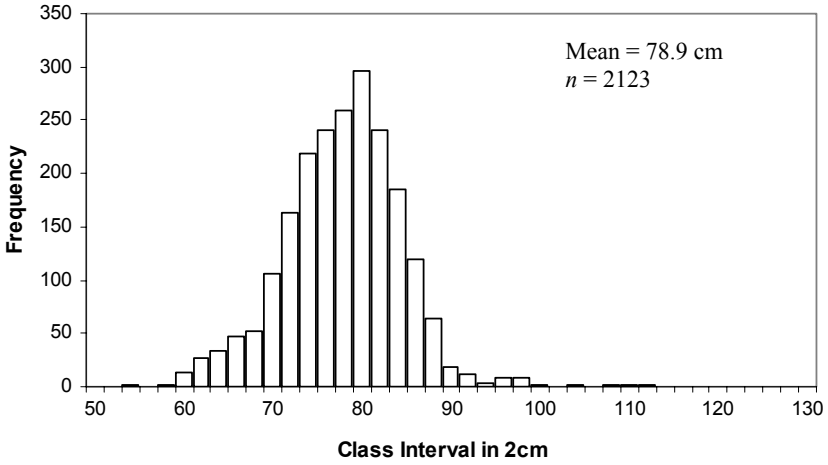

Fig. 1a. Length frequency distribution of albacore catches made by South African poling fleet in ICCAT region for 2001 as measured by port samplers.

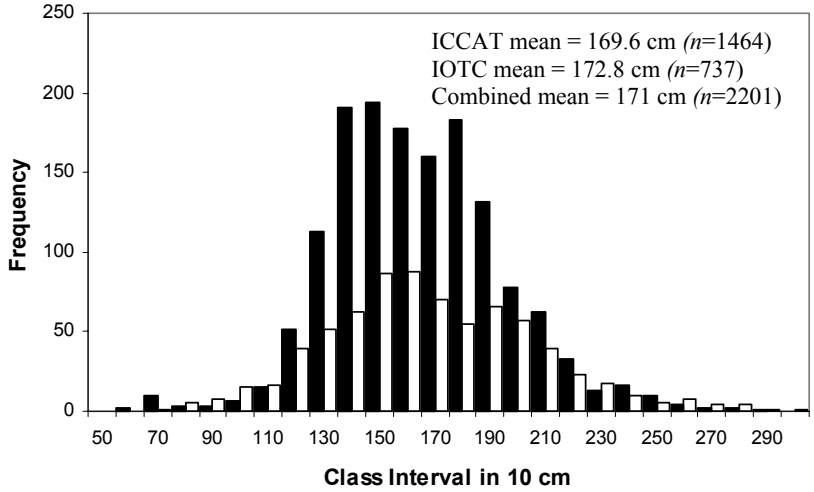

Fig. 1b. Length frequency distribution of the swordfish catches made by the South African tuna longline fleet as measured by onboard observers and split by ICCAT (dark bars) and IOTC (pale bars) regions for 2001.

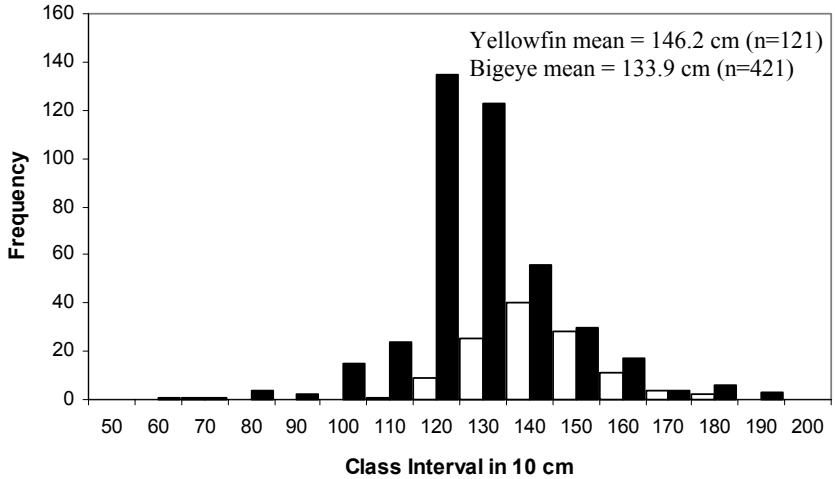

Fig. 1c. Length frequency distribution of yellowfin (pale bars) and bigeye tuna (dark bars) made by the South African tuna longline fleet as measured by onboard observers in the ICCAT region for 2001.

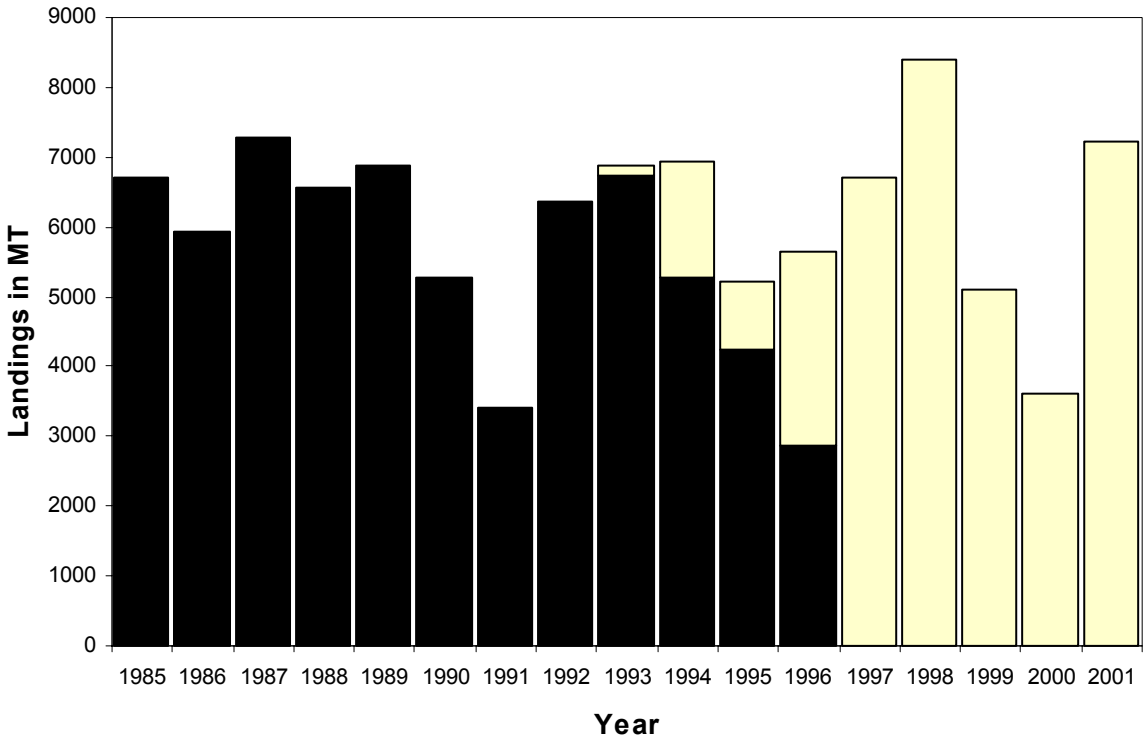

Fig. 2. South African annual albacore catches (nominal mass) in recent years estimated from logbooks and dealer returns (1985-1996, dark bars) and annual exports of South African caught albacore (1993-2001, pale bars).

NATIONAL REPORT OF TRINIDAD & TOBAGO[1, 2]

1. National fisheries information

During 2001, approximately 20 semi-industrial vessels, 1305 artisanal vessels and 73 recreational vessels participated in the fishery for tuna and tuna-like species. Landings from nine semi-industrial and 1,190 artisanal vessels totaled 3,324 t. The recorded landings comprised yellowfin tuna, albacore, bigeye tuna, broadbill swordfish, Atlantic bonito, wahoo, Atlantic blue marlin, Atlantic white marlin, Atlantic sailfish, king mackerel and serra Spanish mackerel.

2. Research and statistics

2.1 Landings and effort data

Semi-industrial/ industrial fleet

A new data collection system was implemented in late 2001 to capture more accurate catch data from the Trinidad-based fleet. This data collection form is called a 'Trip Report' since the data are recorded after the vessel lands. Vessel owners submit the information to the Fisheries Division. The long-term aim is a logbook system. Presently, vessel captains are generally unable to cope with a logbook system.

3. Implementation of ICCAT conservation and management measures

3.1 Reporting (Compliance) tables

Trinidad and Tobago wishes to query its 2002 quota/catch limit for north stock Swordfish, 50.32 t. The objection is based on the adjustment of the catch limit that was approved as a result of the ICCAT technical assistance program implemented in April 2001 by the ICCAT Systems Analyst, Mr. Papa Kebe. This initial adjustment was based on a partial revision of the data submitted in Mr. Kebe's Report (COM-SCRS/01/017) and in the 2000 National Report of Trinidad and Tobago, and further adjustment is to be based on verification that the countries in which longline vessels owned by Trinidad and Tobago nationals were registered (United States, St. Vincent and the Grenadines and the British Virgin Islands) had not previously reported catches from these vessels to ICCAT. Reference is made to the Resolution by ICCAT on the Interpretation of the Recommendation by ICCAT to establish a Rebuilding Program for North Atlantic Swordfish. Mr. Kebe's memorandum of May 17, 2002 suggesting that the data for locally owned foreign-flagged vessels be included in the ICCAT database is also relevant.

All figures submitted in the appendix tables represent catches for the calendar year.

3.2 Implementation of the ICCAT Management Standard for Large-Scale Tuna Longline Vessels

Not applicable to Trinidad and Tobago presently. All local vessels are less than 24m in overall length.

3.3 Observer program

An observer program that will cover the semi-industrial/ industrial longline fleet fishing out of Trinidad will be implemented in 2002. Observers will be trained to collect catch, effort, biological and oceanographic data during fishing trips. Additionally, participants will be trained with regard to relevant national and international (including ICCAT) laws and regulations.

[1] Original report in English; appendices available from the Secretariat.
[2] Fisheries Division. Ministry of Agriculture, Land and Marine Resources.

NATIONAL REPORT OF TUNISIA[1]

Abdallah Hattour[2]

1. Introduction

The fish commonly grouped under the category of large pelagic species occupy an import place in the Tunisian economy since they constitute a preferential product for the export market. In effect, these products are in large part exported to Spain, Japan and to other European countries. Among these species, particular note is made of bluefin tuna (*Thunnus thynnus*) and Atlantic black skipjack (*Euthynnus alletteratus*) that continue to also supply a local industry, since a large of these fish are canned.

The fishing gears used in Tunisia to catch these species are quite varied. Particular note is made of the purse seiners that were very active throughout the year, the longliners that mainly target swordfish, and the traps. Lastly, the artisanal fishery with lights and the hand lines used by the trawlers contribute to the catch.

2. Information on the fisheries

The large pelagic fish exploited by the Tunisian fishers are bluefin tuna (*Thunnus thynnus*), Atlantic black skipjack *Euthynnus alletteratus*), Atlantic bonito (*Sarda sarda)*, bullet tuna (*Auxis rochei*) and swordfish (*Xiphias gladius*).

2.1 Fishing areas

Bluefin tuna are mainly caught by purse seiners in waters off the northern coast of the country up to the area bordering on Libya where, in recent year, they have been competing with French and Italian fishers during the months from April to June. Since the early 1980s a particular rhythm has been established affecting the tuna activities of the purse seiners. Due to an ever-increasing demand for their fishing products (bluefin tuna), these vessels annually frequent fishing areas that have become traditional. They fish from October to March in the Gulf of Gabès to close to the Tunisian-Libyan border. They target average size fish from 25 to 70 kg destined exclusively for export. They then fish from April until the end of June following the drift of the spawners that take them from North of the country to the extreme South. A large part of these catches are exported live, while the remainder are for local consumption and processing. The weights of these fish vary between 50 kg to more than 250 kg.

As regards swordfish, the major part of the effort is concentrated off the northern coast of the country. Nevertheless, since 1998, this activity has extended all along the Tunisian coast. In fact, in 2000 and 2001, the southeast area contributed more than 80% of the national catches of this species.

Small tunas are caught all along the Tunisian coast.

The ports of Tabarka, Bizerte, Kélibia, Mahdia and Sfax comprise the major landing ports for these species.

2.2 Fishing techniques

2.2.1 Purse seine

Introduced in 1977, at the initiative of the *Office National des Pèches* (ONP), the number of these tuna vessels has increased spectacularly, due to the important profits these vessel earn. **Table** 1 and **Figure 1** give an idea of the development of the number of these vessels. The hulls and most of the structure of these vessels are

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made of wood; they measure between 15 and 38 m in length, have a registered tonnage of 17.98 to 298 tons, and have 100 to 999 HP diesel engines.

Up to 1998, about 69 tuna purse seiners fished tuna along the Tunisian coast (DGPA, 1999). However, their number, which had not stopped increasing until 1977, started to decline due to the conversion of a larger number of these vessels (of small or average size) to trawlers **(Table 1)**. In 2001, a slight increase was reported due to the return of seven vessels to their original activity **(Table 1, Figure 1)**.

Currently, purse seine landings of bluefin tuna currently comprise 97% of the national catches.

2.2.2 Trap

Two traps are set to the North of Tunisia, precisely in the Gulf of Tunis, comprised of the Sidi Doud trap, the Ras Lahmar trap and, in 2002, a third is set at El Haouaria. All these traps are managed by private companies.

These gears are based on an ancestral principle: to catch the fish that are headed towards the eastern Mediterranean to spawn in the waters that have a specific temperature and salinity. During their migration, the tunas have to go through the Strait of Sicily, generally close to the northern coast of Tunisia.

The fishers knew that the tunas were present after the third week of May in the Gulf of Tunis, where the traps are set. This presence occurs until early June. The variations in the dates of the presence of these fish in recent years are due to environmental influences. Currently, bluefin tuna are caught from early April until the end of May.

These gears target bluefin tuna and some small tunas, mainly Atlantic black skipjack and Atlantic bonito. Other species are also caught as by-catch, such as swordfish and some shark species.

This fishery is constantly affected by the effects of current international fishing conditions on bluefin tuna and similar species, in international waters of the Mediterranean and the Atlantic.

We believe that in the current state, any measure that aims at avoiding the disappearance of this gear should be encouraged, without prejudicing nearby activities, in order to achieve harmony between the trap tradition and production or profit making.

The traps are fixed passive gears that cannot cause any damage to the environment or to the stock of fish they catch. Besides, the idea of conservation and management cannot be resorted to for this gear, given the relatively small proportion of its catch compared to all the other gears that target the same species.

Mediterranean trap catches are close to 2.5% of the regional production of bluefin tuna and are far from being compared to the catches by purse seiners that are close to 50% of the Mediterranean production of this species.

On the other hand, in the countries where this gear is still in use (Italy and Spain), efforts are being made to maintain this tradition (for example, the tourist aspect has been exploited to increase income for their proprietors).

This awareness comes from the fact that the international fishing conditions for bluefin tuna and other large pelagics (Mediterranean and Atlantic high seas) has, in light of the catches, made the use of this gear random and unable to continue, but what is certain is that if this activity is not is fortified, it could disappear in the very near future.

In effect, the traps have undergone a spectacular decline in catches, as shown by **Table 2** and **Figure 2**, which seems to us very revealing and reflects the bluefin tuna catches in number of fish and in weight.

2.2.3 Hand line

Since some years ago, trawl vessels have been carrying out hand line fishing, as a supplemental activity. This activity is carried out almost the entire year. The total catches, which are all accessory, are on the the order of 50 t in the national landings of this species.

2.2.4 Longline

Currently, about 40 vessels are fishing in Tunisian waters **(Table 3)**. The four major ports for swordfish landings are: Tabarka, Bizerte, Teboulba and Mahdia.

We have received information on the activities of two longline vessels fishing bluefin tuna and we expect to receive other information relative to their catch and effort.

2.3 Catches

The estimated national catches of large pelagics are estimated at about 8,580 tons for 2001, thus showing an important increase of 30.7% as compared to 2000, i.e., 2,020 t.

In terms of proportion, the landings of large pelagics represent 8.7% of the national aquatic production (98,628 t). On the other hand, in terms of value of the catches, tunas contribute to the total aquatic resources with 20,711 million dinars, which is more than 164% as compared to last year.

2.3.1 Bluefin tuna

During the course of 2001, landings of bluefin tuna reached 2,513 t, showing an increase of 329 t over those of 2000. This increase affected particularly the purse seine and hand line catches, which were 298 t and 33 t, respectively. The trap landings, as was pointed out above, have undergone a sharp decline, to only 3 t in 2001 **(Table 6, Figure 4)**.

The monthly catches for all gears combined show that maximum catches are attained during the months from May to June of each year and, secondly during the months of April and July. It is noted that the national catch of bluefin tuna does not seem to have undergone important variations in recent years **(Table 4, Figure 3)**.

Purse seine bluefin tuna catches are very important, making up the majority of the national catches (97%, **Table 5, Figure 4**). The traps were the main source of the catches of this species but their role has diminished and only represented 0.2% of the national catch in 2001 **(Table 5)**, with a catch of 3 t for the two active traps in 2001.

2.3.2 Small tunas

In 2001, small tuna catches amounted to 5,628 t, showing a substantial increase of 1,735 t (44% of the total catch of small tunas in 2000). The catch reports shows that during 2001 bullet tuna comprised more than 40.7% of the landings of this group of species, followed by Atlantic bonito, with 21% of the catches, and Atlantic black skipjack with 18.4%. The rest (17.6%) was comprised of all other unidentified small tunas **(Table 6)**.

As in the past, these figures are presented with considerable reservation due to mis-identification of the species. Since more than two years ago, we have started to make the services concerned with statistics more aware of the importance that should be assigned to species identification. Some illustrated fishing logbooks have been distributed through the fishermen´s union and the administration.

An important part of this catch corresponds to the purse seiners, the lámparos and other coastal gears. Small tunas currently comprise more than 95% of the trap catches.

2.3.3 Swordfish

Swordfish fishing in Tunisian waters is gaining more and more importance. This is an activity that has generalized all along the coast. In 1992, this fishing was restricted only to the northern coast of the country.

The increase in effort and the expansion of the activity of the longliners targeting this species have resulted in an increase in the catches, that amounted to 567 t in 2001, an increase of 84 t as compared to the previous year **(Table 6, Figure 5)**. This also applies to the provisional catches reported for 2002, since the landings in the first seven months of 2002 have reached 758 t, an increase of 191 t.

2.4 Commercialization and export

Up to 2000, the sales of bluefin tuna from the purse seiners was done exclusively according to agreements between the tuna vessel owners and any wholesales and throughout the period of the purse seiner's activity. Each fish wholesales will thus be in charge of all the commercialization operations of the fishing products, especially bluefin tuna.

It should be noted that prior to their export, the bluefin tuna pieces under go a quality text (freshness and fat content), the products that do not meet these standards are stored for their processing to canned products or released for domestic consumption.

In 2001, bluefin tuna fishing was carried out by a group of tuna purse seiners which, after fishing, discharged the product to cages specifically conceived for this purpose. The fish are then transported to Cartagena in Spain where they are fattened before export to Japan. The statistics of the *Direction Générale de la Pêche et de l'Aquaculture* have reported that close to 1,400 t of bluefin tuna were exported in this manner to Spain. In 2002, these quantities increased to about 2,000 t, comprised of fish whose average size varied between 50 and 50 kg.

3. Implementation of the conservation and management measures adopted by ICCAT

In applying the ICCAT recommendation, the General Director of Fisheries, supported by the Ministry of Agriculture and with the support of the research and professional organizations, periodically organizes sessions with the boat owners, vessel captains, regional authorities, fish traders, etc., inform on and clarify the measures adopted by ICCAT and which evidently affect the fishing of large pelagic species.

The objective of these sessions is to explain to all those concerned the measures that affect the activities of the sector.

In this way, for example, they were informed of the prohibition on the of landing under-size fish, establishing a minimum commercial size of bluefin tuna, the close purse seine season from July 16 to August 15, and the prohibition on the use of spotter planes during the month of June, etc.

It should be noted that there is a permanent mechanism in Tunisia to monitor fishing activities, the implementation of current regulations related to gears, to geographic areas where these operate and to the legality of such activity with regard to the period authorized. It also monitors landings and compliance with regulations on minimum sizes for all the aquatic resources fished.

Further, there is a statistical data collection network that covers the landing points. This was created so that the competent authorities know and monitor the level of the catches of those species or groups of species that are under some type of restriction.

4. Research activites on large pelagics

As concerns reserach activities, Tunisia continues to participate in COPEMED research activities, through the *Institut National des Sciences et Technologie de la Mer* (INSTM). The objective of this regional cooperative research program among some countries in the COPEMED area is to study the fishing, ecology and biology of bluefin tuna and swordfish, with an aim to improving the current state of knowledge on these species

The terms of reference of this study are as follows:

- Establish and conduct a sampling program and monitoring of the fisheries for large pelagics and collect basic data on the fisheries (catches, species composition, geographic breakdown, catch rate, effort, etc.);
- Carry out studies aimed at obtaining biological parameters such as migration, growth, spawning period, age at first sexual maturity, fecundity, etc.;
- Carry out studies aimed at stock structure (Analysis of bluefin tuna and swordfish DNA sequences);

Various scientific documents were presented to the SCRS working group meetings and the GFCM/ICCAT joint meeting. Attached herewith is a list of scientific documents that the INSTM submitted to the aforementioned groups:

- SCRS/01/126 Preliminary standardized catch rates for bluefin tuna *(Thunnus thynnus)* from the trap fishery in Tunisia. Hattour, A., J.M.Ortiz de Urbina.
- SCRS/01/128 Bluefin tuna maturity in Tunisian waters: A preliminary approach. Hattour, A., D. Macias, J.M. de la Serna.
- SCRS/01/163 La pêche de thon rouge *(Thunnus thynnus)* à la senne tournante dans les eaux tunisiennes (Préliminaire). Hattour, A.
- SCRS/02/050 La pêche du thon rouge à la senne tournante en Tunisie au cours de 2001. Hattour, A.
- SCRS/02/051 Relation taille-poids de captures de thon rouge en Tunisie. Hattour,A.
- SCRS/02/052 Analyse de l'indice gonado-somatique du thon rouge capturé par les senneurs tunisiens. Hattour, A.
- SCRS/02/053 Analyse du sex ratio par classe de taille du thon rouge capturé par les senneurs tunisiens. Hattour, A.
- SCRS/02/108 Updated standardized catch rates for bluefin tuna *(Thunnus thynnus)* from the trap fishery in Tunisia. Hattour, A., J. M.Ortiz de Urbina.

Table 1. Development of the number of tuna purse seiners in Tunisia, 1977-2001

Year	*Number of vessels*	*Year*	*Number of vessels*	*Year*	*Number of vessels*
1977	2	1986	43	1995	67
1978	3	1987	37	1996	66
1979	7	1988	45	1997	72
1980	16	1989	41	1998	69
1981	22	1990	45	1999	60
1982	37	1991	55	2000	45
1983	41	1992	62	2001	52
1984	42	1993	65		
1985	43	1994	65		

Table 2. Development of the bluefin tuna catches in the Sidi Daoud trap, 1931-2001

Year	*Number*	*Weight (t)*
2001	50	2.685
2000	49	4.279
1998	247	13.185
1995	553	20.078
1985	697	73.475
1950	4,254	432128
1931	3,326	447.338

Table 3. Characteristics of Tunisian longliners targeting swordfish

No. of vessels	*Lengths (m)*	*Tonnage (t)*	*Horse power (Hp)*
42	10-16.7	7-20.3	45-115

Table 4. Monthly catches of blufin tuna in recent years (all gears)

Month	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002**
January	132	39	24	77	4	21	32	1
February	51	8	105	13	12	41	0	19
March	129	290	125	418	40	140	205	132
April	237	506	112	28	413	152	5	93
May	417	205	78	110	173	138	650	329
June	363	965	1503	926	1542	1201	1170	1541
July	284	315	146	142	99	404	401	219
August	10	28	5	3	2	11	0	0
September	9	7	3	6	2	26	0	0
October	101	2	34	10	9	17	23	0
November	17	2	14	5	36	6	17	0
December	147	25	50	8	19	26	12	0
Annual total	**1,897**	**2,392**	**2,199**	**1,746**	**2,351**	**2,184**	**2,513**	**2,335**

* Catches estimated for the first seven months of 2002.

Table 5. Bluefin tuna catches, by type of fishery, 1990-2002

Type of fishery	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002**
Purse seine	114	1,073	975	1,997	2,523	1,617	2,147	1,992	1,662	2,263	2,134	2,432	2,311
Trap	249	243	175	92	169	223	154	95	35	46	13	3	15
Hand line	43	50	45	43	81	57	92	113	48	43	37	58	15
Total	**461**	**1,366**	**1,195**	**2,132**	**2,503**	**1,897**	**2,393**	**2,200**	**1,745**	**2,352**	**2,184**	**2,513**	**2,335**

* Provisional data.

Table 6. National catches of small tunas, 1990-2000

Species	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002**
E.alletteratus	2,113	1,343	664	242	204	696	824	333	1,113	752	1,453	1,036	639
Sarda	488	305	643	792	305	413	560	611	855	1,350	1,528	1,183	920
Auxis	985	985	35	20	13	14	13	26	87	38	7	2,292	648
Unidentified			20	309	105	115	215	657	6	814	905	989	693
Total	**3,586**	**2,633**	**1,363**	**1,363**	**627**	**1,238**	**1,612**	**1,630**	**2,061**	**2,954**	**3,893**	**5,628**	**2,900**

* Provisional data.

Table 7. National catches of swordfish, 1990-2002

Year	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002**
Swordfish	176	181	178	354	298	378	352	346	414	468	483	567	758

* Provisional data.

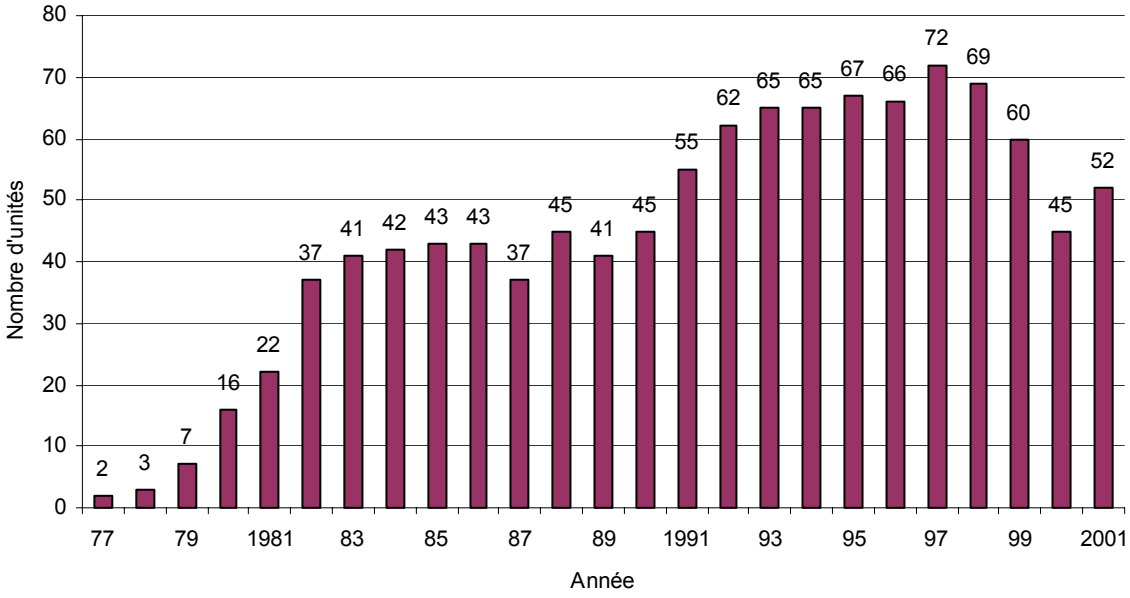


Fig. 1. Development of the number of purse seiners in Tunisia, 1977-2001

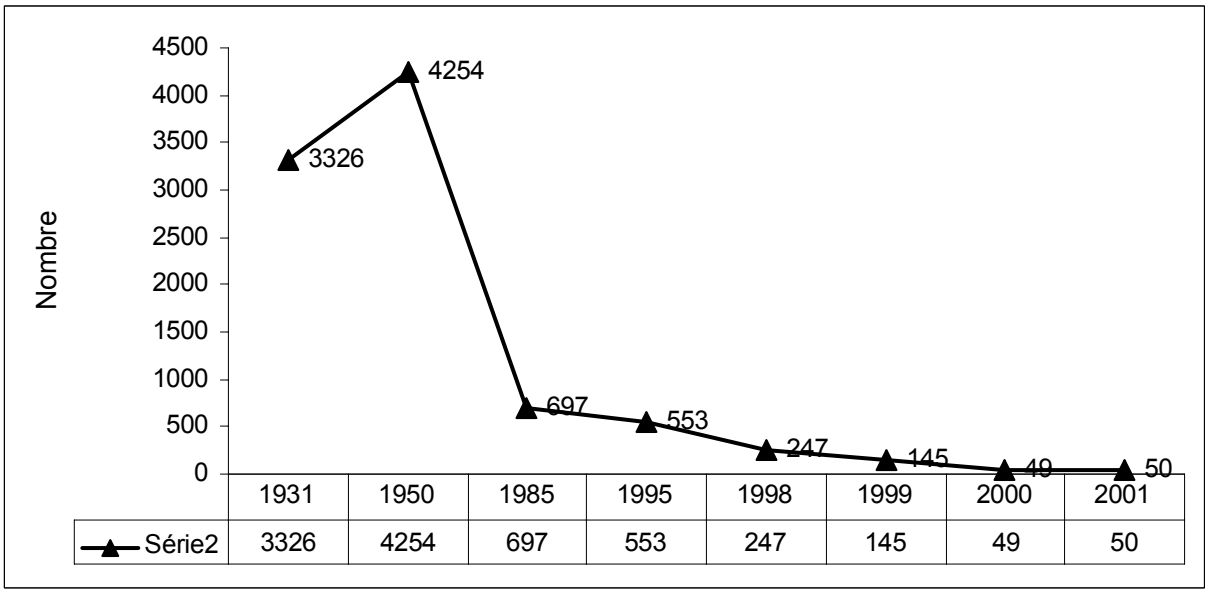


Fig. 2. Development of bluefin tuna catches (in number of fish) in the Sidi Daoud trap, 1931-2001.

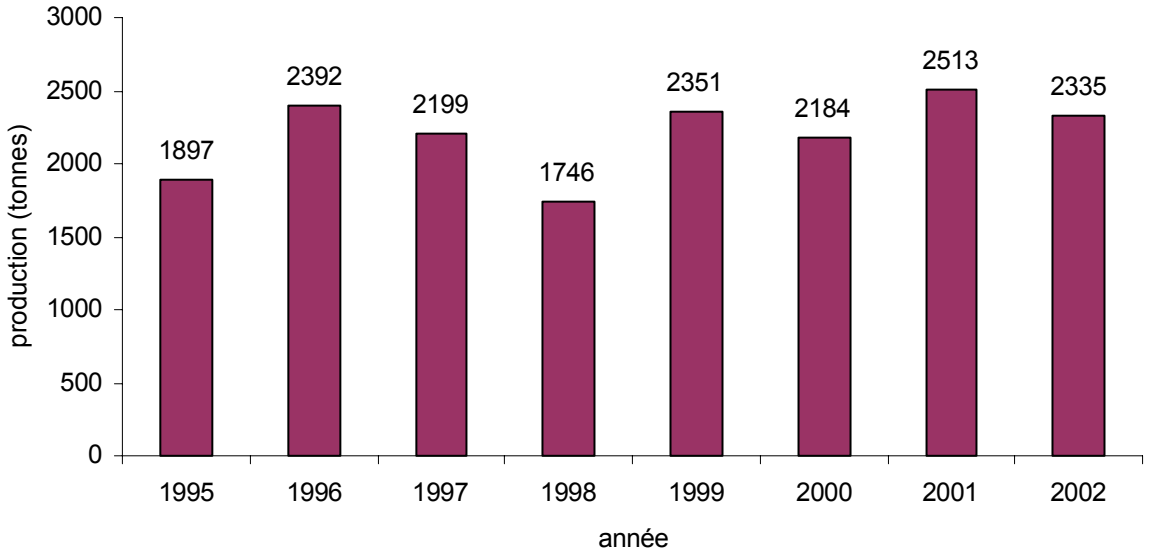


Fig. 3. Variation in the annual catches of bluefin tuna (all gears), 1995-2002.

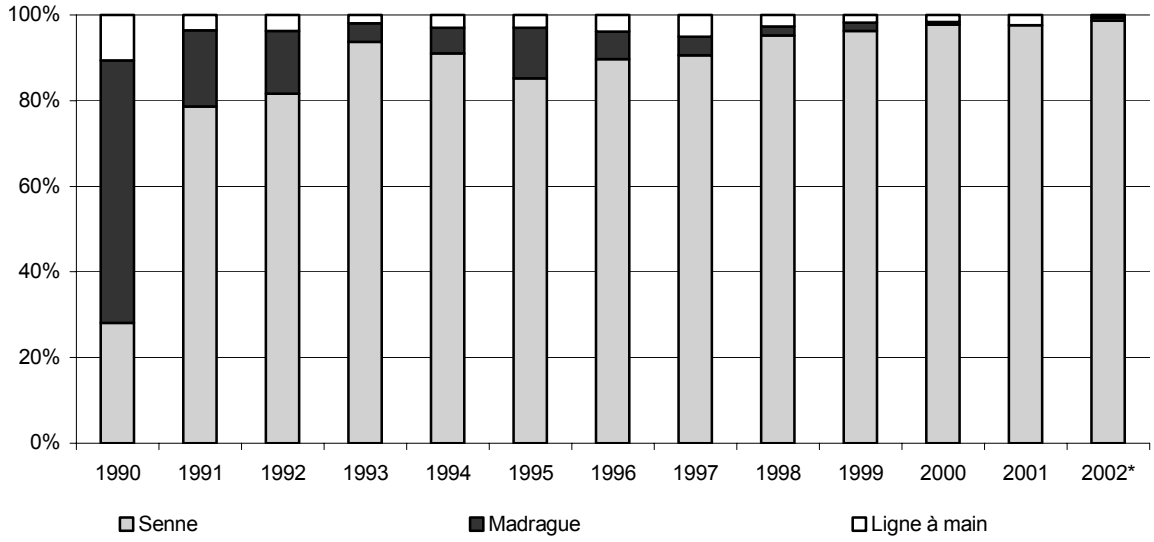


Fig. 4. Relative proportions of bluefin tuna in the annual landings, by fishing type, 1990-2002.

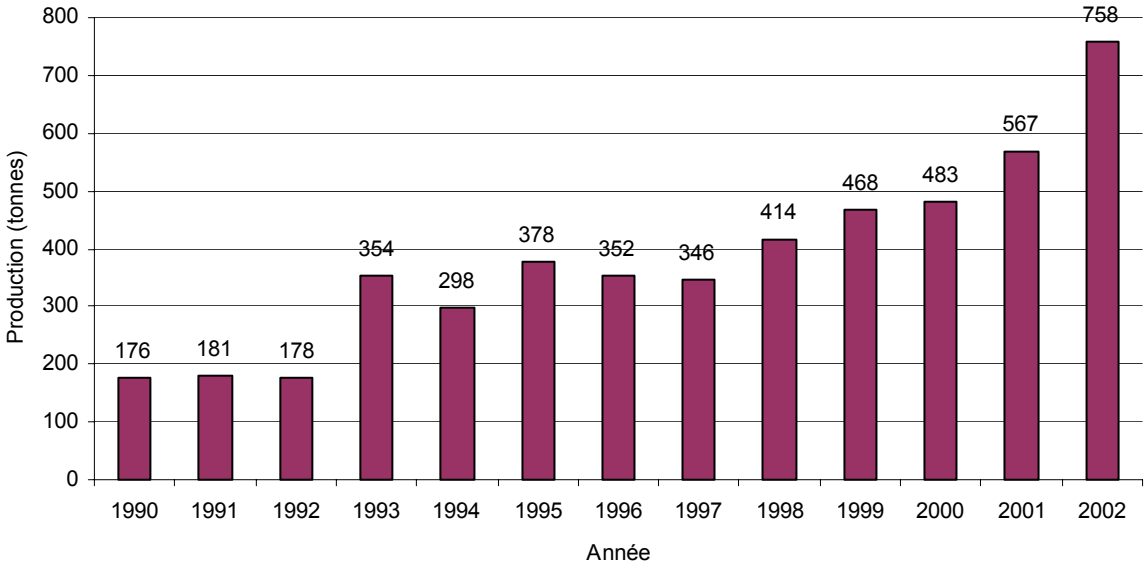


Fig. 5. Development of swordfish landings, 1990-2002.

NATIONAL REPORT OF UNITED KINGDOM (OT)
(Bermuda)[1]

The Bermuda commercial fishing fleet for tuna and tuna-like species consisted of 211 vessels during the year 2001 with approximately one-third of the vessels actively fishing for these species. Most of the fishing effort is carried out in the inner 50 km of the Bermuda Exclusive Economic Zone. Longline operations work considerably further offshore.

The Bermuda domestic fleet is made up largely of fiberglass commercial fishing vessels although there are some purpose-built steel longline vessels. All Bermuda-based longliners arc equipped with an Andronics satellite-based vessel monitoring system (VMS).

In 2001, the total catch of tuna and tuna-like species was 108 metric tons. Details of the catch composition are presented in **Table 1**.

Bermuda continued to be involved in the ICCAT Enhanced Program for Billfish Research. A study on the post-release survival of blue marlin caught on longlines utilizing pop-up satellite tags continued this year. The Bermuda Division of Fisheries continues to be engaged in a number of regional research programs directed at various pelagic species including wahoo and yellowfin tuna.

Regulations were passed and came into force in 2001which introduced minimum sizes of retention for blue marlin (250 lbs / 114 kg) and white marlin (50 lbs / 23 kg).

During the summer of 2002, Bermuda was involved on the Steering Committee for Central North Atlantic Bluefin Tuna Research, which conducted exploratory longline fishing operations to collect data on the presence of bluefin tuna in the central North Atlantic.

Scientists act as observers on fishing vessels when sampling pelagic species as well as conducting tagging programs. The collection of scientific data on billfish and other species is ongoing. Data collection helps to ensure compliance with management measures as well as providing the material for research programs. Recreational fishing for tuna and tuna-like species is monitored as well, thus ensuring compliance with all ICCAT recommendations.

Table 1. Summary table of catch of tuna and tuna-like species by Bermuda, 2001

Species	*Weight (t)*
Yellowfin tuna	37
Bluefin tuna	1
Bigeye tuna	<1
Blackfin tuna	4
Albacore	2
False albacore	1
Skipjack tuna	<1
Wahoo	56
Blue marlin	2
White marlin	< 1
Swordfish (North Atlantic)	2
Total	**108**

September, 2002.

[1] Original report in English

NATIONAL REPORT OF THE UNITED STATES[1, 2]

1. National fisheries information

Total (preliminary) reported U.S. catch of tuna and tuna-like fishes (including swordfish, but excluding other billfishes) in 2001 was 25,747 t, an increase of about 6% from 24,202 t in 2000. Estimated swordfish catch (including estimated dead discards) decreased 913 t to 2,568 t, and provisional landings from the U.S. fishery for yellowfin in the Gulf of Mexico decreased in 2001 to 2,043 t from 2,214 t in 2000. The estimated 2001 Gulf of Mexico landings of yellowfin tuna accounted for about 30% of the estimated total U.S. yellowfin landings in 2001. U.S. vessels fishing in the northwest Atlantic landed an estimated 1,583 t of bluefin, an increase of 370 t compared to 2000. Provisional skipjack landings increased by 26 t to 70 t from 2000 to 2001, estimated bigeye landings increased by 511 t compared to 2000 to an estimated 1,085 t in 2001, and estimated albacore landings decreased from 2000 to 2001 by 83 t to 324 t.

2. Statistics and research

In addition to monitoring landings and size of swordfish, bluefin tuna, yellowfin tuna, billfish, and other large pelagic species through continued port and tournament sampling, logbook and dealer reporting procedures, and scientific observer sampling of the U.S. fleet, major research activities in 2001 and 2002 focused on several items. Research on development of methodologies to determine the genetic discreteness of large pelagic fishes in the Atlantic was continued, as were larval surveys for bluefin tuna and other large pelagics in the Gulf of Mexico. Research on development of robust estimation techniques for population analyses and on approaches for characterization of uncertainty in assessments and methods for translating that uncertainty into risk levels associated with alternative management approaches was further conducted. U.S. scientists also continued to coordinate efforts for the ICCAT Enhanced Research Program for Billfish and for the Bluefin Year Program. Participants in the Southeast Fisheries Science Center's Cooperative Tagging Center (CTC) and the Billfish Foundation tagging program tagged and released 7,785 billfishes (swordfish, marlins, sailfish, and spearfish) and 490 tunas in 2001. This represents a decrease of 15% for billfish and a 42% decrease for tunas from 2000 levels. Electronic tagging studies of bluefin tuna and of marlins were substantially enhanced. Cooperative research was conducted with scientists from other nations on development of assessment methodologies, on biological investigations and on development of indices of abundance for species of concern to ICCAT.

2.1 Fisheries Statistics

2.1.1 Tropical tuna fishery statistics

Yellowfin tuna. Yellowfin is the principal species of tropical tuna landed by U.S. fisheries in the western North Atlantic. Total estimated landings decreased to 6,703 t in 2001, from the 2000 landings estimate of 7,051 t (Appendix Table 2.1-YFT). The 2001 estimate is considered provisional and may change owing to incorporation of late reports of commercial catches as they become available and to possible revisions in estimates of rod and reel catches made by recreational anglers. A high proportion of the landings were due to estimated rod and reel catches of recreational anglers in the northwest Atlantic (3,690 t). Estimates of U.S. recreational harvests for tuna and tuna-like species continue to be reviewed and this may result in the need to report additional revisions to the available estimates in the future. Nominal catch rate information from logbook reports (longline catch per 1,000 hooks) for yellowfin by general fishing areas is shown in Appendix Figure 2.1-YFT.

Skipjack Tuna. Skipjack tuna also are caught by U.S. vessels in the western North Atlantic. Total reported skipjack landings (preliminary) increased from 44 t in 2000 to 70 t in 2001 (Appendix Table 2.1-SKJ). The largest increase in catch was off the U.S. east coast (NW Atlantic) between Cape Hatteras and Long Island. Estimates of recreational harvests of skipjack continue to be reviewed and could be revised again in the future. Appendix Figure 2.1-SKJ presents nominal catch rate information (longline catch per 1,000 hooks) based on fishing logbook reports.

Bigeye Tuna. The other large tropical tuna reported in catches by U.S. vessels in the western North Atlantic

[1] Original report in English; appendices available from the Secretariat.

[2] U.S. Department of Commerce, NOAA-Fisheries

is bigeye tuna. The majority of U.S. landings of this species come from longline vessels fishing off the east coast of the U.S. in the area from Cape Hatteras, North Carolina to Massachusetts. These landings accounted for 47% of the U.S. bigeye catch in 2001. Total reported catches and landings (preliminary) for 2001 increased by 89% from 574 t in 2000 to 1085 t (Appendix Table 2.1-BET). Note that like yellowfin, the estimates of rod and reel catch are considered provisional and may be revised based on results of a future review of recreational harvest estimates. Appendix Figure 2.1-BET presents nominal catch rate information (longline catch per 1,000 hooks) based on fishing logbook reports.

2.1.2 Temperate tuna fishery statistics

Bluefin tuna. The U.S. bluefin fishery continues to be regulated by quotas, seasons, gear restrictions, limits on catches per trip, and size limits. To varying degrees, these regulations are designed to restrict total U.S. landings and to conform to ICCAT recommendations. U.S. vessels fishing in the northwest Atlantic (including the Gulf of Mexico) in 2001 landed an estimated 1,583 t of bluefin tuna. Those estimated landings represent an increase of 371 t from the 2000 landings. The 2001 landings by gear were: 196 t by purse seine, 102 t by harpoon, 9 t by handline, 38 t by longline (of which 20 t were from the Gulf of Mexico), 1238 t by rod and reel (of which, 243 t was the preliminary estimate for bluefin less than 145cm SFL from off the northeastern U.S.), and less than 1 t was taken by other gears.

In response to 1992 regulations limiting the allowable catch of small fish by U.S. fishermen, in conformity with ICCAT agreements, enhanced monitoring of the rod and reel fishery was implemented in 1993 for the purpose of providing near real-time advice on catch levels by this fishery. This monitoring activity has continued and has included estimation of catches by finer size categories than reported above. The preliminary estimates for the 2001 rod and reel fishery off the northeastern U.S. (including the North Carolina winter fishery) for landings in several size categories were 3,470 fish 66-114 cm, 4308 fish 115-144 cm and 1599 fish 145-177 cm (an estimated 80, 163, and 124 t, respectively). An additional 1360 fish <66 cm and 3 fish 66-114 cm (an estimated 6 and 0.05 t, respectively) were discarded dead. Note that additional rod and reel landings of bluefin >177 cm SFL, monitored through a sales reporting system, are included in Table 2.2-BFT.

Logbook tallies of dead discarded bluefin for year 2001, amount to 25 t. Other estimates of this tonnage based on observer data are typically higher than the logbook tallies. The United States sought scientific review of the methods applied for estimating dead discarded catch of bluefin in 2001. This review took place in a 2-stage fashion. In the first stage of the review, three independent scientists contracted through the University of Miami's Center for Independent Experts (CIE) were asked to comment on the approaches used to estimate marine turtle and other species by-catches (the methods used for turtles and bluefin tuna were the same) as part of a broader review of marine turtle stock assessment. None of these reviewers provided recommendations for improvement in the by-catch estimation methods applied. Because this review was judged to be too broad for detailed comments and recommendations for improvements on the methodological approach, a second, and more focused review was sought from an additional 2 independent scientists, again through the CIE. These review comments were received in mid-September 2001 and, as a result, scientists from the CEFAS Lowestoft Laboratory have been contracted to conduct further analysis of the logbook and observer data for the purpose of estimating bluefin (and other species) dead discarded catch. A reviewer recommended continuation of the use of logbook tallies for monitoring U.S. compliance with the negotiated dead discard allowance for the west Atlantic bluefin tuna recovery plan until the technical recommendations for improvements in the statistical methods for estimating discards were incorporated. As a consequence of this recommendation, the logbook tally values for dead discards have been incorporated into the ICCAT database for the period 1987-2001.

Albacore. Albacore are landed by U.S. vessels; however, historically, albacore has not been a main focus of the U.S. commercial tuna fisheries operating in the North Atlantic. Reported commercial catches were relatively low prior to 1986; however, these catches increased substantially and have remained at higher levels throughout the 1990s, with nearly all of the production coming from the northeastern U.S. coast. Caribbean landings increased in 1995 to make up over 14% of the total, but U.S. landings from the Caribbean have remained below 4% of the total each year during 1996-2001. Nominal catch rate information from U.S. longline logbook reports is shown in Appendix Figure 2.1-ALB. Estimated total catches of albacore were 324 t in 2001, a decrease of 83 t from 2000 which was primarily due to a decrease in estimated rod and reel catches from 251 t in 2000 to 122 t in 2001 (Appendix Table 2.2-ALB).

2.1.3 Swordfish fishery statistics

For 2001 the provisional estimate of U.S. vessel landings and dead discards of swordfish was 2,568 t (Appendix Table 2.3-SWO). This estimate is 27% lower than the estimate of 3,497 t for 2000. The provisional landings, excluding discard estimates, by ICCAT area for 2001 (compared to 2000) were: 426 t (503 t) from the Gulf of Mexico (Area 91); 1,057 t (1,278t) from the northwest Atlantic (Area 92); 332 t (330 t) from the Caribbean Sea (Area 93); and 402 t (752 t) from the North Central Atlantic (Area 94A), and 43 t (142 t) from the SW Atlantic (Area 96).

U.S. swordfish landings are monitored in-season from reports submitted by dealers, vessel owners and captains, NMFS port agents, and mandatory daily logbook reports submitted by U.S. vessels permitted to fish for swordfish. This fishery is also being monitored via a scientific observer sampling program, instituted in 1992. Approximately 5% of the longline fleet-wide fishing effort is randomly selected for observation during the fishing year. The observer sampling data, in combination with logbook reported effort levels, support estimates of approximately 27,321 fish discarded dead in 2001, representing an estimated 308 t of swordfish, overall. For the North Atlantic, the estimated tonnage discarded dead in 2001 is 293 t, of which 288 is estimated due to longline gear. Overall, the estimates of dead discarded catch declined by 37% (184 t) compared to the 2000 level. These reductions (both in landed catch and in discarded catch) are thought to in large part be due to the effects of time-area closures and other domestic management actions in place during 2001.

Total weight of swordfish sampled for sizing U.S. landings by longline, harpoon, otter trawl, and handline was 2141 t, 7 t, 2 t, and 5 t in 2001. The weight of sampled swordfish landings in 2001 were 98%, 100%, 75%, and 60% of the U.S. total reported annual landings of swordfish for longline, harpoon, otter trawl, and handline. Again, incorporation of late reports into the estimated 2001 landings figure will likely result in changes in the sampled fraction of the catch. Recent estimates of rod and reel landings of swordfish based on statistical surveys of recreational anglers, range from about 5-21 t per year for the period 1996-2001.

2.1.4 Marlins and sailfish fishery statistics

Blue marlin, white marlin, and sailfish are landed by U.S recreational rod and reel fishermen and are a by-catch of the U.S. commercial tuna and swordfish longline fisheries. The U.S. Fisheries Management Plan for Atlantic Billfishes was implemented in October 1988. The Plan allows billfish that are caught by recreational gear (rod and reel) to be landed only if the fish is larger than the minimum size specified for each species covered by the Plan. Recreational landings of each billfish species are estimated using: (a) the SEFSC Recreational Billfish Survey (RBS) which provides the number of billfish caught during tournaments held along the southeastern U.S. coast (south of 35^0 N latitude), in the Gulf of Mexico, and U.S. Caribbean Sea regions (i.e., U.S. Virgin Islands and Puerto Rico); and (b) the Large Pelagics Recreational Survey (LPS) conducted by the National Marine Fisheries Service which provides estimates of recreational billfish harvest from waters along the northeastern U.S. (north of 35^o N latitude). Estimates of landed recreational catch of these species by non-tournament fishers are not well estimated and for this reason, the landings reported for recreational rod and reel fishers are thought to be conservative. Studies conducted indicate that use of a time-series running average from the U.S. general marine recreational fishing survey in combination with data from the RBS and LPS surveys may provide the most reliable estimates of overall catch and landings for marlins.

In addition to restrictions on U.S. recreational harvest, the Management Plan also imposed regulations on commercial fisheries by prohibiting retention and sale of the three species at U.S. ports. For this reason, no U.S. commercial landings were reported for any of the three Atlantic species. However, estimates of by-catch mortality in the U.S. longline fleet are made using the data from mandatory pelagic logbooks and scientific observer data collected on this fleet. The procedure for estimating the historical by-catch of blue marlin, white marlin, and sailfish was detailed in SCRS/96/97-Revised. This procedure was implemented for estimating by-catch mortalities from the U.S. longline fleet. Revisions to historical landings of billfish previously reported to ICCAT were based on review of the estimates conducted at the 1996 ICCAT Billfish Workshop held in Miami.

The preliminary estimates of 2001 U.S. recreational catches for these billfish species, combining the geographical areas of the Gulf of Mexico (Area 91), the northwestern Atlantic Ocean west of the 60^o W longitude (Area 92), and the Caribbean Sea (Area 93) are: 16.4 t for blue marlin, 3.1 t for white marlin, and 61.7 t for sailfish. The estimates for 2000 were 24.1 t, 0.2 t, and 2.0 t, respectively, for the three species. The estimates of the U.S. recreational catch (landings) do not include any estimates of mortality of released (or tagged and released) fish. Additionally, these landings include survey estimates of non-tournament billfish

mortality and survey estimates from tournaments, but do not constitute a census of all tournaments. Because some components of the charter boat and non-tournament recreational fishery are not surveyed, the recreational catches are considered minimum estimates. Therefore, the rod and reel landings presented in Appendix Table 2.4-BIL include a '?' to represent the unknown quantities of recreational catch of billfish not recorded.

Estimates of the billfish by-catch discarded dead in the U.S. commercial longline and other commercial fisheries for 2000 were 59.6 t for blue marlin, 40.8 t for white marlin, and 45.2 t for sailfish. The estimated 2001 U.S. discarded dead by-catch was 22.4 t, 16.9t, and 10.8 t, respectively for the three species. Overall, these values represent decreases of 62.4%, 58.6%, and 76.0% of the 2000 estimated discard tonnage for these three species, respectively. As for swordfish, these reductions in discarded catch are thought to, in large part, be due to the effects of time-area closures and other domestic management actions in place during 2001. The catches and landings (t) by species, area, and gear, for 1998-2001 are presented in Appendix Table 2.4-BIL.

Information from a statistical survey (Marine Recreational Fishery Statistics Survey, MRFSS) of the US recreational harvesting sector conducted over the US northeast and southeast coasts, continues to be under evaluation for its application to estimating billfish catches by recreational fishers. Preliminary results for marlins were presented at the 2000 SCRS meeting in SCRS/00/052 and again for white marlin at the 2002 SCRS meeting in SCRS/2002/074. Although billfish are considered "rare event" species in this survey and accordingly the estimates may suffer from bias and imprecision, they do provide a possible basis for evaluating the potential degree of conservatism in the values reported in Appendix Table 2.4 BIL for recreational (rod and reel) harvest. These estimates were predictably higher than the previous RBS estimate due to more complete coverage of the recreational fishery for billfish by the MRFSS. For sailfish, the MRFSS based estimates of tonnage landed are considerably higher than counted through the RBS, expectedly so since the tournaments monitored by the RBS are known to represent only a fraction of the recreational fleet that catches sailfish. That the rare event nature of sailfish catch compared to other species catches could lead to some bias in estimates cannot be ruled out. However, for the purposes of assessment of sailfish, it is recommended that the assessment use the MRFSS-based estimates of sailfish harvested to examine the sensitivity of the assessment to these estimates. Table 2.4-BIL for 2001 reflects estimates from the MRFSS for sailfish during times and in areas not covered by either the LPS or the RBS. For 2001, Table 2.4 BIL also reflects estimates of white marlin recreational landings resulting from the methodology used in SCRS/2002/074.

2.1.5 Mackerels fishery statistics

Significant catches of king and Spanish mackerels by U.S. fishermen have occurred since the 1850's for Spanish mackerel and since the 1880's for king mackerel. The major gears currently exploiting these species are handlines and gillnets. Purse seines were also used to harvest king mackerel during the 1980's. Gillnets have historically been the main commercial gear for Spanish mackerel however in recent years, recreational removals have become an important component in total catches for both species. The majority of king mackerel catches are taken off North Carolina and Florida and it is believed that a major production area off Louisiana, is recovering. The primary Spanish mackerel catch areas include the Chesapeake Bay and Florida. Current fisheries are co-managed under the Coastal Migratory Pelagic Resources FMP enacted in 1983 and regulations adopted by the South Atlantic and Gulf of Mexico Fishery Management Council and implemented by NMFS. Annual catches are monitored closely by NMFS and within season management measures include commercial trip limits, size limits, seasonal and area quotas, and recreational per person daily bag limits. Because these species occur in both federal and state territorial zones of U.S. successful management has required participation by both federal and state management agencies. At present, none of the king or Spanish mackerel stocks are any longer considered over-fished.

Annual yields of king mackerel have ranged from 4,365 t to 8,772 t between 1983 and 2001 with an average production of about 7,000 t since 1995. Annual catches of Spanish mackerel have ranged from 2,784 t to 5,957 t from 1983 to 2001 with the average catch of about 4,500 t since 1995. Harvest of both species has stabilized in recent years although large fluctuations in estimates of recreational catches in some years have occurred and overages in commercial landings and recreational quotas can occur. The stabilization in yields is thought to be the direct impact of regulations that have been implemented in an effort to sustain future production. The primary management factors contributing to fluctuations in annual recreational harvests include difficulties of enforcement of differential bag limits imposed in individual states, large inter-annual variances in recreational harvest estimates, and regulations that permit the sale of king mackerel from recreational charter boats after the closure of commercial fisheries. Critical research concerns regarding mackerels are sampling concerns related to

adequate coverage of the age structure of the stocks and increasing the precision associated with the mackerel assessment abundance indices.

2.1.6 Shark fishery statistics

Landings of sharks by U.S. longline fishermen holding permits to land and sell swordfish caught in the Atlantic and dead discards of sharks in the U.S. longline fleet targeting tunas and tuna-like species are monitored and reported to ICCAT. There are also additional catches and landings of Atlantic pelagic sharks across the range of US fleets that harvest them, including recreational fisheries, that are updated annually. These total catches are updated herein up to 2001 (although the data for 2001 are preliminary and subject to change) in anticipation of future assessments of pelagic sharks by ICCAT. Commercial landings of pelagic sharks steadily increased from the early 1980's, peaked in 1995, and have shown a declining trend since that year (Appendix Table 2.6a-SHK). Recreational landings in numbers estimated from the MRFSS survey during 1981-2001 peaked to a maximum of 93,000 fish in 1985, and showed a declining trend since that year, fluctuating between about 42,600 fish in 1986 to about 3,800 fish in the last year of data (but estimates for 2001 are preliminary; Appendix Table 2.6a-SHK). Pelagic longline dead discards also fluctuated between 1987 and 2001, with a minimum of about 3,500 fish in 1999 and a maximum of about 30,500 fish in 1993, but show a declining trend overall. Total catches ranged from about 12,500 fish in 1981 (no commercial landings or discard estimates were available for that year) to about 95,000 fish in 1985, as a result of the peak in recreational landings that year.

Blue shark (*Prionace glauca*) commercial landings were generally very low (Appendix Table 2.6b-SHK). Recreational landings in numbers ranged from about 500 fish in 1994 and 1995 to over 20,000 fish in 1987. Pelagic longline discards reached 29,000 fish in 1993, but otherwise oscillated between a minimum of about 2,800 fish in 1999 to a maximum of about 19,000 fish in 1996 (Appendix Table 2.6b-SHK). The trends in recreational landings and dead discards were very similar from 1992 to 1997. Total catches ranged from 0 fish in 1982 (a year in which no commercial or recreational landings were reported) to about 43,500 fish in 1993, the year in which dead discard estimates peaked (Appendix Table 2.6b-SHK).

Shortfin mako (*Isurus oxyrinchus*) commercial landings never exceeded 5,000 fish according to available estimates (Appendix Table 2.6c-SHK). Commercial landings from 1995 to 2001 in the quota monitoring and general canvass data collection programs are also assigned to an unclassified "mako" category, in addition to the "shortfin mako" category. Adding these landings of unclassified makos, which are likely to be shortfin makos, would increase commercial landings for this species, but would not affect significantly total catches. Most of the landings were attributable to the recreational fishery, whose landings in numbers peaked in 1985 (as for blue shark) to about 80,000 fish, and ranged from less than 1,400 fish to over 31,000 fish in the remaining years. Pelagic longline discards of shortfin makos were negligible. Total catches ranged from less than 4,000 fish in 1999 to almost 82,000 fish in 1985, when recreational catches peaked (Appendix Table 2.6c-SHK).

Catches of other pelagic species, such as longfin mako (*Isurus paucus*), oceanic whitetip shark (*Carcharhinus longimanus*), porbeagle (*Lamna nasus*), bigeye thresher (*Alopias superciliosus*), and thresher shark (*Alopias vulpinus*) were very small. Only for thresher shark, did total landings exceed 1,000 fish for more than one year in a row.

2.2 Research activities

Research continued on genetic discreteness of large pelagic fishes in the Atlantic, larval surveys for bluefin tuna and other large pelagics in the Gulf of Mexico, new methods for estimating and indexing abundance, robust estimation techniques for sequential population analyses, and estimating discards based on direct observations by scientific fishery observers. Research was also conducted on approaches for characterization of uncertainty in assessments and methods for translating that uncertainty into risk levels associated with alternative approaches. U.S. scientists also continued to coordinate efforts for the ICCAT Enhanced Research Program for Billfish and for the Bluefin Year Program. Collaborative research with scientists from ICCAT member nations and cooperating parties continues.

2.2.1 Bluefin tuna research

As part of its commitment to the Bluefin Program, research supported by the U.S. has concentrated on ichthyoplankton sampling, reproductive biology, methods to evaluate hypotheses about movement patterns, spawning area fidelity and stock structure investigations. A BYP planning meeting was hosted at the SEFSC in

May 2001, to review activities of eastern and western researchers relative to further study of bluefin reproductive biology in the central North Atlantic and in the Mediterranean. The results of the initial survey of the central North Atlantic study area were provided in SCRS/01/031 (rev). An information release relating to year 2002 field sampling in the central North Atlantic is provided in the Appendix. Samples collected and available for collaborative research, in support of the BYP research plans are presented in Appendix Tables BYP-1 to BYP-4.

Ichthyoplankton surveys in the Gulf of Mexico during the bluefin spawning season were continued in 2001 and 2002. Data resulting from these surveys that began in 1977 are used to develop a fishery-independent abundance index of spawning West Atlantic bluefin tuna. This index has continued to provide one measure of bluefin abundance that is used in SCRS assessments of the status of the resource (SCRS/2002/091).

Studies related to genetic evaluations of the number of fishery management units of Atlantic bluefin are being conducted at several laboratories in the United States. The National Oceanographic and Atmospheric Administration laboratory in Charleston, South Carolina is acting as a sample archive center and has tissues from all bluefin collected for stock structure research by the National Marine Fisheries Service since 1996 and some or all samples collected by researchers from various institutions including the University of South Carolina, the Virginia Institute of Marine Science, the University of Maryland and the Massachusetts Department of Marine Fisheries. A summary of tissues collected though mid-2002 is presented in Appendix Tables BYP-1 to BYP-4.

Scientists at Virginia Institute of Marine Science and Texas A&M University continue to search for heterogeneous micro-satellite loci. In addition they have begun screening adult bluefin from the east and western management areas for micro-satellite frequencies. Regional and temporal heterogeneity of allele frequencies have been found for several loci, but consistent differences between adults captured in the eastern and western Atlantic have not been found.

Efforts are underway to identify bluefin larvae for possible use in genetic analyses. During the ichthyoplankton surveys in the Gulf of Mexico during the bluefin spawning season two types of gear (bongo and neuston) are fished; the bongo samples have been used for the bluefin larval index. For about a decade two neuston nets have been fished at each station and the samples from one net have been preserved in ethanol. During 2001 and 2002 neuston samples that were preserved only in ethanol and collected throughout the 1990s have been sent for sorting. Those sent in 2001 were from 1995-2000 and have been sorted, but the identifications have not yet been verified. Samples sent for sorting in 2002 were from 1992-1994 and 2001. These samples in addition to samples already made available from 1994 when the joint cruise with the Japanese occurred, may be useful in stock discrimination analyses.

Research on bluefin tuna movement patterns using electronic tags, and on the associated methodology, was continued in 2001 and 2002. Tagging activities continued off North Carolina (scientists from Stanford University, Monterey Bay Aquarium and N.M.F.S.) and off northeast North America (by scientists from (1) New England Aquarium, Massachusetts Division of Marine Fisheries. and D.F.O. from Canada and (2) Stanford University and the Monterey Bay Aquarium). Additionally, researchers from Stanford University and the Monterey Bay Aquarium continued tagging bluefin tuna in the Gulf of Mexico, successfully releasing 8 fish in 2002. SCRS/2002/092 reported upon the most recent results obtained from electronic tagging of more than 500 Atlantic bluefin tuna with implantable archival and pop-up satellite archival tags by the Stanford University team.

Research on the feasibility of using otolith chemistry to discriminate bluefin stock continues at Texas A&M University and the University of Maryland continued. Current research is focused on pre-concentration procedures to eliminate chemical interferences and increase sample classification accuracy. Additionally stable isotopes (d13C and d18O) have been used as recorders of environmental conditions and are being investigated for possible use in determining stock structure. Preliminary results for one isotope (d18O) for 1-year-old bluefin from the Mediterranean and the West Atlantic were markedly different with cross-validated classification success of 100%, indicating that nursery area could be accurately predicted.

Scientists from the New England Aquarium conducted studies on a variety of topics related to bluefin tuna in addition to the tagging activities and extensive participation in the exploratory research in the central Atlantic mention above. Data from pop-up satellite tags is being studied to determine the reliability of the geographic information for understanding bluefin movement and behavior. Studies of the relationship between bluefin schools and surface water temperatures have been conducted. Additionally research on the bluefin movement patterns and their relationship to the environment have been investigated with respect to the utility of spotter

aircraft observations for indicators of abundance. Research is also continuing on bluefin energetics, reproduction and predator-prey relations.

Several documents considered the implications of mixing between Eastern and Western stocks. SCRS/2002/093 examines recapture rates of tagged fish in three areas: (1) West Atlantic, (2) northeast central Atlantic, and (3) East Atlantic and Mediterranean. The use of the ICCAT tagging data to identify stock mixing in the northeast central area is discussed, as is the possibility of differing reporting rates between areas. SCRS/2002/087 assumed a six strata spatial structure (as identified at the September 2001 ICCAT Workshop on Bluefin Tuna Mixing) and applied a simple age-aggregated (production) model approach with inter-stratum mixing. The results suggest that, with or without mixing, the 1997 catch levels of bluefin in the western Atlantic are sustainable; however, those in the east for 1997 are well above sustainable levels and need substantial reduction. Across a wide range of model input parameter values, even at relatively modest levels of mixing the fishery in the west is predicted to be adversely impacted unless reduction in the east takes place. In SCRS/2002/088, a multi-area, fleet-disaggregated, age-structured population dynamics model is used to evaluate the effectiveness of existing and alternative management measures under different mixing scenarios. The model simulates the dynamics of the two bluefin tuna stocks in the North Atlantic and of the fisheries that target them. Results indicate that assessment results can be affected considerably by the level of mixing, age-specific movement patterns, and gear selectivities.

SCRS/2002/086 identified the some improvements for the ADAPT VPA assessment and projection computations carried out at the 2000 assessment, related to plus-group mass and how this was taken into account in MSY computations. Abundance indices were developed using Canadian fishery data (SCRS/2002/081), U.S. longline data (SCRS/2002/090) and U.S. rod and reel data (SCRS/2002/089) for a range of size classes of bluefin tuna.

2.2.2 Swordfish research

Data from observer samples were compared against self-reported information in from the U.S. large pelagic mandatory logbook reporting system and estimates of discard mortality of swordfish, billfish, sharks and other species from the U.S. fleet were developed from that analysis for the 2002 SCRS. (SCRS/2002/117).

Swordfish catch, size and catch rate patterns were examined to identify times and areas where closures would be most likely to reduce the mortality of undersized swordfish in the Atlantic, Gulf of Mexico and Caribbean (SCRS/2002/118).

An age-structured and partially spatially-structured population dynamics model was used to evaluate the effectiveness of the established closed area in the western Atlantic and of closed areas in general, as a management tool for the regulation of the North Atlantic swordfish fishery and stock rebuilding (SCRS/2002/119).

Fisher reported and observed swordfish catch, size and catch rate patterns through 2000 were examined in support of monitoring the recovery of North Atlantic swordfish. Standardized indices of abundance were updated for the western North Atlantic using data from the U.S. pelagic longline fleet (SCRS/2002/115) and for the North Atlantic using data from swordfish longline fleets from the United States, Spain, Canada, and Japan (SCRS/2002/116).

2.2.3 Yellowfin tuna research

Several collaborative studies were conducted by U.S. scientists in cooperation with scientists from other countries. Cooperative research by the U.S. NMFS and the INP in Mexico is expected to continue. Cooperative research plans include further development of abundance indices for sharks and other tunas, as well as the refinement of the yellowfin tuna indices as additional data becomes available.

Cooperative research on yellowfin tuna abundance indices, catch at age, and life-history studies is also continuing with Venezuelan scientists.

2.2.4 Albacore research

The cooperative research initiated by the U.S. NMFS and the IEO of Spain in 1993 continued. In 1999 the effort was extended to analyze the catch per unit of effort data for the Spanish troll and baitboat fisheries using the general linear modeling approach. Further training sessions on this topic also took place in late 2000 and were extended to standardization of eastern Atlantic bluefin tuna catch rate time series in early 2001. A U.S. scientist also provided training to Spanish IEO and other ICCAT country scientists in mid-2001.

2.2.5 Mackerels and small tunas research

U.S. small tuna research is directed mainly on king and Spanish mackerel stocks as the amount landed of other small tunas such as cero makerels by U.S. fishermen is very low. The focus of research is collection of primary fishery catch statistics, and biostatistical sample data, fishery age samples, and abundance indices. Because assessment and management are by necessity by geographical units, continued research on migration of king mackerel in particular is important.

2.2.6 Shark research

Research on Atlantic pelagic sharks continued to be conducted in support of the Fishery Management Plan for Atlantic Tunas, Swordfish and Sharks, and ICCAT. Two NMFS scientists were invited to attend a North Atlantic blue shark Discussion Meeting organized by the Irish Marine Institute in Dublin, Ireland, on January 24-25, 2002. The objectives of the meeting were to further cooperation between ICES (International Council for the Exploration of the Seas) and ICCAT, on the assessment of pelagic sharks in the north Atlantic, as well as enhancing the links between researchers and institutes involved in pelagic shark assessment in the region. The meeting was a result of the EC-funded initiative DELASS (Developing Elasmobranch Assessments), an international research project aimed at improving the scientific basis for the management of fisheries taking elasmobranchs in Europe. Items reviewed and discussed at the meeting included information on the biology of Atlantic pelagic sharks, with emphasis on the blue shark, existing analyses and further work on blue shark stock status, cooperation between ICES and ICCAT on future assessment work of pelagic sharks, data availability, a possible assessment of blue shark by ICES in 2002, and future research directions and collaborative work.

After the meeting, a spreadsheet for calculating population parameters of blue sharks under uncertainty using a life-table approach was made available by NMFS scientists for use in the ensuing ICES Study Group on Elasmobranch Fishes stock assessment meeting held in Copenhagen, Denmark, in May 24-25, 2002. ICCAT is planning an assessment of pelagic sharks in 2004.

2.2.7 Billfish research

Sampling of recreational billfish tournaments continued in 2001 along the U.S. East Coast, Gulf of Mexico, Bahamas, and U.S. territories in the Caribbean. A total of 177 billfish tournaments were sampled in 2001, compared to 174 tournaments in 2000. This represented 127,467 hours of fishing effort, a decrease of about 19,188 hours from the 2000 level. In 2001, sampling accounted for 108 billfish boated (75 blue marlin, 22 white marlin, 11 sailfish, and 0 spearfish) and 5,563 released. In comparison, in 2000, there were 144 billfish boated (120 blue marlin, 8 white marlin, 16 sailfish, and 0 spearfish) and 4,598 released.

A number of working papers on various aspects of marlin research were submitted to ICCAT for consideration at the inter-sessional white marlin assessment in May 2002. These are briefly summarized as follows: SCRS/2002/065 presents standardized catch rates for white and blue marlin from the US pelagic longline fishery in the northwest Atlantic and the Gulf of Mexico while document SCRS/2002/066 summarizes standardized catch rates for white and blue marlin from the U.S. recreational tournament fishery in the northwest Atlantic and the Gulf of Mexico. Bayesian methods for accounting for data contradictions in stock assessment of Atlantic white marlin are summarized in SCRS/2002/067. A preliminary assessment of Atlantic white marlin using a state-space implementation of an age structured production model is presented in SCRS/2002/068. Document SCRS/2002/069 reviews the indices of abundance for white marlin from the Playa Grande Yachting Club sport fishery in Venezuela. SCRS/2002/071 presents habitat preferences of Istiophorid billfishes in the western North Atlantic and discusses the application of popup satellite archival data to habitat-based stock assessments methodologies. The size composition of white marlin catch is analyzed in SCRS/2002/072. The research needs involved in habitat standardization of CPUE indices are reviewed in SCRS/2002/073 and revised estimates the U.S. recreational harvest of white marlin is presented in SCRS/2002/074. SCRS /02/075 presents a

discussion of developing biological reference points alternatives to standard assessment methods and SCRS/2002/076 summarizes standardized catch rates for blue and white marlin from the Venezuelan pelagic longline fishery off the Caribbean Sea and western central Atlantic. Document SCRS/2002/125 presents results of simulation experiments that indicate the unsuitability of using mean hook depth for computing effective effort for standardizing billfish longline CPUE.

The NMFS SEFSC again played a substantial role in the ICCAT Enhanced Research Program for Billfish in 2002, with SEFSC scientists acting as general coordinator and coordinator for the western Atlantic Ocean. Major accomplishments in 2002 are documented in SCRS/2002/127.

In 2002, further investigations of biological habitat requirements and post release survival of blue and white marlins were conducted using popup satellite archival tags (PSAT) facilitated through cooperative research with the U.S. pelagic longline vessels and with the U.S. for-hire fleets operating in areas of high concentrations of billfish. To date, 19 blue marlin have been released with PSATs from recreational vessels in the Caribbean and 6 from commercial platforms in the South Atlantic off Florida. In addition, five white marlin were tagged with PSATs from recreational vessels near the southeastern tip of the Dominican Republic and along the U.S. Mid-Atlantic coast. In addition, six white marlin were tagged with PSAT tags from commercial longline platforms off South Florida. This research is critical for evaluation of essential fish habitat since for pelagic species in general, and for marlins in particular the information base is almost non-existent. Data from these fish are currently being compiled and analyzed.

2.2.8 Tagging

Participants in the Southeast Fisheries Science Center's Cooperative Tagging Center (CTC) and the Billfish Foundation Tagging Program (TBF) tagged and released 7,785 billfishes (including swordfish) and 490 tunas in 2001. This represents a decrease of about 15% for billfish and a decrease of 42% for tunas from 2000 levels. A number of electronic tagging studies involving bluefin tuna and billfish were also carried out in 2000 and 2001. These are discussed in the bluefin and billfish research sections above.

There were 77 billfish recaptures from the CTC and TBF reported in 2001, representing a decrease of 49% from 2000. Among the 2001 CTC billfish recaptures there were 15 blue marlin, 3 white marlin, 51 sailfish, and 8 swordfish. For the CTC and TBF, a total of 53 tunas were recorded recaptured in 2001; these were 48 bluefin and 5 yellowfin tuna. These recaptures represent a 43% increase with respect to year 2000 values. The ICCAT Enhanced Research Program for Billfish in the western Atlantic Ocean has continued to assistance in reporting tag recaptures to improve the quantity and quality of tag recapture reports, particularly from Venezuela, Barbados and Grenada.

2.2.9 Fishery observer deployments

Domestic longline observer coverage. In accordance with ICCAT recommendations, randomized observer sampling of the U.S. large pelagic long line fleet was continued into 2001 (see Appendix Figure 2.2-Observers). Representative scientific observer sampling of this fleet has been underway since 1992. The data collected through this program have been used to quantify the composition, disposition, and quantity of the total catch (both retained and discarded at sea) by this fleet that fishes in waters of the northwest Atlantic Ocean, Gulf of Mexico, and the Caribbean Sea. Selection of the vessels is based on a random, 5% sampling of the number of sets reported by the longline fleet. A total of 4,886 sets (3,432,941 hooks) were recorded observed by personnel from the SEFSC and NEFSC programs from May of 1992 to December of 2001. Observers recorded over 290,013 fish (primarily swordfish, tunas, and sharks), marine mammals, turtles, and seabirds during this time period. Observer coverage successfully recorded effort from 329 observed sets during 1992, 817 during 1993, 648 during 1994, 699 during 1995, 361 during 1996, 455 during 1997, 287 during 1998, 430 during 1999, 465 during 2000, and 395 during 2001 corresponding to nominal sampling fractions of about 2.5%, 6%, 5.2%, 5.2%, 2.5%, 3.1%, 2.9%, 4%, 4%, and 4%. Increased sampling in year 2002 is expected to increase the sampling fraction to about 8%. Document SCRS/2002/126 provides a more detailed summary of the data resulting from observer sampling between 1992 and 2000.

In 2001, an experimental program was initiated in cooperation with the U.S. pelagic long line fleet with a history of fishing for swordfish on the Grand Banks fishing grounds, to develop gear modifications that might prove useful in reducing the rate of interaction and limit severity of injury to marine turtles incidentally captured by the gear while at the same time minimizing loss of targeted catch. The gear modifications being tested include

the type of bait used, the type of hooks used, as well as the positioning of gangions relative to surface floats. Other gear modifications may be tested in the future. It is viewed that these technologies could be of application in other long line fleets. In this experiment, there is 100% observer coverage of the U.S. vessels is underway. The experiments undertaken are being coordinated and are, to some degree, based on provisional results obtained from experiments conducted on Azorean long line vessels operating in the northeastern Atlantic as described in SCRS/01/110. Provisional results of the experiment conducted in year 2001 and a description of the experiment underway in 2002 are provided in SCRS/2002/123. Document SCRS/2002/124 describes an experimental approach to estimate post-hooking survival of marine turtles captured in longline gear. This research was initiated in 2001 and will continue in 2002.

Southeast U.S. shark drift gillnet fishery observer coverage. The SEFSC Pelagic Observer Program at the Panama City Laboratory observed 215 sets of the shark drift gillnet fishery during 1999-2001. Effort took place in waters off of South Georgia, as well as central and south Florida.

Foreign fishery observers. There was no foreign fishing activity in the U.S. Exclusive Economic Zone (EEZ) off the east coast during 2001.

3. U.S. implementation of ICCAT conservation and management measures

3.1 Catch limits and minimum sizes

3.1.1 Rebuilding Program for West Atlantic Bluefin Tuna (Rec. 98-7)

The twenty-year rebuilding program for West Atlantic bluefin tuna established an annual landings quota for the United States of 1387 t. This quota is applied to the 2000 fishing year of June 1, 2000 to May 31, 2001. During the 1999 fishing year, there was an under-harvest of 228 t, which has been carried over to adjust the 2000 fishing year quota. The United States landed an estimated 1181 t, including 18.8 t of bluefin tuna less than 115 cm and 30 t of dead discards, in fishing year 2000 (see Appendix, page 1)[3].

3.1.2 Recommendation Regarding Atlantic Billfishes (Rec. 98-10)

This extends the requirements of Rec. 97-9 to apply in the year 2000 (i.e., a 25% reduction in landings from the 1996 baseline of 26 t of blue marlin and 2.5 t of white marlin). The billfish fishery is managed on a fishing year basis (June 1 - May 31) in the United States. During the 2000 fishing year, the United States landed an estimated 0.23 t of white marlin and 21.4 t of blue marlin (see Appendix, page 3).

3.1.3 Recommendation to Establish a Plan to Rebuild Blue Marlin and White Marlin Populations (Rec. 00-13)

Phase I requires that countries capturing marlins commercially reduce white marlin landings from pelagic longline and purse seine fisheries by 67% and blue marlin landings by 50% from 1999 levels; the United States has prohibited all commercial retention of billfish since 1988. For its part of the rebuilding program, the United States agreed to maintain regulations that prohibit all landings of marlins by U.S. pelagic longline fishermen, and to continue monitoring billfish tournaments through scientific observer coverage of at least 5% initially, with an objective of 10% coverage by 2002. The United States now exceeds these observer requirements. The United States also agreed to limit annual landings by U.S. recreational fishermen to 250 Atlantic blue and white marlin, combined, per year, for 2001 and 2002. Catch and release rates are estimated to be very high (90-95%) based on tournament data, and minimum sizes have been established at 168 cm (66 inches) for white marlin and 251 cm (99 inches) for blue marlin. The United States has also implemented time/area closures to reduce billfish mortality (see section 3.2.2).

3.1.4 Recommendation to Establish a Rebuilding Program for North Atlantic Swordfish (Rec.90-2)

This recommendation establishes an annual landings quota of 2951 t ww for the United States. The discard allowance for 2000 is 320 t ww. The landings quota and discard allowance are applied to a fishing year of June 1 to May 31. During the 1999 fishing year, there was an under-harvest of 731 t ww. This under-harvest has been

[3] Fishing year 2001 was year 3 in the initial 4-year balancing period for applying the 8% limit on bluefin tuna less than 115 cm. The United States will report on the balance for the complete 4-year period at the conclusion of the 2002 fishing year.

added to the landings quota for the 2001 fishing year, therefore, the 2000 landings quota has not been adjusted. Landings and discard estimates for the 2000 fishing year are provided in the U.S. compliance tables (See Appendix, page 4). The United States has a minimum size of 33 lb (15 kg) dressed weight, which is designed to correspond to 119 cm, with zero tolerance. Information on compliance with the minimum size is provided in the U.S. compliance tables (see Appendix, page 4). The United States has also implemented time/area closures to reduce dead discards of juvenile swordfish (See section 3.2.2).

3.1.5 Recommendation Concerning Swordfish Catches by the Tuna Longline Fishery (Rec. 00-3)

The United States is in the final stages of rulemaking to establish a 400 t reserve from the 2001 fishing year quota for North Atlantic swordfish; this will be applied to Japan's discards during 2001 in order to account for that mortality in the total allowable catch.

3.1.6 Recommendation on South Atlantic Swordfish (Rec. 01-2)

The United States informed ICCAT of its intention to stay within its prior annual catch limit of 384 t ww (289 t dw) for 2002. The United States landed an estimated 93.8 t in fishing year 2000.

3.1.7 Recommendation on Revision and Sharing of the Southern Albacore Catch Limit (Rec. 01-6)

The United States is subject to a catch limit of 100 t in 2002, but does not have a directed fishery for southern albacore. The United States estimated landings for the 2000 fishing year is less than 5 t.

3.1.8 Recommendation on North Atlantic Albacore Catch Limits (Rec. 01-5)

The United States was allocated a landings quota of 607 t ww for the 2002 fishing year, which is a level consistent with average landings for the United States over the past ten years. This recommendation applies for one year only. Given the minor share of U.S. mortality in this fishery (< 2%), and given that the ICCAT recommendation provides for the adjustment of next year's catch level in the case of over-harvest or under-harvest, no new regulations have been proposed for this fishery in the United States. The recommendation provides that overages/underages of this annual catch limit should be deducted from or added to the catch limit established for the year 2003 and/or 2004. Once ICCAT establishes a catch limit for 2003 and beyond (as expected at the November 2002 meeting), the United States may need to undertake rulemaking to adjust as necessary for any over-harvest or under-harvest during 2002. The United States landed an estimated 415 t in fishing year 2000.

In addition, pursuant to ICCAT's recommendation concerning the limitation of fishing capacity on North Atlantic albacore (1998), the United States submits annually to the ICCAT Secretariat the required reports providing a list of U.S. vessels operating in the fishery.

3.1.9 Recommendation on Bigeye Tuna Conservation Measures (Rec. 01-1)

No catch limits apply to the United States, since 1999 catch was less than 2100 t. The United States has implemented a higher minimum size than that required by ICCAT, which provides additional protection for juvenile bigeye. This minimum size of 27 inches (approximately 6.8 kg) applies to all U.S. fisheries landing bigeye tuna, both commercial and recreational. The United States landed an estimated 589.2 t, with no landings of bigeye tuna less than 3.2 kg in fishing year 2000.

3.1.10 Resolution on Atlantic Sharks (Res. 01-11)

This resolution calls for the submission of catch and effort data for porbeagle, shortfin mako, and blue sharks; encourages the release of live sharks to the extent possible; encourages the minimization of waste and discards in accordance with the Code of Conduct for Responsible Fisheries; and calls for voluntary agreements not to increase fishing targeting Atlantic porbeagle, shortfin mako, and blue sharks until an assessment can be conducted. The United States already submits catch and effort data for sharks and has catch limits in place for Atlantic porbeagle, shortfin mako, and blue sharks. In 2002, pursuant to the 2000 Shark Finning Prohibition Act, the United States banned the practice of finning nationwide (67 FR 6194, February 11, 2002), which will reduce waste associated with finning. Additionally, the United States adopted a National Plan of Action for the Conservation and Management of Sharks in February 2001, consistent with the International Plan of Action for

Sharks, which calls for management measures to reduce waste to the extent practicable and to protect vulnerable life history stages, such as juveniles.

3.2 Closed seasons

3.2.1 Recommendation on the Establishment of a Closed Area/Season for the Use of Fish-Aggregation Devices (Rec. 99-1)

No U.S. action is necessary. The United States does not have any surface fleets fishing in the area covered by this recommendation.

3.2.2 Domestic Time/Area Closures for ICCAT Species

At present, the Atlantic pelagic longline fishery of the United States is subject to several discrete time/area closures that are designed to reduce by-catch of regulated and protected species in the pelagic longline fishery by prohibiting pelagic longline fishing for ICCAT species in those areas during specified times. These closures affect offshore fishing areas within and beyond the U.S. EEZ (see **Figure 1**). Those closures are as follows: (1) Florida East Coast: 50,720 nm^2 year-round; (2) Charleston Bump: 49,090 nm^2 from February through April each year; (3) DeSoto Canyon: 32,860 nm^2 year-round; (4) the northeastern United States: 21,600 nm^2 during the month of June each year; and (5) Northeast Distant Statistical Sampling Area (NED): 2,631,000 nm^2 year-round (50 CFR 635.21(c)(2)).

NMFS is conducting a three-year experimental fishery in the NED closed area to develop sea turtle by-catch reduction measures. The overall objective is to research gear modifications that minimize by-catch rates or by-catch mortality and share these results with countries that have pelagic longline fleets. The second year of the experiment is underway.

3.3 Ban on imports

3.3.1 Trade Restrictive Recommendations adopted in 2000 and 2001

In 2000, ICCAT recommended bigeye tuna trade restrictions against Belize, Cambodia, Honduras, Equatorial Guinea, and St. Vincent and the Grenadines pursuant to its 1998 unregulated and unreported catches resolution. At its 2001 meeting, ICCAT allowed the bigeye tuna import prohibition against Honduras to enter into force effective January 1, 2002. However, ICCAT recommended lifting the bluefin tuna and swordfish import trade restriction against Honduras. A 2001 ICCAT recommendation indicates that an import prohibition against St. Vincent and the Grenadines should take effect on January 1, 2003, unless ICCAT decides at its 2002 meeting that this measure would be unnecessary based on documentary evidence. The United States is developing regulations to implement these measures.

3.3.2 Statistical Documentation Programs

The U.S. Bluefin Tuna Statistical Document program has been in place since the 1990s. As required under the program, the United States submits reports to ICCAT, twice yearly, providing information on the implementation of the program. In 2001, ICCAT recommended that all bigeye tuna and swordfish be accompanied by an ICCAT Bigeye Tuna or Swordfish Statistical Document, respectively, when those species are imported into the territory of a Contracting Party. The United States already has a domestic documentation program for swordfish called the Certificate of Eligibility. Either the domestic COE form or the ICCAT Swordfish Statistical Document meets the domestic reporting requirements. The United States is developing regulations to implement these measures.

3.4 Observer programs

The U.S. observer program currently meets two main objectives: monitoring of interactions between fishing gear and protected species (marine mammals, sea turtles, and to a lesser degree, sea birds), and monitoring of fishing effort and catch (estimation of total landings of target species and/or by-catch of non-target or prohibited species). An overview of observer programs in the United States can be found at: http://www.st.nmfs.gov/st1/nop/. Information is also available at that website on both the National Observer Program, which is a coordinating office for NMFS observer programs in our headquarters outside of

Washington, DC, and the Regional Programs. Observers for U.S. vessels in ICCAT fisheries are deployed from Miami, Florida and Panama City, Florida.

3.5 Vessel monitoring

3.5.1 Recommendation Concerning a Vessel Monitoring System Pilot Program (Rec. 97-12)

The United States adopted fleet-wide VMS requirements in the Atlantic pelagic longline fishery in May 1999, but was subsequently sued by an industry group. By order dated September 25, 2000, the U.S. District Court for the District of Columbia prevented any immediate implementation of VMS in the Atlantic pelagic longline fishery, and instructed the National Marine Fisheries Service (NMFS) to "undertake further consideration of the scope of the [VMS] requirements in light of any attendant relevant conservation benefits." Pursuant to that order, NMFS conducted an analysis of HMS pelagic longline vessels to determine whether the VMS requirement could be restricted to a subset of HMS pelagic longline vessels. This information has been submitted to the court, and NMFS is awaiting further direction regarding its ability to implement a VMS program.

3.6 Inspection schemes and activities

See Section 3.7 for information on the Management Standard for the Large-Scale Tuna Longline Fishery.

3.7 Measures to prohibit IUU fishing

The United States is committed to full participation in ICCAT's efforts to prohibit illegal, unreported and unregulated (IUU) fishing in the Convention Area. The United States government is actively developing a National Plan of Action (NPOA) to combat IUU, consistent with the International Plan of Action that was recently adopted by the FAO. Possible regulatory or legislative actions will be considered in the context of NPOA development.

3.7.1 Resolution Concerning a Management Standard for the Large-Scale Tuna Longline Fishery (Res. 01-20)

In 2001, ICCAT resolved that minimum management standards should be established for issuance of fishing licenses to tuna longline vessels greater than 24 meters in overall length and that an annual report should be submitted to ICCAT using a specific format. As part of the United States limited access program, all vessels that participate in tuna fisheries are currently licensed, of which 17 are tuna longline vessels over 24 meters in overall length. The United States' submission is provided in the Appendix on page 6.

3.8 Other recommendations

3.8.1 Resolution on Improving Recreational Fishery Statistics (Res. 99-7)

Recreational landings are estimated through a combination of tournament surveys (the Recreational Billfish Survey), the Large Pelagic Survey (LPS), the Marine Recreational Fishing Statistics Survey (MRFSS), and state landings data. Final regulations adopted in 1999 require selected HMS charter/headboat vessels that do not already do so to complete a logbook; implementation of this requirement is underway. In 1999, NMFS mandated the registration of all recreational tournaments for Atlantic highly migratory species. All tournaments are now required to submit landing reports, if selected. Currently, 100% of billfish tournaments are selected for reporting. NMFS has also published a proposed rule to further improve the monitoring of recreationally landed billfish and swordfish [66 FR 66386] and is developing final regulations at this time.

3.8.2 Recommendation Concerning Registration and Exchange of Information on Vessels Fishing for Tuna and Tuna-Like Species in the Convention Area (Rec. 00-17).

The United States has submitted the list of vessels required pursuant to this recommendation to the Secretariat.

3.8.3 U.S. Swordfish Certificate of Eligibility Program

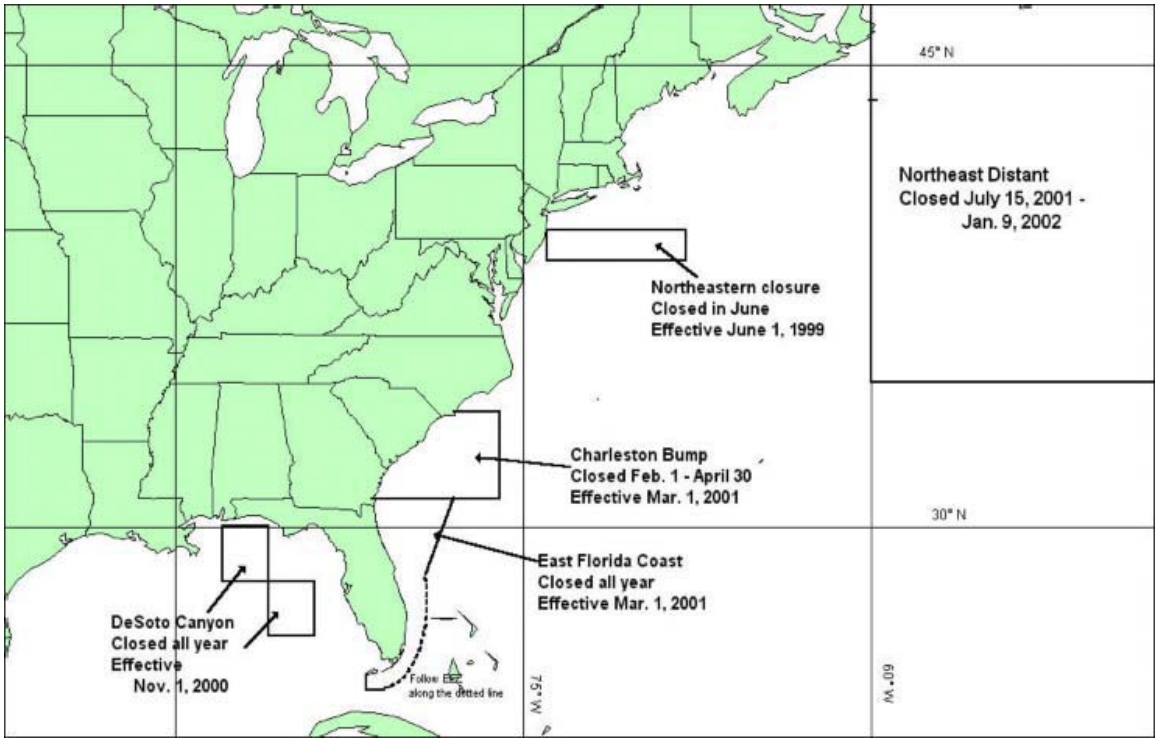
A summary of data collected through this program in 2002 is provided in the Appendix, page 9.

3.8.4 U.S. enforcement actions

A summary of actions taken in ICCAT fisheries is provided in the Appendix, page 7.

Recent U.S. management actions for Atlantic highly migratory species can be found online at: http://www.nmfs.noaa.gov/sfa/hmspg.html.

Federal Register notices containing the full text of proposed and final regulations can be found at: http://www.access.gpo.gov/su_docs/aces/aces140.html.



Note: The Northeast Distant Area is closed all year effective July 9, 2002.

Fig. 1. National time-area closures for species under ICCAT mandate.

NATIONAL REPORT OF VENEZUELA[1, 2]

1. Introduction

In Venezuela, the *Instituto Nacional de Investigaciones Agrícolas* (INIA) is the agency in charge of carrying out agricultural research programs, including the fishing sector. The *Instituto Nacional de Pesca y Acuacultura* (INAPESCA) is the agency responsible for the management and administration of the fishery resources.

The research projects on tunas and billfishes are carried out at the *Centro de Investigaciones Agropecuarias* of the States of Sucre and Nueva Esparta (CIAE-Sucre/N. Esparta), with headquarters in Cumaná, in cooperation with various national and international institutions, such the INAPESCA, the University of Oriente, ICCAT and the IRD.

2. The fisheries

2.1 Purse seine

The Venezuelan fleet is comprised of 34 purse seine vessels, 9 of which fished in the western Atlantic Ocean and the remainder fished in the eastern Pacific Ocean **(Table 1)**. The fishing area of the Venezuela purse seiners is between 5° and 15°N and 51° and 73°W (**Figure 1**).

The catch taken by the purse seine fleet in 2001 amounted to 20,311 metric tons (t), which showed an increase of 81% with respect to 2000. Yellowfin tuna *(Thunnus albacares)*, comprised 64.3% of the catches by this fleet, and skipjack tuna *(Katsuwonus pelamis)* comprised 25.5%. Other species caught by the fleet were blackfin tuna *(Thunnus atlanticus)*, frigate tuna *(Auxis thazard)*, albacore *(Thunnus alalunga)* and bigeye tuna *(Thunnus obesus)*. These species represented 10.3% of the catch **(Table 2)**.

The effort exerted by these vessels in 2001 was 1,036 days at sea, with the highest effort corresponding to the second quarter for vessels between 301 and 650 GRT. Further, yellowfin tuna catches were between 0.39 and 6.56 t/day at sea, and the highest catches correspond to the first and fourth quarters. Skipjack tuna catches amounted to 10.12 t/day at sea in the first quarter **(Table 4)**.

2.2 Baitboat

The Venezuelan baitboat fleet was comprised in 2001 of 16 fishing vessels and these operate in the same areas as the purses seiners (**Figure 2**). The catch taken by these vessels amounted to 6,198 t, which is23% above that of 2000. The major species taken by this fleet were yellowfin tuna *(Thunnus albacares)* 65.2% and skipjack tuna *(Katsuwonus pelamis) with* 17.8%, while blackfin tuna (*T. atlanticus*) contributed 13.9% of the total landings of the fleet **(Table 3**).

Effort applied by the baitboat fleet for this year was 2,068 days at sea. Yellowfin tuna catches fluctuated between 1 and 2.01 t/day at sea, with the highest catches in the first and fourth quarters. Skipjack catches ranged between 0.29 and 0.59 t/day at sea, with the highest catches corresponding to the fourth quarter **(Table 4)**.

2.3 Longline

Thirty-four (34) Venezuelan longliners fished in the Atlantic Ocean in 2001.

The catch by the tuna longline fleet was 639.6 t. Yellowfin tuna *(Thunnus albacares)* was the most important species in the catch (67.2%), while catches of other tunas, namely albacore *(T. alalunga)* and bigeye tuna *(T. obesus)* represented 8.1% of the catch; billfishes comprised 5.2% of the catch.

The yields obtained in this fishery for yellowfin tuna fluctuated between 21.1 and 39.4 kg/100 hooks, with the

[1] Original report in Spanish.
[2] Instituto Nacional de Investigaciones Agrícolas (INIA) and Instituto Nacional de Pesca y Acuacultura (INAPESCA).

maximum value corresponding to the fourth quarter. Albacore and bigeye tuna showed average catches of 2.5 and 1.2 kg/100 hooks. Shark catches fluctuated between 5.2 and 8.9 kg/100 hooks. The effort applied by the fleet was 1,389,901 hooks **(Table 6)**.

2.4 Artisanal fleet

Playa Verde (central Venezuelan coast)

Billfish fishing activities in this region are carried out throughout the year. The fleet that operated is comprised of 33 vessels, ranging in size from 7 to 10 m, and the fishing gear used is floating driftnet.

The catch of this fishery is mainly comprised of fish of the Istiophoridae family, particularly sailfish *(Istiophorus albicans)* and blue marlin *(Makaira nigricans)*, with catches of 63.6 and 56.7 t, respectively; tuna landings were 15.4 t. Other species in the catch included various shark species and dolphinfish *(Coryphaena hippurus)* **(Table 7)**.

Juangriego (eastern area of Venezuela)

This is the base port for 72 artisanal longline vessels that target king mackerel *(Scomberomorus cavalla)* and billfishes. Their fishing activities are carried out in the northeastern area of Venezuela. These vessels are of an artisanal nature with lengths ranging between 9 and 14 m, which fish using hooks and surface drift longline.

In this fishery, the catches indicate that billfishes, i.e. white marlin *(Tetrapturus albidus)* and sailfish *(Istiophorus albicans)* were the most abundant, with catches of 58.5 t and 48.1 t, respectively. The tunas landed were 68.5 t, comprised mainly of blackfin tuna with 38.1 t. One species that in recent years has acquired importance due to its market value is dolphinfish *(C. hippurus)* and landings of this species amounted to 163 t **(Table 8)**.

3. Activities in research and statistics

Venezuela carries out research on the fishery for large pelagics, including tunas and billfishes. Biological sampling continued on the various species landed at the ports of the States of Sucre, Anzoátegui and Nueva Esparta. In 2001, sampling was carried out on 6,861 tunas and billfish from industrial fishing landings, and 3,978 fish from the artisanal fishery **(Tables 9 and 10)**. The percentage composition of the catch was determined from multi-species sampling at the ports to correct the landings reported in the logbooks. The results indicate that the most important species in the landings of the various fisheries is yellowfin tuna, comprising from 58.42 to 73.23% of the purse seine catches, from 60.02 to 85.11% of the baitboat catches, and from 62.2 to 70.6% of the longline catches, respectively **(Tables 11 and 12)**.

The assessment continued on catch and effort in the hook fishery for king mackerel *(Scomberomorus cavalla)* in eastern Venezuela. This program is carried out at the INIA´s Nueva Sparta local station.

Monitoring of catch and effort was carried out on the industrial vessels that fished in the Atlantic Ocean using baitboat, purse seine and longline. The industrial fleet carried out 473 trips and the overall coverage rate was 49.68%, while by fishing type, the coverage rates were 46% for purse seine, 64.46% for baitboat and 29.4% for longline **(Table 13)**. For this year, there were reported catches of 1,861.1 t by foreign vessels (not by-catch) that fished in Venezuelan waters **(Table 14)**.

Within the ICCAT Enhanced Research Program for Billfish, sponsored and coordinated by the International Commission for the Conservation of Atlantic Tunas (ICCAT), billfish sampling continued at the ports of Playa Verde and Juangriego, in the central coastal area and the eastern area of Venezuela, respectively, as well as monitoring of the sport fishing tournaments at the Play Grande Club and at the Puerto Viejo Marina. In addition, trips were carried out on tuna longline vessels. In 2001, 23 scientific observer trips were carried out on these types of vessels, with a 14% coverage rate on all the trips carried out by longline fleet. On these trips, sampling was conducted on 1,136 tuna and tuna-like fish.

4. Implementation of the ICCAT conservation and management measures

- Resolution DM/227, of 30 September 1994, mandates that Venezuelan fishing vessels must comply with international conservation and management measures on high seas living resources, adopted in accordance with the applicable provisions of international law.

- Resolution DM/41, of 17 March 1995, regulates the inspections that should be carried out at the port. In this sense, a series of inspection activities are being carried out at the various docks, which include the monitoring of the landings and final destination of the products, the collection and review of the logbooks and biological sampling at ports and freezers.

- 2000 with Resolution DM/020. Among these are the following:

  - A minimum size limit on swordfish (125 cm LJFL), with zero tolerance
  - A minimum size limit on blue marlin (180 cm LJFL), white marlin (150 cm LJFL) and sailfish (160 cm LJFL).
  - Mandatory live release of billfish that are caught by the industrial fishery.
  - Prohibition imposed on sport fishermen to market billfish catches, and the mandatory reporting, to the fishing authorities, of information on their trips and the number of fish released and/or retained.
  - The expansion of the protection area for marlins in the La Guaira area, which includes the industrial and artisanal fishery vessels Only a group of 35 artisanal vessels are allowed to fish in the area, but the replacement and transfer of fishing permits is prohibited. There are also fishing gear restrictions.

- Resolution DM/034, of 25 February 2001, establishes the conditions to implement the National Observer Program on board Venezuelan flag industrial fishing vessels or those that are authorized to fish in waters under Venezuelan jurisdiction.

- Resolution DM/515, of 1 August 2001, suspends the entry of new vessels to the national fishing fleet for a period of 6 months, from the time of publication of the resolution.

- In the Official Gazette No. 37.323, of 13 November 2001, the new Fishing and Aquaculture Law is published, which is the legal instrument that regulates the fishing activity, in accordance with the current needs and criteria. In its Article 65, the law outlines the Republic of Venezuela's criteria for the joint management of the highly migratory resources¸ in which it states: "…The National Institute of Fishing and Aquaculture will ensure that Venezuelan vessels that fish on the high seas comply with international conservation and management measures on living resources."

Table 1. Composition of the Venezuelan industrial fleet in the Atlantic Ocean, by carrying capacity, 2001

Size	*GRT*	*Longline (LL)*	*Baiboat (BB)*	*Purse Seine (PS)*	*Total*
0	50	25			25
51	100	5	2		7
101	150	5	3		8
151	200		6		6
201	250		2		2
251	300		3	1	4
301	350				
351	400				
401	450				
451	500				
501	550				
551	600			6	6
601	650			1	1
651	700				
701	750				
751	800				
801	850				
851	900				
901	950				
951	1000				
1001	1050				
1051	1100				
1101	1150				
1151	1200			1	1
Total		**35**	**16**	**9**	**60**

Table 2. Venezuelan purse seine catches (in t) in the central West Atlantic, 2001

	Ouarter					
Species	*I*	*II*	*III*	*IV*	*Total*	*%*
Yellowfin tuna (YFT)	2.838.4	2.723.0	1.159.5	6.343.3	13.064.2	64.3
Skipjack tuna (SKJ)	745.3	809.9	277.9	3356.8	5,188.9	25.5
Frigate tuna (FRI)	168.2	57.7	59.2	108.6	393.7	1.9
Albacore (ALB)	146.0			114.0	260.0	1.3
Bigeye tuna (BET)	133.8	34.6	71.7	272.5	512.6	2.5
Blackfin tuna (BLF)	163.2	52.9	15.0	660.1	891.2	4.4
Total	**4,194.8**	**3,677.1**	**1,583.4**	**10,855.2**	**20,310.5**	**100.0**

Table 3. Venezuelan baitboat catches (in t) in the central West Atlantic, 2001

	Ouarter					
Species	*I*	*II*	*III*	*IV*	*Total*	*%*
Yellowfin tuna (YFT)	576.8	828.7	793.3	1.840.5	4.039.2	65.2
Skipjack tuna (SKJ)	114.2	16.4		973.8	1,104.3	17.8
Frigate tuna (FRI)				31.5	31.5	0.5
Albacore (ALB)				33.1	33.1	0.5
Bigeye tuna (BET)		12.7	39.7	79.0	131.4	2.1
Blackfin tuna (BLF)	269.9	116.0	281.8	191.5	859.2	13.9
Total	**960.9**	**973.7**	**1.114.8**	**3.149.3**	**6.198.7**	**100.00**

Table 4. Effort (in days at sea) and catch per unit of effort (in t/days at sea) for the Venezuelan baitboat and purse seine industrial fisheries in the central West Atlantic, 2001

Quarter	*Gear*	*Days at sea*	*Capacity*	*RYFT*	*RSKJ*	*Others*
			Purse seine			
		35	<301	0.98	1.65	
I	PS	155	>=301<650	6.56	6.42	0.81
			>=650			
		18	<301	0.39		
II	PS	227	>=301<650	2.50	2.46	0.52
		108	>=650	1.85	1.45	0.01
		30	<301	0.56	0.14	
III	PS	172	<=301<650	3.68	1.91	0.59
		48	>=650			
		29	<301	2.27	6.35	0.80
IV	PS	191	<=301<650	3.97	6.38	
		71	>=650	5.09	10.12	
			Baitboat			
			<60			
I	BB	306	>=60<150	1.11	0.23	0.02
		175	>150	1.38	0.56	
		349	>=60<150	1.32	0.40	0.05
II	BB	105	>=150	1.16	0.52	
		279	>=60<150	1.09	0.20	
III	BB	181	>=150	1.00	0.27	0.05
		408	>=60<150	1.72	0.59	0.07
IV	BB	265	>=150	2.01	0.35	0.35

Table 5. Catch (in t) of the Venezuelan tuna longline fleet in the Atlantic Ocean, 2001

	Quarter					
Species	*I*	*II*	*III*	*IV*	*Total*	*%*
Yellowfin tuna (YFT)	55.7	58.4	157.2	164.6	429.5	67.2
Bigeye tuna (BET)	1.5	10.8	0.0	0.0	16.9	2.6
Albacore (ALB)	1.4	5.0	14.8	18.1	35.1	5.5
Blue marlin (BUM)	1.3	1.3	3.1	7.6	10.8	1.7
White marlin (WHM)	0.9	2.3	0.8	4.7	7.4	1.2
Sailfish (SAI)	2.5	2.0	0.5	0.0	14.7	2.3
Swordfish (SWO)	0.5	0.2	7.3	3.4	11.8	1.8
Sharks (SHK)	23.5	16.0	32.7	27.6	109.7	17.2
Dolphinfish (DOL)	0.5	0.2	0.3	0.1	1.3	0.2
Wahoo (WAH)	0.0	0.9	0.6	0.8	2.4	0.4
Total	**89.5**	**90.2**	**226.9**	**233.1**	**639.6**	**100.00**

Table 6. Effort (in hooks) and CPUE (in kg/100 hooks) in the Venezuelan industrial longline fishery for tuna and billfishes in the central West Atlantic, 2001

	Quarter				
Species	*I*	*II*	*III*	*IV*	*Total*
Yellowfin tuna (YFT)	21.1	19.0	39.2	39.4	30.9
Bigeye tuna (BET)	0.6	3.5	0.0	0.0	1.2
Albacore (ALB)	0.5	1.6	3.7	4.3	2.5
Blue marlin (BUM)	0.5	0.4	0.8	1.8	0.8
White marlin (WHM)	0.3	0.7	0.2	1.1	0.5
Sailfish (SAI)	0.9	0.7	1.6	0.0	1.1
Swordfish (SWO)	0.2	0.1	1.8	0.8	0.8
Sharks (SHK)	8.9	5.2	8.2	6.6	7.9
Dolphinfish (DOL)	0.2	0.1	0.1	0.0	0.1
Wahoo (WAH)	0.0	0.3	0.2	0.2	0.2
Total	**33.9**	**29.4**	**56.6**	**55.8**	**46.0**
Hooks	**264,337**	**306,972**	**400,769**	**417,823**	**1,389,901**

Table 7. Catch (in t) and effort (in trips) for the Venezuelan artisanal driftnet fishery for billfishes off the central coast, 2001

	Quarter				
Species	*I*	*II*	*III*	*IV*	*Total*
Blue marlin (BUM)	12.9	31.9	4.3	7.6	56.7
White marlin (WHM)	2.2	1.3	1.8	1.2	6.5
Sailfish (SAI)	6.3	22.4	24.5	10.4	63.6
Swordfish (SWO)	2.1	4.1	1.5	1.2	8.9
Dolphinfish (DOL)	1.9	3.6	1.5	0.7	7.6
Sharks (SHK)	3.5	3.4	2.5	1.3	10.7
Yellowfin tuna (YFT)	1.4	1.7	0.1	3.1	6.5
Albacore (ALB)	0.2	0.3	0.0	0.6	1.1
Atlantic bonito (BON)	7.5	0.1	0.2	0.0	7.8

Table 8. Catch (in t) and effort (in hooks) for the artisanal longline fishery for billfishes in eastern Venezuela and adjacent areas, 2001

	Quarter				
Species	*I*	*II*	*III*	*IV*	*Total*
White marlin (WHM)	2.6	0.8	14.2	40.9	58.5
Sailfish (SAI)	2.2	0.6	11.7	33.6	48.1
Blue marlin (BUM)	0.2	0.1	1.0	2.9	4.2
Yellowfin tuna (YFT)	2.1	7.6	0.8	15.4	25.9
Blackfin tuna (BLF)	4.2	9.8	0.2	23.8	38.1
Dolphinfish (DOL)	14.1	81.2	50.9	16.8	163.0
Wahoo (WAH)	0.8	1.0	1.9	0.7	4.5
Sharks (SHK)	5.2	0.0	0.6	4.9	10.7
Total	**31.4**	**101.1**	**81.3**	**139.1**	**352.9**
Hooks	**260,289**	**404,591**	**446,114**	**492,231**	**1,603,225**

Table 9. Biological sampling of tunas and tuna-like fish in the Venezuelan industrial fishery for tunas in the western Atlantic Ocean, 2001

	Baitboat		*Purse seine*		*Longline*		
Species	*(BB)*	*%*	*(PS)*	*%*	*(LL)*	*%*	*Total*
Yellowfin tuna (YFT)	392	51.9	1,883	30.8	144	12.7	2,419
Skipjack tuna (SKJ)	72	9.5	2,865	46.9		0.0	2,937
Frigate tuna (FRI)			612	10.0			612
Albacore (ALB)			36	0.6	408	35.9	444
Bigeye tuna (BET)	26	3.4	320	5.2	178	15.7	524
Blackfin tuna (BLF)	266	35.2	389	6.4		0.0	655
Sailfish (SAI)					9	0.8	9
Spearfish (SPF)					6	0.5	6
Blue marlin (BUM)					14	1.2	14
Swordfish (SWO)					162	14.3	162
White marlin (WHM)					19	1.7	19
Dolphinfish (DOL)					39	3.4	39
Sharks (SHK)					157	13.8	157
TOTAL	**756**	**100.0**	**6,105**	**100.0**	**1,136**	**100.0**	**7,997**
%	**9.5**		**76.3**		**14.2**		**100.0**

Table 10. Biological sampling of billfishes in the Venezuelan artisanal driftnet and longline fisheries, 2001

Species	*Artisanal driftnet*	*Artisanal longline*
White marlin (WHM)	278	6.990
Blue marlin (BUM)	766	19.26
Sailfish (SAI)	2,597	65.28
Swordfish (SWO)	337	8.47
Spearfish (SPF)		0.00
Total	**3,978**	

Table 11. Percentage composition, by quarter, of the tuna catches by Venezuelan surface tuna fleets (baitboat and purse seine), in the central West Atlantic, 2001

	Purse seine (PS)				*Baitboat (BB)*			
Species	*I*	*II*	*III*	*IV*	*I*	*II*	*III*	*IV*
Yellowfin tuna	67.67	74.06	73.23	58.43	60.02	85.11	71.15	80.45
Skipjack tuna (SKJ)	17.77	22.00	17.55	30.92	11.88	1.68		3.30
Frigate tuna (FRI)	4.01	1.57	3.74	1.00				
Albacore (ALB)	3.48			1.05				
Bigeye tuna (BET)	3.19	0.94	4.53	2.51		1.30	3.56	1.12
Blackfin tuna (BLF)	3.89	1.44	0.95	6.08	28.09	11.91	25.25	15.12

Table 12. Percentage composition, by quarter, of tuna catches by the Venezuelan tuna longline (LL) fleet in the central West Atlantic, 2001

	Ouarter				
Species	*I*	*II*	*III*	*IV*	*Total*
Yellowfin tuna (YFT)	62.2	64.8	69.3	70.6	67.2
Bigeye tuna(BET)	1.7	12.0	0.0	0.0	2.6
Albacore (ALB)	1.6	5.6	6.5	7.8	5.5
Blue marlin (BUM)	1.5	1.4	1.4	3.2	1.7
White marlin (WHM)	1.0	2.5	0.4	2.0	1.2
Sailfish (SAI)	2.7	2.2	2.9	0.0	2.3
Swordfish (SWO)	0.5	0.3	3.2	1.4	1.8
Sharks (SHK)	26.2	17.7	14.4	11.8	17.2
Dolphinfish (DOL)	0.5	0.2	0.1	0.0	0.2
Wahoo (WAH)	0.1	1.0	0.3	0.3	0.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 13. Trips made by industrial tuna vessels in the central West Atlantic, 2001

Month	*Purse seine (PS)*		*Baitboat (BB)*		*Longline (LL)*		*Total*	
	R	*C*	*R*	*C*	*R*	*C*	*R*	*C*
January	2	1	16	12	1	1	19	14
Febuary	7	4	20	13	12	7	39	24
March	6	2	16	11	18	5	40	18
April	4	3	19	12	11	5	34	20
May	4	3	18	12	16	7	38	22
June	5	2	15	10	9	3	29	15
July	3	2	22	19	13	1	38	22
August	5	4	16	13	13	4	34	21
September	3	1	19	11	21	5	43	17
October	6	3	26	16	17	4	49	23
November	12	3	33	17	17	4	62	24
December	11	3	22	10	15	2	48	15
Total	**68**	**31**	**242**	**156**	**163**	**48**	**473**	**235**
%	**46.00**		**64.46**		**29.4**		**49.68**	

R = Total trips carried out.
C = Trips monitored.

Table 14. Catches (in t) of tunas in Venezuela, by foreign vessels, 2001

Species	*Catches*
Yellowfin tuna (YFT)	1,090.5
Skipjack tuna (SKJ)	577.0
Frigate tuna (FRI)	18.7
Albacore (ALB)	19.6
Bigeye tuna (BET)	46.8
Blackfin tuna (BLF)	113.5

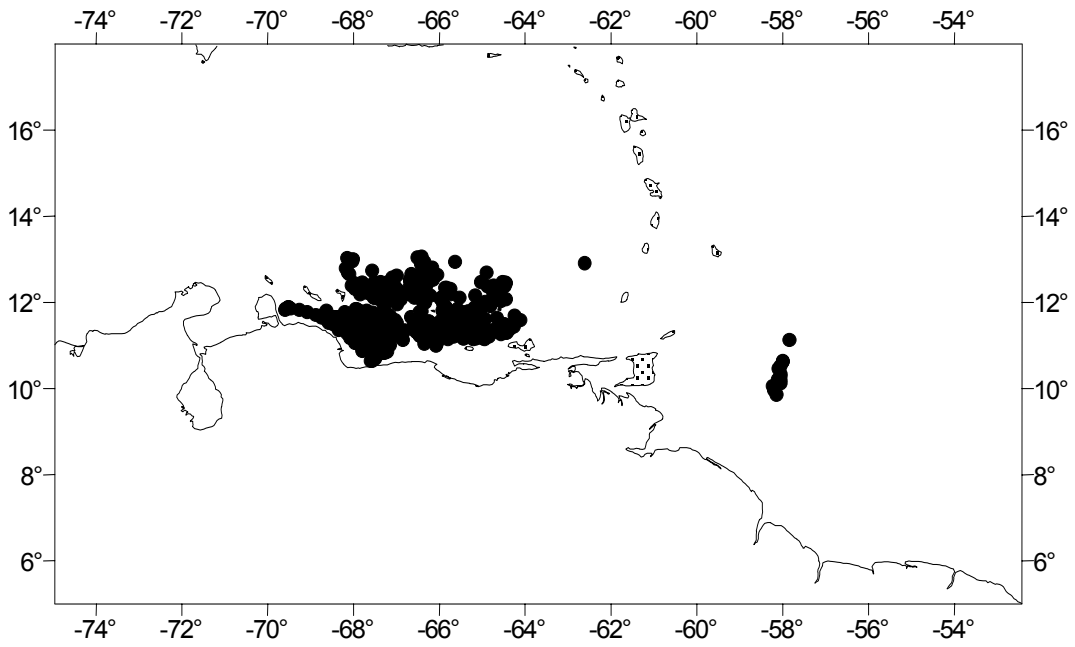


Fig. 1. Area distribution of catches of the Venezuelan purse seine fleet, 2001.

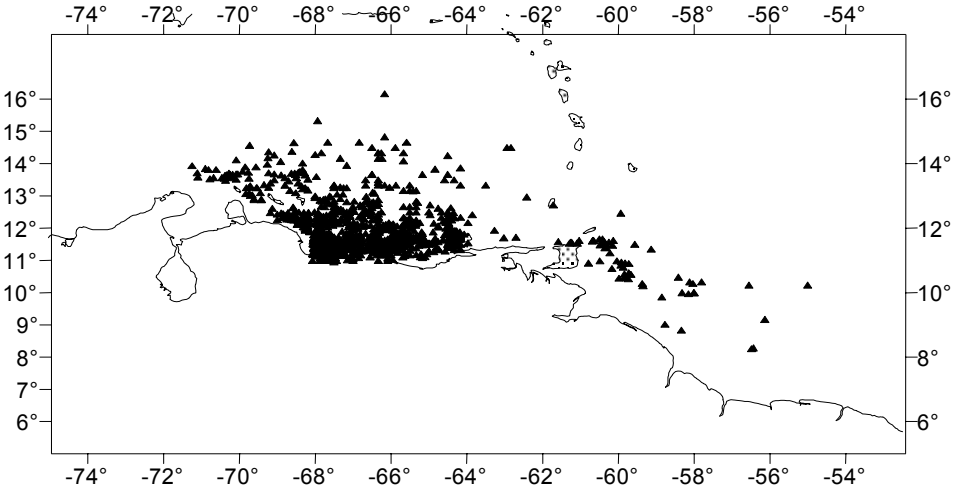


Fig. 2. Area distribution of catches of the Venezuelan baitboat fleet, 2001.

REPORTS OF OBSERVERS FROM COOPERATING NON-CONTRACTING PARTIES, ENTITIES OR FISHING ENTITIES

NATIONAL REPORT OF CHINESE TAIPEI[1,2]

1. National fisheries information

1.1 General overview

The distant water longline (DWLL) fishery is currently the only tuna fishery operated in the Atlantic Ocean and the Mediterranean Sea by Chinese Taipei. The total number of vessels operating in these areas was around 180 in 2001, a slight decrease from the previous year. However, the total catch made by the fleet was estimated to be about 46,685 t in 2001, a significant decrease from 2000. More detailed information on the major tuna species is as follows:

1.2 Albacore

Chinese Taipei longliners fished albacore all year round in the Atlantic Ocean. The total catch of this species in 2001 was estimated to be about 21,049 t, of which 4,399 t were caught in the North Atlantic Ocean and 16,650 t in the South, with a decrease for both the North and South Atlantic Ocean from 5,299 t and 17,221 t of the previous year, respectively.

1.3 Bluefin tuna

Chinese Taipei longliners fished bluefin tuna in the Mediterranean Sea and in waters of the eastern Atlantic Ocean. The catch was 633 t in 2001, an increase of 320 t from 2000.

1.4 Tropical tunas

Catches of bigeye tuna and yellowfin tuna from the Atlantic Ocean in 2001 were estimated to be about 16,429 t and 4,805 t, respectively, a decrease of 2.18% for bigeye tuna (16,795 t in 2000), and a decrease of 15% for yellowfin tuna (5,661 t in 2000) from the previous year.

1.5 Swordfish

The preliminary estimate of swordfish catches in the Atlantic Ocean was 1,448 t in 2001, a decrease of 12% from 2000, comprised of 281 t from the North Atlantic Ocean and 1,167 t from the South Atlantic Ocean.

2. Researches and statistics

2.1 Domestic research and statistics

The routine collection and compilation of data for tuna and tuna-like species has been applied. The data, including Task I and Task II for all tuna and tuna-like species ICCAT competence, as well as the number of fishing vessels have been reported to ICCAT Secretariat. Chinese Taipei scientists also presented their research results at the regular meetings and the inter-sessional working group meetings of the SCRS.

2.2 Financial contribution to ICCAT scientific research

In addition to the domestic research conducted by Chinese Taipei scientists, the government has continued

[1] Original report in English; appendices available from the Secretariat.

[2] Fisheries Administration

providing financial support for the scientific research programs implemented by ICCAT. In 1998, a sum of USD 25,000 was donated by the Fisheries Administration, of which USD 10,000 was for the Bigeye Year Program, USD 5,000 each for the Bluefin Year Program and the Billfish Program, and USD 5,000 for the ICCAT Secretariat. In 1999, except for USD 5,000 for ICCAT Secretariat, the donation of USD 5,000 each for the Bluefin Year Program and Billfish Program continued. In 2000 and 2001, USD 15,000, including USD 10,000 for the Billfish Program and USD 5,000 for the Bluefin Year Program was donated. In 2002, a donation was made of USD 5,000 for the Billfish Program, USD 5,000 for Bluefin Year Program, and USD 5,000 for the ICCAT Secretariat.

Furthermore, the Fisheries Administration has provided voluntary contributions to the four-year Bigeye Tuna Year Program (BETYP) amounting to USD 100,000 in 1999 and 2000, and USD 67,000 in 2001. An additional donation of about USD 72,000 will be made in 2002. Chinese Taipei scientists are currently working with scientists from ICCAT and other countries to conduct this four-year research program.

3. Implementation of ICCAT conservation and management measures

In compliance with the conservation and management measures adopted by ICCAT, the Fisheries Administration has promulgated a number of corresponding measures. Currently, catch and/or size limits on northern albacore, eastern bluefin, northern and southern swordfish, as well as blue marlin and white marlin have been set for Chinese Taipei distant water longline (DWLL) fleet operating in the Atlantic Ocean. More detailed information follows herewith:

3.1 By species

3.1.1 Albacore

According to the ICCAT recommendation adopted in 2001, a catch limit of 27,500 t of southern albacore was set for Chinese Taipei, South Africa, Brazil and Namibia. There was no agreement on the allocation of catch quota for each individual country. In accordance with the requirement set forth in the recommendation, Chinese Taipei reported its cumulative catch to South Africa. In addition, on May 31, 2002, Chinese Taipei also provided the Secretariat with a list of fishing vessels targeting albacore in the North Atlantic Ocean.

3.1.2 Bluefin tuna

In 2001, the bluefin tuna catch quota for Chinese Taipei vessels was 658 t in the eastern Atlantic Ocean including the Mediterranean Sea. The catches of this species during 1998-2001 were as follows: 456 t in 1998, 249 t in 1999, 313 t in 2000, and 633 t in 2001. In addition, in compliance with the resolution of ICCAT, vessels were restrained from fishing western Atlantic bluefin and operating in the Mediterranean Sea between June 1 and July 31. The size limitation of 6.4 kg on bluefin tuna catch in the regions was applied.

3.1.3 Swordfish

In 2001, the total catch of swordfish for Chinese Taipei vessels in the Atlantic Ocean was estimated to be about 1,448 t, of which 1,167 t were caught in the South Atlantic Ocean and 281 t in the North. Swordfish discards were estimated to be about 200 t, of which 133 t was caught in the South Atlantic Ocean and 67 t in the North area. In addition, the incidental catch was not allowed to exceed 8% of other major species catch, and restrictions on minimum weight (< 25 kg) and size (< 125 cm) of swordfish for vessels operating in this region were applied.

3.1.4 Atlantic white marlin and blue marlin

In 1997, ICCAT adopted a recommendation on the conservation of Atlantic white marlin and blue marlin, requesting 25% reduction on the catch of these two species from the 1996 catch level, within 1998 and 1999. The recommendation requested Chinese Taipei to further reduce its catch of blue marlin to 482.3 t and its catch of Atlantic white marlin to 424.5 t. The catches of blue marlin and white marlin were 240 t and 152 t, respectively in 2001, both within the catch level as recommended. In addition, the discard of blue marlin and white marlin were estimated to be about 185 t and 14.2 t in the Atlantic Ocean.

3.1.5 Bigeye tuna

The estimated catch of bigeye tuna in the Atlantic Ocean was about 16,429 t in 2001. In addition to the catch limit on bigeye tuna, Chinese Taipei has also provided a list of vessels targeting bigeye tuna in this region since 1997, to comply with the ICCAT recommendation on registration and exchange of information on bigeye tuna fishing vessels. Besides, there is also a minimum size limit of 3.2 kg for bigeye tuna caught in this region.

3.2 By activity

3.2.1 Limit on the number of fishing vessels for bigeye tuna and northern albacore

The number of fishing vessels for catching bigeye tuna was limited to 125 in accordance with the *Recommendation by ICCAT on the Bigeye Tuna Conservation Measures* (00-1).

In accordance with the 1998 *Recommendation by ICCAT on the Limitation of Fishing Capacity on Northern Albacore* (98-8), the number of fishing vessels for catching northern albacore was set at the average number for the period of 1993-1995, and a list of vessels fishing for northern albacore was transmitted to ICCAT Secretariat on May 31, 2002. Likewise, in accordance with the *Recommendation by ICCAT Concerning Registration and Exchange of Information of Fishing Vessels Fishing for Tuna and Tuna-like Species in the Convention Area* (00-17), a list of respective vessels larger than 24 meters length overall that were licensed to fish for tuna and tuna-like species in the ICCAT Convention area was transmitted to ICCAT Secretariat.

3.2.2 Catch limits and minimum sizes

In accordance with the relevant ICCAT Recommendations, catch limits on bigeye tuna, eastern bluefin tuna, northern and southern swordfish, blue marlin and white marlin have been set. Measures to prohibit catch of undersized fish for yellowfin tuna, bigeye tuna, bluefin tuna and swordfish were also implemented.

During 2001, information on the accumulative catches of southern albacore was reported to South Africa every two months based on the 2000 *Recommendation by ICCAT on Revision and Sharing of the Southern Albacore Catch Limit*. Starting in 2002, information on the accumulative catches of southern albacore was reported to the Secretariat under the requirement as set forth in Resolution 01-06.

As for the new *Recommendation by ICCAT Regarding Compliance with Management Measures which Define Quotas and/or Catch Limits* (00-14), Chinese Taipei will take into account the relevant adjustment of underages/overages from one year to be added to/subtracted from the quota/catch limit immediately after or one year after that year.

3.2.3 Closed seasons

In accordance with the 1993 ICCAT Recommendation (93-7), a regulation to prohibit longline vessels to fish for bluefin tuna in the Mediterranean from June 1 to July 31 was implemented.

3.2.4 Ban on imports

According to ICCAT Resolutions/Recommendations (01-15, 01-14, 00-16, 00-15, 99-8, 99-10), imports of products of bluefin tuna, swordfish, and bigeye tuna caught by countries as referred to in the Resolutions/Recommendations have been prohibited.

3.2.5 Observer programs

Two scientific observers were placed on board two large-scale tuna longliners operating in the Atlantic Ocean during 2002, for the collection of scientific data, biological samples and information on the fishing operations as well as targeted and non-targeted species.

3.2.6 Vessel monitoring

All vessels that were permitted to fish for tuna and tuna-like species in the ICCAT Convention area were required to install a satellite-based vessel monitoring system (VMS).

4. Inspection scheme and activities

4.1 Inspections

The catches landed at domestic ports are required to undergo inspections according to ICCAT Resolutions/Recommendations, upon receipt of reports on alleged violations.

4.2 Related activities

To double check actual landings and reported landings, landing data were collected from traders stationed at foreign landing ports as well as at fish markets for those landings made at domestic ports. Furthermore, certified weight reports were obtained from the public surveyors who supervised the offloading of catch at importing countries, especially Japan, for crosschecking of landing/import/trade data.

5. Other recommendations

5.1 Measures to ensure effectiveness of ICCAT conservation and management measures and to prohibit illegal, unreported, and unregulated fisheries

In accordance with the *Resolution by ICCAT Calling for Further Actions Against Illegal, Unregulated, and Unreported Fishing Activities by Large-Scale Tuna Longline Vessels in the Convention Areas and Other Areas* (99-11), and the *Supplemental Resolution by ICCAT to Enhance the Effectiveness of the ICCAT Measures to Eliminate Illegal, Unregulated and Unreported Fishing Activities by Large-Scale Tuna Longline Vessels in the Convention Area and Other Areas* (00-19), thirty-one FOC vessels that were built in our shipyards have been re-registered to our registry. A list of the changes of the re-registered vessels was also reported to the Secretariat.

In accordance with the *Resolution by ICCAT Concerning More Effective Measures to Prevent, Deter and Eliminate IUU Fishing by Tuna Longline Vessels* (01-19), the following measures have been taken: (1) Administrative guidance has been given to the industry concerning not to engage in FOC/IUU activities that might diminish ICCAT conservation and management measures; and (2) administrative guidance has been given to banking institutions not to grant loans to IUU fishers.

Furthermore, in accordance with *Resolution by ICCAT Further Defining the Scope of IUU Fishing* (01-18), vessels that have been identified as being involved in IUU fishing have been prohibited access to our fishing ports.

5.2 Implementation of the ICCAT Management Standard for Large-Scale Tuna Longline Vessels

Pursuant to the *Resolution by ICCAT Concerning a Management Standard for the Large-Scale Tuna Longline Fishery* (01-20), the Report of Implementation of the ICCAT Management Standard for Large-Scale Tuna Longline Vessels is herewith attached as Annex 1.

5.3 Information submitted to the ICCAT Secretariat

Lists of fishing vessels fishing bigeye tuna and northern albacore were sent to the Secretariat on May 30, 2002.

On July 31, 2002, the following information for 1999, 2000, and 2001 was sent to the Secretariat, namely, Task I catch statistics, Task I fishing power (fleet) statistics, Task II catch and effort statistics, Task II size data, and shark data. Furthermore, size data for 1998, 1999, and 2000 for specific species were transmitted to the Secretariat on September 11, 2002.

According to ICCAT recommendation adopted in 2001, a catch limit of 27,500 t on southern albacore was set for Chinese Taipei, South Africa, Brazil and Namibia, who were requested to initiate multilateral discussions when a total cumulative catch level of 22,000 t had been reached, to decide on steps to prevent catches exceeding the catch limit of 27,500 t. There was no initiative on discussions of catch allocation for individual countries. In accordance with the requirement as set forth in the recommendation, Chinese Taipei reported its cumulative catch to the Secretariat every two months in 2002.

5.4 Statistical Document

In accordance with the ICCAT Recommendation, regulations on the application of the Bluefin Tuna Statistical Document were implemented as from 1994. To meet the requirements of Japanese and U.S. domestic regulations on the import of swordfish, regulations on the application of the Swordfish Certification of Eligibility were implemented starting from June 1999 and November 2000 for the United States and Japan, respectively. Furthermore, a scheme for issuing the ICCAT Bigeye Tuna Statistical Document, in accordance with the ICCAT recommendation, has been conducted as from June 28, 2002.

Table 1. Task I catch estimate (in round weight, t) for the Chinese Taipei tuna longline fishery that operated in the Atlantic Ocean during the 1991-2001 period.

YEAR	*ALB*	*BET*	*YFT*	*BFT*	*SBF*	*SWO*	*BILL*	*SKJ*	*YOU*	*KGM*	*OTH*	*SKX*	*TOTAL*
1991	24,201	13,850	4,172	0	15	2,031	2,548	37	0	0	2,023	654	49,531
1992	25,272	11,546	4,528	0	14	2,127	1,455	29	0	0	1,103	538	46,612
1993	25,700	13,426	4,196	334	472	974	1,946	11	202	0	946	1,011	49,217
1994	28,982	19,680	6,660	729	172	3,336	2,375	17	0	0	1,541	1,896	65,388
1995	22,328	18,023	4,699	502	168	3,365	1,678	5	24	0	1,103	2,121	54,016
1996	22,861	21,850	6,653	472	157	3,394	1,369	15	3	0	1,183	2,283	60,240
1997	21,495	19,242	4,466	506	47	3,074	2,215	48	6	0	650	847	52,596
1998	19,204	16,314	5,328	456	234	1,433	1,495	75	6	0	121	969	45,635
1999	23,162	16,837	4,411	249	71	1,453	1,282	40	0	0	558	1,092	49,155
2000	22,520	16,795	5,661	313	215	1,650	1,087	41	0	0	714	961	49,957
2001*	21,049	16,429	4,805	633	205	1,448	441	25	0	0	975	675	46,685

* a preliminary estimate

* BILL: including WHM, BUM, BLM, and SAI

REPORTS OF OBSERVERS FROM NON-CONTRACTING PARTIES, ENTITIES OR FISHING ENTITIES

NATIONAL REPORT OF ST. VINCENT AND THE GRENADINES[1]

Leslie Straker[2]

1. The artisanal small-scale fishery

In 2001 there were 602 registered vessels in St. Vincent and the Grenadines and 1,500 fulltime fishers. Because of the small-scale nature of fishing operations, these vessels catch tunas and tuna-like species opportunistically. However, only 250 of these vessels (500 fishers) target large pelagics. More than 95% of these vessels are open fiberglass boats less than 8m in length. They are equipped with 15-125 Hp gasoline outboard engines. The other 5% of the pelagic fishing fleet is composed of six (6) longliners (13m in length) and several "day tour" boats that are engaged in sport fishing.

In general, a fishing trip has a duration of approximately eight hours for the open fiberglass vessels (4:00 am-4:00 pm) and up to five (5) days for the longliners. The smaller vessels fish predominantly in the eastern waters of the island 85 km offshore. The longliners conduct fishing in the western waters of the island 250 km offshore. Trolling by the open vessels, longlining by the longliners, beach seining and gillnetting are the usual fishing methods used to catch tuna and tuna-like species.

2. Data collection

Data are collected from 36 landing sites throughout the State. These landing sites are designated as primary, secondary or tertiary, based on the level of activity and infra-structural development at that site. The collection process follows a stratified cluster sampling methodology **(Table 1)**.

3. The high seas fishing fleet

These vessels are foreign owned vessels registered with St. Vincent and the Grenadines and conduct their fishing activities on the high seas. In 2001, the number of vessels reporting to conduct fishing activities in the Atlantic was 75. Tuna and tuna-like species were caught with yellowfin tuna, bigeye tuna and albacore being the main species targeted **(Table 2a and 2b)**. The southern Atlantic and eastern Atlantic were the two main areas of operations for these vessels.

4. Management plans and actions taken for the high Seas fishing vessels

As a Small Island Developing State (SIDS), St. Vincent and the Grenadines does not have many resources for revenue generation. The open registry has provided a significant source of revenue in the past. However, such revenue generating activities must be in compliance with acceptable international practices and standards. It is with this in mind that St. Vincent and the Grenadines has undertaken the following management measures geared toward supporting conservation measures taken by ICCAT.

1. Discontinuation of registration for new high seas fishing vessels under the relevant Merchant Act was put into effect in May 2001.
2. A new High Seas Fishing Act 2001 was legislated and necessary actions are now being taken to effect modest amendments to the Merchant Shipping Act such that it complements the High Seas Fishing Act.
3. Draft legislation on licensing and fee structure of high seas fishing vessels is currently being finalized.
4. Vessel owners and agents have been informed of the new High Seas Fishing Act 2001 and the pending High Seas Fishing Regulations.

[1] Original report in English.

[2] Fisheries Division, Ministry of Agriculture Lands and Fisheries.

5. Implementation of High Seas Fishing Regulations is expected to take full effect by early October 2002.
6. Daily catch and effort log forms were developed and circulated to the vessels in June 2002. Vessel captains have been asked to fill out these forms and return them to the St. Vincent and the Grenadines Fisheries Division. Some companies, encompassing 40 vessels, all fishing in the Atlantic, have begun to complete the log forms on a routine basis.
7. Vessel monitoring would be accomplished by a satellite monitoring system.
8. ICCAT membership is being considered.

5. Legislation

The Fisheries Division operates under the Ministry of Agriculture Lands and Fisheries and is responsible for the overall management and development of the fisheries sector. The Division has the following pieces of legislation to assist in this task:

1. The Maritime Areas Act of 1983
2. The Fisheries Act, No1 of 1986
3. The Fisheries Regulations, No 8 of 1987 to the Act No 1 of 1986
4. The Fisheries Processing Regulations of 2001
5. The High Seas Fishing Act of 2001
6. The High Seas Fishing Regulations (pending)

Table 1. Annual artisanal small-scale fishery landings (t) of tunas and tuna-like species in St. Vincent and the Grenadines 1997-2001

Species	*Scientific name*	*1997*	*1998*	*1999*	*2000*	*2001*
Yellowfin tuna	*Thunnus albacares*	35.0	48	38	33.4	23.5
Albacore	*Thunnus alalunga*	0.0	0.04	0.5	0.8	0.3
Skipjack tuna	*Katsuwonus pelamis*	41.7	57.4	37.0	68.1	96.8
Blackfin tuna	*Thunnus atlanticus*	21.5	17.2	15.0	23	24
Bigeye tuna	*Thunnus obesus*	1.8	2.2	0.8	0.6	0.03
Little tuna	*Euthynnus alleteratus*	0.0				
Wahoo	*Acanthocybium solandri*	10.0	64.6	52.0	46.1	55.9
Mackerel	*Scomberomorus spp.*	1.0	0.6	1.1	0.9	0.4
Atlantic sailfish	*Istiophorus albicans*	2.5		0.6		
Marlin	*Makaira nigricans and Tetrapturus albidus*	1.3	2.1	0.6	0.1	0.7
Swordfish	*Xiphias gladius*	1.3	0.4	0.5	0.1	0
Shark unsp.		10.3		1.0		
Shortfin mako	*Isurus oxyrhincus*			2.5		

Table 2a. Catch data (t) for St. Vincent & the Grenadines high seas fishing vessels operating in the Atlantic in 2001(38 vessels contributed to this data set)

Species	*Scientific Name*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
Yellowfin tuna	*Thunnus albacares*	172	139	58	73	71	96	186	110	73	223	39	100	**1,341**
Bigeye tuna	*Thunnus obesus*	68	73	87	44	41	38	42	40	38	34	0	0	**506**
Albacore	*Thunnus alalunga*	540	417	298	407	490	1,079	691	268	334	50	392	694	**5,662**
Sword fish	*Xiphias gladius*	4	3	10	0	0	0	0	1	4	0	0	0	**22**
Marlin		23	27	11	19	25	20	35	21	23	30	31	41	**306**
Shark unsp.		3	4	1	14	5	8	35	10	7	4	15	9	**115**
Wahoo	*Acanthocybium solandri*	4	6	4	12	18	14	13	16	23	23	63	59	**255**
Miscellaneous		27	25	3	2	5	5	3	5	9	0	0	0	**83**
		0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL		**840**	**695**	**472**	**571**	**656**	**1,261**	**1,006**	**471**	**512**	**364**	**540**	**903**	**8,290**

Table 2b. Length and GRT breakdown of the 38 vessels that contributed to the data set in Table 2a

Length (m)	*GRT (t)*	*No. of vessels*
20-24	50-100	24
25-30	100-200	3
31-35	200-300	3
40-45	500-600	4
>46	>600	4

NATIONAL REPORT OF TURKEY[1]

I. K. Oray[2], F.S. Karakulak, T.Z. Alıçlı, A.E. Kahraman

1. Introductıon

Scombridae species in Turkish waters are important for the Turkish fishery that fishes blufin tuna (*Thunnus thynnus*, Linnaeus 1758), Atlantic black skipjack (*Euthynnus alletteratus*, Rafinesque 1810), albacore (*Thunnus alalunga*, Bonnaterre 1788), bullet tuna (*Auxis rochei*, Risso 1810), and Atlantic bonito (*Sarda sarda*, Bloch 1793). In addition to these, swordfish should also be mentioned (*Xiphias gladius*, Linnaeus 1758) as another important species.These species are consumed as fresh and canned.

2. Fishing situation

2.1 Bluefin tuna

Bluefin tuna are caught mainly by purse seines. However, longlines and poles are used on a small scale in this fishery.

In the last two years (2001 and 2002), mainly in May and July, 25 to 29 purse seiners measxuring 20-64 m length were engaged in the bluefin tuna fishery in the eastern Mediterranean Sea **(Table 1)**.

2.2 Atlantic black skipjack

Atlantic black skipjack are caught in the Aegean Sea and in the eastern Mediterranean by purse seine, mainly between the months of February and June **(Table 2)**.

2.3 Atlantic bonito

Atlantic bonito, which has a high commercial value in the Turkish fishery, are caught mainly in the Black Sea, the Sea of Marmara, and in the northern Aegean Sea, between the months of September and December.

Dalians (traps), purse seines, trammel nets, beach seines, pole and lines are used in this fishery **(Table 3)**.

2.4 Bullet tuna

Bullet tuna are caught intensively by purse seines and drift nets in the Aegean Sea and the eastern Mediterranean Sea, particularly between March and May.

In 1999, the catch of bullet tuna amounted to 316 tons.

2.5 Swordfish

Until recently, swordfish were caught mainly by longline and harpoon. Depending on the location and season, different fishing methods are used in the Mediterranean Sea **(Table 4)**.

2.5.1 Longline fishery

This is the most important fishing method and is carried out by boats measuring 7 to 11 m length. The fishing season starts in May and continues until November.

[1] Original report in English.

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2.5.2 Harpoon fishery

Up to 1970, harpoon fishing was carried out in the Sea of Marmara. Due to the decreasing swordfish populations in the Sea of Marmara, this fishery ceased operations. The harpoon fishing for swordfish is now carried out between May and June in the northern Aegean Sea by measuring under 12 m.

2.5.3 Driftnet fishery

Up to 1970, the driftnet fishery was carried out in the Sea of Marmara. This fishery continued until 2001 in the central and southern Aegean Sea by boats of 15 m. Due to the ICCAT regulations, since 2002 this method has not been in use any more.

3. Results

Since 1992, the Faculty of Fisheries of Istanbul University has been conducting active research on large pelagic fish in Turkish waters, in close colloboration with ICCAT. Turkey is complying with the ICCAT regulations and hopes to become an ICCAT member very soon.

Table 1. Total bluefin tuna catches (in t) by Turkey between 1995 and 1999

Species	*1995*	*1996*	*1997*	*1998*	*1999*
Bluefin tuna	4,220	4,616	5,093	5,899	1,407

Table 2. Total Atlantic black skipjack catches (in t)in Turkish waters between 1995 and 1999

Species	*1995*	*1996*	*1997*	*1998*	*1999*
Atl. black skipjack	--	--	--	500	750

Table 3. Total Atlantic bonito catches (in t) in Turkish waters between 1994 and 1999

Species	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*
Atlantic bonito	10,093	8,944	10,282	7,810	24,000	12,000

Table 4. Total swordfish catches (in t) in the Turkish waters between 1995 and 2000

Species	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*
Swordfish	306	320	350	450	230	373

REPORTS OF OBSERVERS FROM INTERGOVERNMENTAL ORGANIZATIONS

REPORT OF THE CARICOM FISHERIES UNIT[1]

S. Singh-Renton[2]

1. Introduction

The CARICOM Fisheries Unit (CFU) is currently responsible for execution of the fisheries component of the Integrated Caribbean Regional Agriculture and Fisheries Development Programme (ICRAFD) which commenced in 1999 and which will end in 2005. During this period, ICRAFD is addressing a broad range of fisheries development and management issues in 15 CARIFORUM countries (The Caribbean Forum of African, Caribbean and Pacific States - a grouping of Caribbean States which are signatories to the Lomé IV Convention), all of which are developing states. Except for the Dominican Republic, other CARIFORUM States are also Member States of CARICOM (The Caribbean Community and Common Market, an inter-governmental organisation of which there are 15 Member States: Antigua and Barbuda, Commonwealth of The Bahamas (The Bahamas is a member of the Community but not of the Common Market), Barbados, Belize, Commonwealth of Dominica, Grenada, Republic of Guyana, Republic of Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and The Grenadines, Republic of Suriname, Republic of Trinidad and Tobago).

The establishment of the Caribbean Regional Fisheries Mechanism (CRFM) in 2002 is expected to play a key role in continuing and expanding the work commenced by the CARICOM Fisheries Resource Assessment and Management Programme (CFRAMP) that ended in 2001. The CFU is coordinating CRFM activities pending formal activation later in 2002 of the CRFM secretariat, and has prepared this report on behalf of those CARICOM & CARIFORUM States that are ICCAT non-Contracting Parties.

2. Fisheries information

The large pelagic fisheries in these countries are mostly artisanal and small-scale, with the introduction of limited semi-industrial longline operations in several territories during the late 1980s-early 1990s. Significant recreational and sport fisheries also exist and are an important component of tourism-based economies. Given that large pelagic fishing operations are conducted well within countries' Exclusive Economic Zones (EEZs), fishing trips are largely opportunistic, harvesting whatever is locally abundant at the time. Consequently, observed fluctuations in reported landings from year to year at least partly reflect annual fluctuations in local abundance of each species. In the Eastern Caribbean territories, most large pelagic landings occur during the period November-July. The use of FADs has gradually increased in importance, especially in St. Kitts and Nevis and The Dominican Republic. National data information systems provide reasonable coverage of fish landings at main landing sites. However, many small vessels operate from beaches and other sites, which are scattered along the extensive coastlines of these countries, and which often have little supporting infrastructure. Such landing sites are not readily accessible and this continues to present certain difficulties for regular adequate sampling coverage. As a result, in all cases, reported landings represent underestimates of the real values. Some territories, particularly Guyana, recognise the need to improve reporting of landings at the individual species level, and are working towards this goal.

With extended jurisdiction, and as a part of ongoing economic development, many CARICOM countries have begun to expand their offshore fishing capacity for large pelagic fishes, or have expressed the intention of doing so. In view of this, FAO commenced a project in 2001 to review and to make recommendations concerning the expansion of domestic fisheries for large pelagic species by CARICOM countries. The results of the first phase of the FAO project were presented at a regional Workshop held in June 2002, and that Workshop made specific recommendations regarding the issue of improving national data information systems, and enhancing countries'

[1]Original report in English

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abilities to participate in regional and international arrangements for management of large pelagic resources occurring in the Caribbean region.

3. Statistics and research

Table 1 provides currently available best estimates of commercial landings of large pelagic species in the Commonwealth of Dominica, St. Kitts and Nevis, Grenada, St. Lucia, St. Vincent and the Grenadines (for the artisanal and small-scale fishery), Jamaica, the Republic of Guyana, and the Dominican Republic. As noted in **Table 1**, some categories can include more than one species, and may represent a different group of species for each country.

As noted in section 2, yearly fluctuations in species landings partly reflect annual changes in local abundance as large pelagic fishing operations generally target several species simultaneously. The steady increases in tuna landings reported by the island of Nevis can be attributed to the recent increased use of FADs. In 2001, Grenada recorded a reduction in its swordfish landings. In 2002, Grenada did not issue any export licences for swordfish, in an attempt to reduce further the harvest of this species. This may have caused local fishers to land more yellowfin tuna and billfishes, which are usually very abundant in Grenadian waters. In the case of Guyana, large pelagic fisheries are only now developing and are not adequately covered by the present statistical information system. The data presented are recorded landings only. Owing to this, years of low landings probably reflect poor sampling coverage in those years rather than genuine decreases in landings. The increasing use of FADs in recent years in the Dominican Republic (DR) may explain the observed increased landings of yellowfin tuna, but overall landings of large pelagic species in the DR decreased by more than 50% between 1997 and 2000.

3.1 FAO TCP project RLA/0070: preparation for expansion of domestic fisheries for large pelagic species by CARICOM countries

This project commenced in 2001 and has three phases. Phase 1, which was completed earlier in 2002, focused on acquisition and synthesis of current technical, social and economic information on large pelagic fisheries in CARICOM countries, and examined the potential and requirements for further development of these fisheries, including the benefits and technical and legal implications of different regional and international management arrangements. A FAO-CARICOM regional Workshop was held in June 2002 to review the results of Phase 1, and to make specific recommendations for proceeding with phases 2 and 3. Regarding options for future management of large pelagic species, the Workshop recognised that all Atlantic large pelagic species except possibly dolphinfish (*Coryphaena hippurus*) are included in ICCAT's mandate. Workshop participants agreed that CARICOM countries should improve their collaboration with ICCAT, especially important for contributing to ICCAT's current efforts in assessment and management of the more oceanic species. The Workshop recommended that the CRFM pursue the development of arrangements for management of the coastal large pelagic species with due reference to ICCAT. To achieve these aims, the Workshop recommended that countries improve their statistical reporting obligations to ICCAT, and acquire the necessary data to document the important social and economic contribution of the large pelagic fisheries so as to demonstrate to their governments the urgent need for supporting collaboration with regional and international fisheries management arrangements.

Phase 2 of the FAO project will involve political negotiations among CARICOM countries to consider development of a co-ordinated regional approach and to identify the most appropriate mechanism for its implementation. Phase 3 will accommodate an overall review of the results of Phases 1 and 2, and contribute to the development of a formal regional agreement by CARICOM countries.

Table 1. The annual commercial large pelagic fish landings (t) of seven CARICOM countries and one CARIFORUM country for the period 1997-2001.

Country	*Common name*	*Scientific name*	*1997*	*1998*	*1999*	*2000*	*2001*
Dominica	Yellowfin tuna	*Thunnus albacares*			80.4	78.1	
	Skipjack tuna	*Katsuwonus pelamis*			85.2	85.5	
	Blackfin tuna	*Thunnus atlanticus*			79.2	83.2	
	Wahoo	*Acanthocybium solandri*			50.0	45.9	
	King mackerel	*Scomberomorus cavalla*			36.0	34.9	
St. Kitts	Tuna and mackerels unspecified		3.0	10.0	9.0	3.0	4.4
Nevis	Tuna and tuna-like unspecified		4.3	6.3	14.7	20.5	18.8
Grenada	Yellowfin tuna	*Thunnus albacares*	302.4	484.1	430.0	403.2	758.8
	Skipjack tuna	*Katsuwonus pelamis*	14.9	23.4	23.0	23.3	15.3
	Blackfin tuna	*Thunnus atlanticus*	126.3	232.7	94.0	163.8	222.7
	Bigeye tuna	*Thunnus obesus*	1.0	0.3	<0.5	0.4	0.2
	King mackerel	*Scomberomorus cavalla*	4.4	28.4	13.5	9.0	3.8
	Wahoo	*Acanthocybium solandri*	56.0	59	82.0	50.6	71.1
	Atlantic bonito	*Sarda sarda*	5.5	13.9	16.1	7.2	9.6
	Albacore	*Thunnus alalunga*	6.0	7	6.0	12.2	20.8
	Atlantic sailfish	*Istiophorus albicans*	83.2	151.2	148.0	164.3	186.7
	Blue marlin	*Makaira nigricans*	47.2	60	100.0	86.6	103.5
	White marlin					0.5	15.1
	Swordfish	*Xiphias gladius*	14.8	32.3	42.2	84.5	73.5
	Shark unspecified		8.8	17.9	24.0	29.1	28.8
	Spanish mackerel	*Scomberomorus brasiliensis*	0.2	0.9	0.9	1.0	0.2
	Frigate tuna	*Auxis thazard*	0.6		<0.1	0.2	1.1
Guyana	King mackerel	*Scomberomorus cavalla*	269.5	440	398.0	214	239
	Serra Spanish	*Scomberomorus*	571.5	625	1143.0	308	329
	Crevalle jack	*Caranx hippos*		118	78.0	233	58
	Blacktip shark	*Carcharhinus limbatus*	162.3			50	14.4
	Smalltail shark	*Carcharhunus porosus*	23.4			192	114
	Tiger shark	*Galeocerdo cuvieri*					4
	Smooth hammerhead	*Sphyrna zygaena*	4.7			11	
	Shark unspecified		2193.8	2562	2175.0	903	666
St. Lucia	Yellowfin tuna	*Thunnus albacares*	109.5	166.2	123.2	133.7	144.5
	Skipjack tuna	*Katsuwonus pelamis*	99.8	163.1	153.0	216.1	151.4
	Blackfin tuna	*Thunnus atlanticus*	39.7	60.3	41.0	45.3	107.5
	Albacore tuna	*Thunnus alalunga*	0.2	0.2	0.3	0.5	3.1
	Atlantic black skipjack	*Euthynnus alletteratus*	1.7	1.6	2.3		1.1
	Tuna unspecified		1.0	3.1	3.0	1.0	0.3
	Atlantic bonito	*Sarda sarda*		<0.1	0.2	0.1	0.1
	Bullet tuna	*Auxis rochei*					0.1

	King mackerel	*Scomberomorus cavalla*	3.9		-	9.1	0.6
	Spanish mackerel	*Scomberomorus maculatus*	0.2		-		0.5
	Cero mackerel	*Scomberomorus regalis*	0.1		-	3.2	5.41
	Wahoo	*Acanthocybium solandri*	223.8	250.3	310.0	243	213
	Blue marlin	*Makaira nigricans*	3.5	1		10.3	4.6
	Shark unspecified				6.0		
	Bigeye tuna	*Thunnus obesus*	0.1	<0.1	<0.1		0.7
St. Vincent and	Yellowfin tuna	*Thunnus albacares*	35.0	48	38.0	33.4	23.5
The Grenadines:	Albacore	*Thunnus alalunga*	0.0	0.04	<0.5	0.8	0.3
artisanal / small-scale fishery	Skipjack tuna	*Katsuwonus pelamis*	41.7	57.4	37.0	68.1	96.8
	Blackfin tuna	*Thunnus atlanticus*	21.5	17.2	15.0	23	24
	Bigeye tuna	*Thunnus obesus*	1.8	2.2	0.8	0.6	0.03
	Little tuna	*Euthynnus alleteratus*	0.0				
	Wahoo	*Acanthocybium solandri*	10.0	64.6	52.0	46.1	55.9
	Mackerel	*Scomberomorus spp.*	1.0	0.6	1.1	0.9	0.4
	Atlantic sailfish	*Istiophorus albicans*	2.5		0.6		
	Marlin	*Makaira nigricans & Tetrapturus albidus*	1.3	2.1	0.6	0.1	0.7
	Swordfish	*Xiphias gladius*	1.3	0.4	0.5	0.1	0
	Shark unsp.		10.3		1.0		
	Shortfin mako	*Isurus oxyrhincus*			2.5		
Jamaica	Yellowfin tuna	*Thunnus albacares*					
	Skipjack tuna	*Katsuwonus pelamis*					
	Atlantic bonito	*Sarda sarda*					
	Blackfin tuna	*Thunnus atlanticus*					
	Tuna unspecified		119.8			35.0	37.5
	Mackerel unspecified		155.3			44.0	47.9
Dominican Rep.	Albacore	*Thunnus alalunga*	323.2	120.7	73.4	95.2	
	Yellowfin tuna	*Thunnus albacares*		88.9	220.2	226.3	
	Tuna unspecified		624.2	195.8	173.6	207.8	
	King mackerel	*Scomberomorus cavalla*	588.8	288.0	230.0	225.6	
	Spanish mackerel	*Scomberomorus maculatus*	231.2	190.7	125.0	158.4	
	Wahoo	*Acanthocybium solandri*	325.2	112.1	31.1	35.4	
	Small tunas	*Auxis spp*	230.6	157.5	17.9	18.8	
	Atlantic sailfish	*Istiophorus albicans*	100.7	88.9	26.5	66.8	
	Blue marlin	*Makaira nigricans*	40.9	71.1	29.4	19.0	

Notes:

All countries:

i) Blank spaces indicate that data were not made available for this report.

ii) Data for 2001, where available, are preliminary and subject to revision.

iii) At present, wahoo catches may include a small amount of king mackerel. Recording by individual species slowly improved through the years in some instances.

Nevis and the Dominican Republic: The use of FADs has increased in recent years.

Grenada and St. Vincent and the Grenadines: Landings of skipjack tuna can include catches of frigate tuna and bullet tuna.

Guyana: All data for Guyana represent sampled landings only.

Jamaica: Though not recorded, sharks are taken as a by-catch.