PROGRESS OF THE ICCAT ENHANCED PROGRAM FOR BILLFISH RESEARCH IN THE WESTERN ATLANTIC OCEAN DURING 2015

J.P. Hoolihan[1] and E.D. Prince[2]

SUMMARY

Research activities of the ICCAT Enhanced Program for Billfish Research in the western Atlantic Ocean during 2015 are summarized by location and research objectives. At-sea sampling by observers on Venezuelan industrial longline vessels completed six trips and 81 sets by July 2014. Shore-based sampling of billfish landings for size frequency data, as well as tournament sampling, was accomplished in the United States. Program participants in Venezuela continued to assist in obtaining information on tag-recaptured billfish, as well as a few sharks, in the western Atlantic Ocean during 2014, with the recovery of 12 tags from August 2013-December 2014, which included four blue marlin and one small tuna in 2013, and six blue marlin and 2 white marlin in 2014.

RÉSUMÉ

Les activités de recherche menées en 2015 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 six sorties et 81 opérations jusqu'à juillet 2014. 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 aux États-Unis. Les participants au programme au Venezuela ont continué à aider 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 2014. Entre août 2013 et décembre 2014, douze marques ont été récupérées sur quatre makaires bleus et un thon mineur en 2013 et six makaires bleus et deux makaires blancs en 2014.

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 2015. Se realizaron actividades de muestreo en el mar con observadores embarcados en buques palangreros industriales venezolanos en seis mareas y 81 operaciones de pesca hasta julio de 2014. En Estados Unidos se llevó a cabo un muestreo en tierra de los desembarques de istiofóridos para obtener datos de frecuencias de tallas, así como un muestreo en torneos. Los participantes en el programa en Venezuela continuaron ayudando a obtener información sobre istiofóridos marcados y recuperados, así como sobre algunos tiburones, en el océano Atlántico occidental durante 2014, con la recuperación de 12 marcas entre agosto de 2013 y diciembre de 2014, que incluían cuatro agujas azules y un pequeño túnido en 2013 y seis agujas azules y 2 agujas blancas en 2014.

KEYWORDS

Billfish, Western Atlantic Ocean, Research coordination

[1] Cooperative Institute for Marine and Atmospheric Studies, Rosenstiel School for Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, Florida 33149, USA. E-mail: john.hoolihan@noaa.gov
[2] U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center, 75 Virginia Beach Drive, Miami, FL 33149-1099. E-mail: eric.prince@noaa.gov
This is NOAA-NMFS Sustainable Fisheries Division Contribution SFD-2015-005.

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 2015 began immediately after the SCRS meeting in October 2014. The objectives of the initial 1986 program plan (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. An additional objective to determine the distribution and ratios of white marlin and roundscale spearfish using genetic analyses was undertaken.

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 2014 was Dr. David Die (USA); 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. In 2015, Dr. John P. Hoolihan (USA) assumed the role of overall coordinator and western Atlantic coordinator, while Dr. Fambaye Ngom Sow (Senegal) assumed the role of eastern Atlantic coordinator.

Starting in October, 1998, there were changes in the financial structure of the Program and these changes are detailed in the SCRS 1998 financial report for. 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. The following coordination activities were realized by this program during 2015 (and last three months of 2014) in the western Atlantic Ocean.

1.1 Objective 1, Landing statistics

Brazil: Dr. Alberto Amorim of Institute de Pesca continued his billfish conventional tagging activities in 2014-15, as well as the collection of billfish larvae and genetic samples. Dr. Fabio Hazin of the Federal Rural University in Pernambuco continued a billfish research program in 2014-15, focusing on billfish interactions with pelagic fishing gears; tagging of blue marlin, white marlin, and sailfish with pop-up satellite tags and studies on age and growth and reproductive biology.

Uruguay: Uruguay participated in the research conducted by Bernard et al. (2014) on the comparative population genetics and evolutionary history of two commonly misidentified billfishes (*Tetrapturus georgii* and *Kajikia albida*) of management and conservation concern.

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 6 at-sea observer trips accomplished between August 2013 and December 2014. 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 in the last part of 2013 through December 2014, with port sampling in Playa Verde and Cumaná. In the port of Playa Verde (off La Guaira, central Venezuela) a total of 3,746 daily trips targeting billfish were recorded in 2014, and 1,341 daily trips from August – December 2013. Biological sampling for sailfish tissue sampling for genetic studies were completed. No of information on catch and effort from sport fishing tournaments were available for the period 2013/2014, it is presumed that there were very few (<3) due to economic circumstances. A major effort to obtain reports of tag recaptured billfish continued during 2014, with the recovery of 12 tags from August 2013-December 2014, which included 4 BUM and 1 SMA in 2013, and 6 BUM and 2 WHM in 2014.

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 white marlin and spearfishes. NOAA 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). This work contributed to the publication of Bernard *et al.* 2014, Comparative population genetics and evolutionary history of two commonly misidentified billfishes of management and conservation concern. BMC Genetics, 15:141.

1.2 Objective 2, Billfish Tagging Program

Venezuela continued to assist in obtaining information on tag-recaptured billfish, as well as a few sharks, in the western Atlantic Ocean during 2014, with the recovery of 12 tags from August 2013-December 2014, which included 4 BUM and 1 SMA in 2013, and 6 BUM and 2 WHM in 2014. These recaptures represent both NMFS and The Billfish Foundation tags

1.3 Objective 3, Age and growth

High resolution photomicrographs of anal fin spines from Venezuelan and U.S. samples was done in preparation of analyses to determine age, growth, and maximum longevity for Atlantic blue marlin.

1.4 Objective 4, Genetic analyses of white marlin, longbill spearfish, and roundscale spearfish

Genetic sampling of surface mucous was undertaken to determine the spatial and temporal ratios of white marlin, longbill spearfish and roundscale spearfish that occur in landings. During 2014-15, 500 hundred genetic sampling kits were distributed in allotments of 50 kits each to longline fleets based in Mexico, Venezuela, Morocco, Senegal, Portugal, and Spain; and, to purse fleets based in Spain and Ghana. Once samples are collected from these fleets they will be provided to Nova Southeastern University in Florida USA for processing. To-date, samples have been received from Portugal (n = 39) and Spain (n = 1) longline fleets fishing in the eastern central Atlantic. Genetic analyses confirmed the samples were from white marlin (n = 36), and sailfish (n = 1). DNA could not be extracted from the three remaining samples due to mold contamination. This project is ongoing.