

**PROGRESS OF THE ICCAT ENHANCED RESEARCH PROGRAM FOR BILLFISH  
IN THE WESTERN ATLANTIC OCEAN DURING 1995**

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**SUMMARY**

Research activities of the ICCAT Enhanced Research Program for Billfish in the western Atlantic Ocean during 1995 are summarized by location and research objective. At-sea sampling will accomplish about 30 observer trips on Venezuelan industrial longline vessels in 1995. Most of these vessels are based out of Cumana targeting tuna or swordfish. Biological samples of 32 swordfish for reproductive organs and for 20 swordfish for calcified structures (age and growth) were done during the 1995 sampling season. At least three sailfish tagging cruises were made by the Western Atlantic Coordinator, members of CARICOM, and St. Vincent Division of fisheries staff on small longline vessels off St. Vincent. Shore-based sampling of billfish landings for size and sex data was obtained from Venezuela, Grenada, U.S. Virgin Islands, Bermuda, and Brazil. Observer training was initiated in Brazil and a few pilot cruises on Brazilian longline vessels are anticipated before the end of 1995. Program participants in Venezuela, Grenada, and Barbados continued to assist in obtaining information on over 40 tag-recaptured billfish in the western Atlantic Ocean. The Federation of Japan Tuna Fisheries Cooperative Associations reported that in 1995, Japanese longline vessels have started tagging billfish that come along side their vessels alive. Spain also indicated that they will initiate tag and release activities of billfish caught on their longline vessels. Age and growth samples from three blue marlins over 1,000 pounds and one juvenile blue marlin (10.5 inches) were obtained from Bermuda during 1995.

**RESUMÉ**

Les activités de recherche dans le cadre du Programme Istiophoridés de l'ICCAT dans l'Atlantique Ouest en 1995 sont récapitulées par location et domaine de recherche. L'échantillonnage en mer effectuera environ 30 sorties d'observateurs sur des palangriers industriels vénézuéliens en 1995. La plupart de ces bateaux sont basés à Cumana et visent le thon ou l'espadon. Des échantillons biologiques d'organes reproducteurs de 32 espadons, et de structures osseuses de 20 espadons (âge et croissance) ont été prélevés pendant la saison d'échantillonnage de 1995. Au moins trois campagnes de marquage de voilier ont été effectuées par le Coordinateur pour l'Atlantique Ouest, des membres de la CARICOM, et le personnel de la St. Vincent Division of Fisheries, sur des petits palangriers basés à St. Vincent. De l'échantillonnage à terre de débarquements d'istiophoridés à la recherche de données sur la taille et le sexe a été obtenu du Venezuela, de Grenade, des Iles Vierges (USA), des Bermudes et du Brésil. La formation d'observateurs a été entreprise au Brésil, et quelques campagnes pilotes sur des palangriers brésiliens sont prévues avant fin 1995. Les personnes qui ont participé au programme au Venezuela, à Grenade et aux Barbades continuent d'aider à recueillir des informations sur plus de 40 istiophoridés marqués et recapturés dans l'Atlantique Ouest. La Federation of Japan Tuna Fisheries Cooperative Association a signalé qu'en 1995 les palangriers japonais avaient commencé à marquer des istiophoridés qui se présentent vivants le long de leur bateau. L'Espagne a également signalé qu'elle commencera du marquage d'istiophoridés capturés par ses palangriers. Des échantillons pour l'âge et la croissance de 3 makaires bleus de plus de 1.000 livres, et d'un makaire bleu juvénile (10,5 inches) ont été obtenus des Bermudes en 1995.

## RESUMEN

Se resumen por localidad y objetivo de investigación las actividades de investigación en 1995 del Programa ICCAT de Investigación Intensiva sobre Marlines. Se habrán efectuado en 1995 en unos 30 viajes de actividades de muestreo a bordo en palangreros industriales venezolanos. La mayor parte de estos buques tienen base fuera de Cumaná, persiguiendo túndidos o pez espada. Durante la temporada de muestreo de 1995 se tomaron muestras biológicas de 32 ejemplares de pez espada para obtener órganos reproductores y 20 ejemplares de pez espada para obtener estructura calcificadas (edad y crecimiento). Por lo menos 3 campañas de marcado de pez vela fueron llevadas a cabo por el Coordinador del Atlántico oeste, miembros de CARICOM y personal de St. Vincent División of Fisheries en pequeños palangreros frente a St. Vincent. Se obtuvo muestreo en la orilla de desembarques de marlines para obtener datos de talla y sexo de Venezuela, Granada, Islas Vírgenes (EE.UU.), Bermuda y Brasil. Se inició en Brasil la capacitación de observadores y se anticipan algunas campañas piloto en palangreros brasileños antes del final de 1995. Los participantes en los programas en Venezuela, Granada y Barbados continuaron ayudando a obtener información sobre más de 40 marlines marcados-recapturados en el Océano Atlántico oeste. La Federation of Japan Tuna Fisheries Cooperative Associations comunicó que, en 1995, los barcos palangreros japoneses habían comenzado a marcar los marlines que se aproximaban vivos a sus barcos. España indicó también que darán comienzo actividades de marcado y liberación de marlines capturados por sus palangreros. Durante 1995 se obtuvieron de Bermuda muestras de edad y crecimiento de 3 agujas azules de más de 1.000 libras y de una aguja azul juvenil (10.5 pulgadas).

## INTRODUCTION

Research activities during 1995 began immediately after the SCRS meeting in mid-November, 1994. The objectives in the initial program plan in 1986 (Appendix to Annex 12 of Report of Biennial Period, 1986-87 part 1) have not changed, and include: (1) Provide more detailed catch and effort statistics; (2) Initiate and expand the ICCAT billfish tagging program; and (3) Assist in collecting data for age and growth studies.

The two locations for intensive scientific study given in the original plan remain the Caribbean Sea and the west coast of Africa. The overall program coordinator during 1995 was Dr. Bradford E. Brown (U.S.A.); Dr. Eric D. Prince (U.S.A.) was coordinator for the western Atlantic Ocean, and Dr. Taib Diouf (Senegal) and Mr. Martin Mensha (Ghana) coordinated activities for the eastern Atlantic Ocean. The following coordination activities were realized by this program during 1995 in the western Atlantic Ocean.

### OBJECTIVE 1 -- LANDING STATISTICS

Dr. Eric Prince made 4 trips to western Atlantic locations in 1995 as part of his coordination responsibilities for program activities. The first trip in the western Atlantic was in conjunction with CARICOM and St. Vincent Department of Fisheries

staff, in January, 1995, for the purposes of conducting a survey from a St. Vincent longline vessel to evaluate the effectiveness of using live bait to increase billfish tag and release efforts. A brief trip was made in early April, 1995, to meet with Ms. Eiko Ozaki, Assistant Manager of Federation of Japan Tuna Fisheries Cooperative Associations in New York, to discuss implementation of the ICCAT billfish tagging program on Japanese longline vessels. A trip to Santos, Brazil, was also made by the western Atlantic Coordinator in April, 1995, to give a report on the ICCAT Billfish Program and to train observers for possible at-sea research activities. In addition, the government of Bermuda and the recreational community provided funds for the western Atlantic Coordinator to travel to Bermuda to give a report on the ICCAT Billfish Program. Mr. Freddy Arocha with the University of Miami (supported by National Marine Fisheries Service funds), made 3 trips to Venezuela since the 1994 SCRS meeting to work on swordfish biology (one in November 1994, the rest in 1995), establish and confirm the annual ICCAT billfish sampling schemes, collect data, and return biological samples to Miami.

The following summarizes research progress according to location and/or type of research activity.

Barbados. The shore-base sampling in Barbados was not conducted due to low fishing effort but at least 7 recreational billfish tournament were covered in 1995. In addition, summaries of catch and effort data from 3 previous years of recreational billfish tournament sampling were submitted to the western Atlantic Coordinator in 1995.

Bermuda. The Ministry of Fisheries invited the western Atlantic coordinator to visit Bermuda (travel expenses covered by Bermuda) and present a report on the progress of the ICCAT Enhanced Research Program for Billfish in May, 1995. In addition, Ministry of Fisheries staff were trained in the collection of skeletal structures used for age and growth assessment of billfish.

Brazil. The western Atlantic coordinator traveled to Santos, Brazil, to report on progress of the ICCAT Enhanced Research Program for Billfish and promote the tagging program. One report was given at a seminar sponsored by the Departamento de Pesca, as well as to a group of recreational billfish tournament fishermen. In addition, training of several technicians for at-sea observer activities was also accomplished. Brazilian scientists hoped to accomplish at least one at-sea observer trip during 1995.

Grenada. The ministry of industrial development and fisheries continued shore-based sampling activities of the artisanal fisheries during the 1995 season. Sampling of CPUE, size and sex information of billfish landings for the annual Spice Island Billfish Tournament was also accomplished in 1995.

Jamaica. Dr. Guy Harvey continues to collect data at recreational tournaments including size and sex information of the landed fish, as well as catch and effort data. Dr. John Graves (Virginia Institute of Marine Science) intends to collect biological samples from blue marlin landed during the 1995 Port Antonio billfish tournament held in October.

St. Maarten, N.A. The western Atlantic coordinator could not make a trip to St. Maarten in 1995 and no samples were obtained from the Nichirei Carib Corporation. In addition, data was not collected from the annual recreational billfish tournament, although these data are hopefully available from the recreational fishing club that sponsors this tournament. St. Maarten did receive a direct hit from Hurricane "Luis" in September, 1995, and early reports indicate severe damage to the islands infrastructure--this may inhibit collection of 1995 billfish data.

St. Vincent. The western Atlantic Coordinator assisted members of CARICOM and St. Vincent Ministry of Fisheries staff in a longline cruise in January to test the feasibility of using live bait to increase the catch, tag, and release efforts for billfish in this area. CARICOM AND St. Vincent Fisheries staff also made at least two additional trips in the spring of 1995. Live bait were successfully held aboard the boat, although the preferred species of live bait (big eye scad) were not always available. Catches of sailfish however, were very low during this period. The initial longline sets were made well offshore (about 10 miles) and future trips are being organized to investigate local sailfish abundance closer to shore.

Trinidad and Tobago. Shore-base sampling of the industrial longline vessels (mostly Taiwanese vessels) that off-load in the Port of Spain is normally carried out by Dr. Christine Chan-A-Shing, Ministry of Food Production and Marine Exploitation. However, due to recent changes in the ownership of the large freezer facility in Port of Spain, shore-based sampling was not conducted during 1995. With consideration of budgetary constraints, this work may be re-activated next year.

Venezuela. At-sea sampling activities of FONAIAP continued at the port of Cumana, where the fleet of industrialized longline vessels target yellowfin tuna and swordfish, but also catch billfish. In addition, the fleet of smaller artisanal vessels often target billfish. There were 23 at-sea observer trips accomplished by October, 1995. Several of these trips were made on the larger Korean type longline vessels and smaller artisanal boats, but most were made on the mid-size industrialized longline boats. A total of at least 30 at-sea observer trips are anticipated by the end of 1995. Biological sampling of swordfish consisted of reproductive organs from 32 fish and skeletal structures for age and growth assessment from 20 fish collected during 1995 at-sea sampling activities. Biological sampling of swordfish by at-sea observers during the first part of 1995 was reduced compared to previous years because fishing effort for swordfish was reduced during this period. Shore-based sampling in Venezuela continued during 1995, with harbor sampling in Juangriego and Playa Verde, in addition to Cumana and La Guaria. Sampling of 3 recreational tournaments held in Playa Grande Marina as well as Puerto Cabello and Punto Fijo, continued in 1995. A major effort to obtain reports of tag recaptured billfish continued in Venezuela during 1995. These results are including in the tagging section (below).

U.S. Virgin Islands. Shore-based sampling of billfish tournaments continued during 1995 (normally at least 4 tournaments are held each year). In addition, a major effort to enter several years back-log of billfish tournament data was accomplished during the 1995 sampling season. This effort was intended to result in an updated reported which will be submitted as an ICCAT working document to the 1995 SCRS. However, since hurricane "Marilyn" had a direct hit on St. Thomas and St. Croix in September, 1995, it is unknown at this time if this report will be submitted to the 1995 SCRS.

#### OBJECTIVE 2 -- BILLFISH TAGGING PROGRAM

A brief trip was made by the Western Atlantic Coordinator to New York to visit with representatives of the Federation of Japan Tuna Fisheries Cooperative Associations. The purpose of the trip was to give a presentation describing tagging procedures and to provide duplicate copies of the slides as well as written text in an effort to initiate the billfish tagging program from the Japanese offshore longline fleet in the Atlantic. Recent communications in August, 1995, indicate that the billfish tagging program on Japanese longline vessels has started to actively tag fish. The western Atlantic Coordinator responded to numerous requests for ICCAT tagging kits during 1995 because tagging supplies in Madrid were low. Large quantities of tags were shipped to the Japan Tuna Fisheries Association in Las Palmas, as well as to the Instituto Espanol de Oceanografia in La Coruna, Spain. These tags are intended to be used for tagging billfish by the offshore longline fleets from these countries. A total of over 40 tag recaptured billfish (as well as a few sharks) have been reported to the western Atlantic Coordinator through September, 1995. These recaptures represent both NMFS and The Billfish Foundation tags and continue to indicate increased tag recapture reporting rates as a result of the ICCAT Enhanced Research Program for Billfish.

#### OBJECTIVE 3 -- AGE AND GROWTH

The 1995 sampling year was very unusual for the acquisition of calcified structures from very large billfish for our age and growth program. For example, the western Atlantic Coordinator received hardpart samples (in several cases reproductive organs) from 3 blue marlin of over 1,000 caught in Bermuda. These large marlin include fish weighing 1153, 1355, and 1195 pounds. The 1355 pound Atlantic blue marlin is the largest blue marlin sample we have ever taken for age and growth analysis and should provide important information on maximum longevity. In addition, a juvenile blue marlin of about 10.5 inches was also retrieved from Bermuda. This fish was dip netted at night off the continental shelf of Bermuda in September, 1994, and will provide important information on the growth of young of the year blue marlin and possible blue marlin spawning in Bermudian waters. We greatly appreciate the special efforts of Dr. Brian Luckhurst and John Barnes (Director of Fisheries) for assisting the ICCAT billfish program in obtaining these important samples from Bermuda.