

PROGRESS OF THE ICCAT ENHANCED RESEARCH PROGRAM FOR BILLFISH IN THE WESTERN ATLANTIC OCEAN DURING 2012

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SUMMARY

Research activities of the ICCAT Enhanced Research Program for Billfish in the western Atlantic Ocean during 2012 are summarized by location and research objectives. At-sea sampling with observers on Venezuelan industrial longline vessels accomplished 7 trips by July 2012, and more trips are targeted before the end of the year. Most of the vessels are based out of Cumana - in the port of Playa Verde (La Guaira, central Venezuela) about 3,300 fishing trips for billfish were monitored. Biological sampling of istiophorids in Venezuela for reproductive and genetic identification studies were continued during 2012. Some limited biological sampling was also accomplished in Bermuda and the US, where gonads and hard parts for age determination from several large blue marlin were obtained, including two specimens well over 1,000 pounds. Shore-based sampling of billfish landings for size frequency data, as well as tournament sampling was accomplished in Grenada, Bermuda, and Barbados. Program participants in Venezuela, Grenada, and Barbados continued to assist in obtaining information on tag-recaptured billfish, as well as a few sharks, in the western Atlantic Ocean during 2012 (and the last 3 months of 2011). A total of 7 tagged billfish were recaptured, most of these were blue marlin.

RÉSUMÉ

Les activités de recherche menées en 2012 dans l'océan Atlantique Ouest dans le cadre du Programme ICCAT de recherche intensive sur les istiophoridés sont résumées par zone et objectifs de recherche. Un échantillonnage en mer a été réalisé par des observateurs se trouvant à bord de palangriers industriels vénézuéliens lors de sept sorties jusqu'à juillet 2012, d'autres sorties étant prévues avant la fin de l'année. La plupart des navires ont leur port d'attache à Cumana. Dans le port de Playa Verde (La Guaira, centre du Venezuela), près de 3.300 sorties de pêche ciblant les istiophoridés ont fait l'objet de suivi. L'échantillonnage biologique des istiophoridés au Venezuela à des fins d'études sur la reproduction et l'identification génétique a été poursuivi en 2012. Un échantillonnage biologique restreint a également été réalisé dans les Bermudes et aux États-Unis, dans le cadre duquel des gonades et des pièces dures aux fins de la détermination de l'âge provenant de plusieurs grands makaires bleus ont été obtenues, dont deux spécimens pesant plus de 1.000 livres (453,6 kg). Un échantillonnage à terre des débarquements d'istiophoridés a été réalisé pour obtenir les données de fréquence de taille, ainsi qu'un échantillonnage des tournois à la Grenade, dans les Bermudes et à la Barbade. Les participants au programme au Venezuela, à la Grenade et à la Barbade contribuent encore à recueillir des informations sur le marquage et la récupération des marques apposées sur les istiophoridés, ainsi que sur quelques requins dans l'océan Atlantique Ouest pendant 2012 (et au cours des trois derniers mois de 2011). Au total, sept istiophoridés, majoritairement des makaires bleus, porteurs de marques ont été récupérés.

RESUMEN

Se resumen, por localización y objetivo de investigación, las actividades de investigación del Programa ICCAT de Investigación Intensiva sobre Marlines en el océano Atlántico occidental durante 2012. Se realizaron siete mareas de muestreo en el mar con observadores embarcados en buques palangreros industriales venezolanos hasta julio de 2012, y están programadas nuevas mareas antes de que finalice el año. La mayoría de los buques tienen como base Cumaná. En el puerto de Playa Verde (La Guaira y Venezuela central) se hizo un seguimiento de 3.300 mareas de pesca de istiofóridos. El muestreo biológico de istiofóridos en Venezuela para

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estudios reproductivos y de identificación genética ha continuado durante 2012. También se llevó a cabo algún muestreo biológico limitado en Bermudas y Estados Unidos, donde se obtuvieron gónadas y partes duras para la determinación de la edad de varias agujas azules grandes, incluidos dos ejemplares de bastante más de 1.000 libras. Se llevó a cabo un muestreo en tierra de los desembarques de istiofóridos para obtener datos de frecuencias de tallas, así como el muestreo en torneos en Granada, Bermudas y Barbados. En 2012 (y durante los tres últimos meses de 2011), los participantes en el programa de Venezuela, Granada y Barbados continuaron colaborando en la obtención de información sobre istiofóridos marcados y recuperados, así como sobre unos pocos tiburones, en el océano Atlántico occidental. Se recuperaron en total 7 istiofóridos con marcas y la mayoría de ellos fueron agujas azules.

KEY WORDS

Billfish, Western Atlantic Ocean, Research coordination

1. Introduction

The following summarizes research progress according to location and/or type of research activity for the ICCAT Enhanced Research Program for Billfish (IERPB).

Research activities during 2012 began immediately after the SCRS meeting in October 2011. The objectives of the initial 1986 program plan (Appendix to Annex 12 of Report of Biennial Period, 1986-87 Part I) 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 2012 was Dr. Freddy Arocha (Venezuela); Dr. Eric D. Prince (U.S.A.) was coordinator for the western Atlantic Ocean, and Mr. Paul Bannerman (Ghana) coordinated activities for the eastern Atlantic Ocean.

Starting in October, 1998, there were changes in the financial structure of the Program and these changes are detailed in the financial report for the 1998 SCRS. In terms of affecting research activities, scientists collaborating in the IERPB were asked to make requests for release of funds directly from the ICCAT Secretariat and these requests were then verified by area coordinators. Reductions in contributions to IERPB in 2012 were comparable to the previous year. The following coordination activities were realized by this program during 2012 (and last 3 months of 2011) in the western Atlantic Ocean.

1.1 Objective 1: Landing statistics

Barbados: The shore-base sampling in Barbados was not conducted due to low fishing effort.

Bermuda: Dr. Brian Luckhurst retired in 2007 and it is still unclear whether staff of the Bermuda Division of Fisheries will continue to collect catch and effort statistics from billfish tournaments at this location.

Brazil: Dr. Alberto Amorim of Instituto de Pesca continued his billfish conventional tagging activities in 2011. With funding from the National Marine Fisheries Service (USA) and the Special Secretariat of Fisheries and Aquaculture (Secretaria Especial de Aqüicultura e Pesca- SEAP/ PR; Brazil), Dr. Fabio Hazin and Dr. Paulos Travassos of the Federal Rural University in Pernambuco continued a joint billfish research program in 2011 with Dr. David Die (UM/ RSMAS), Dr. Mahmood Shivji and Dr. David Kerstetter (NSU), and Dr. John Graves (VIMS). Work in 2010-2011 under this program focused on billfish interactions with pelagic fishing gears, including circle and J-style hook comparisons in the equatorial pelagic longline fishery; tagging of blue marlin, white marlin, and sailfish with pop-up satellite tags; age and growth and reproductive biology of blue and white marlins. A Brazilian graduate student attending the Virginia Institute of Marine Science is working with Dr. Kerstetter and SEFSC staff in order to analyze data from pop-up satellite archival tags. Additional details on this program, including future research plans, can be found in 2010 SCRS working documents.

Grenada: We have had no communication with the Ministry of Industrial Development and Fisheries (MIDF) about shore-based sampling in Grenada during 2012.

Jamaica: A new ICCAT billfish coordinator for this location has not been determined. Most of the billfishing activity in Jamaica takes place in the fall to coincide with the billfish tournament schedule. We normally gain access to these data at the end of the fishing season.

St. Maarten, N.A.: Recreational billfish tournaments are normally held on St Martin but have not been sampled since 2005. Financial constraints have also prevented our normal sampling of size frequency data from the transshipment company, Nichirei Carib Corporation at St. Maarten (Dutch side).

St. Vincent: Members of CARICOM continue their efforts in tagging small pelagic species throughout the Caribbean. Research cruises aboard the St. Vincent Department of Fisheries longline vessel were not made during 2011. This activity will be re-evaluated to determine if it is appropriate to continue this research next year.

Uruguay. Dr. Andres Domingo, Recuros Pelagicos, Direccion Nacional de Recuros Acuaticos, Montevideo, Uruguay, continued to participate in the collaboration with Dr. Mahmood Shivji, Nova Southeastern University. Tissues samples from spearfish and marlin were shipped to NOVA SE during the 2011 sampling season.

Venezuela: At-sea sampling activities of INIA/IOV-UDO continued at the port of Cumaná, where the fleet of industrialized longline vessels target yellowfin tuna and swordfish, but also catch billfish. In addition, the fleet of smaller artisanal drift-gillnet vessels target billfish. There were a total of 10 at-sea observer trips accomplished in 2011, and 7 trips through July 2012. Most trips were on industrialized small to mid-size longline vessels out of Cumaná port. Shore-based sampling of size frequency data in Venezuela continued at about the same rate as 2010, with port samplings in Playa Verde and Cumaná. In the port of Playa Verde (off La Guaira, central Venezuela) about 3,300 daily trips targeting billfish were recorded in 2012. Biological sampling for sailfish reproductive studies continued, as well as WHM/Spearfish tissue sampling for genetic studies. Recoding of information on catch and effort from sport fishing tournaments continued during 2010/2011. The number of tournaments organized annually continues at a decreased level in the central Venezuelan coast. Since all animals are released by law in the tournaments made in the central Venezuelan coast, no sampling was made from the recreational tournaments held in Playa Grande Marina in 2011. A major effort to obtain reports of tag recaptured billfish continued during 2012, with the recovery of 7 tags through July 2012. These results are including in the tagging section (below).

U.S. Virgin Islands: Several billfish tournaments held during 2012 (normally at least 3 tournaments are held each year) and these results are reported to the Southeast Fisheries Science Center.

United States (Domestic). Dr. Mahmood Shivji, Nova Southeastern University, continued his research collaborations involving genetic analyses of roundscale spearfish, white marlin, and other Atlantic istiophorids with the Southeast Fisheries Science Center (US), Venezuela (Dr. Freddy Arocha, Instituto Oceanografico, Universidad de Oriente), Uruguay (Dr. Andres Domingo, Recuros Pelagicos, Direccion Nacional de Recuros Acuaticos, Montevideo); and Brazil (Dr. Fabio Hazan (UFRPE), Secretaria Especial de Aquicultura e Pesca, Monteiro Recife, Pernambuco). Several shipments of biological tissue were received from each country over the last year. A paper entitled "Occurrence and broad geographic distribution of roundscale spearfish *Tetrapturus georgii* (Teleostei, Istiophoridae) in the central north and western south Atlantic revealed by DNA analysis: implications for white marlin management" was submitted to peer review journal and is currently *In Review*.

1.2 Objective 2: Billfish Tagging Program

Only about 7 conventional tag recaptured billfish have been reported to the western Atlantic Coordinator through September, 2012. Most were blue marlin, although white marlin, sailfish, and sharks were also reported. The majority of these were from Venezuela. These recaptures represent both NMFS and The Billfish Foundation tags and continues to indicate increased tag recapture reporting rates in the southeast Caribbean Sea as a result of the ICCAT Enhanced Research Program for Billfish. A number of Atlantic-wide tagging programs have engaged in tagging billfish using pop-up satellite archival tag (PSAT) technology in 2012, including off Aruba and US eastern Atlantic. Swordfish have also been tagged with PSATs off south Florida.

1.3 Objective 3: Age and growth

The current sampling year resulted in a general increase in age and growth and reproductive studies. Venezuela continued to accelerate its biological sampling for age and growth and reproductive studies in 2012. In addition, several sets of hard parts were obtained from very large blue marlin over 1,000 lbs during the 2011 season.