

**A CFRAMP PERSPECTIVE OF THE SECOND ICCAT BILLFISH WORKSHOP**

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by

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**ABSTRACT**

A summary of the proceedings of the Second ICCAT Billfish Workshop is presented. Several countries submitted historical catch and effort data for inclusion in the ICCAT database. Some of these data series were incorporated into surplus production analyses, to obtain updated estimates on the status of billfish stocks. In addition, scientists from three CARICOM States, which currently participate in the ICCAT Enhanced Billfish Tagging Program, presented a review of the progress of their shore-based sampling programs. In addition, the Pelagic and Reef Fishes Resource Assessment Unit presented historical billfish catch and effort data for the artisanal fisheries of Barbados, Grenada, St. Lucia and St. Vincent and the Grenadines. Billfish comprised a large portion of the artisanal catch in Grenada, and hence this series may be sufficiently important for inclusion in ICCAT's surplus production analyses.

Tagging information from the Western Atlantic indicated that during winter months, billfish may migrate into warmer Caribbean waters from off the Coast of North America. Generally, however, participants noted the need to acquire additional information to test assumptions on stock movements, particularly in the South and East Atlantic. Also noted was the need to increase size-frequency sampling activities throughout the Atlantic to help with age and growth research. In addition, a test has been developed which appears to enable identification of dressed Atlantic sailfish.

## **BACKGROUND**

The ICCAT Enhanced Research Program for Billfish was established in 1987. Its aim is to acquire the necessary data for assessing the status of Atlantic billfish stocks. Program activities include retrieval of historical data, carrying out at-sea and shore-based sampling to obtain catch and effort statistics, developing species identification kits, and tagging experiments to assist with determining migration patterns and age and growth research. The purpose of the Second ICCAT Billfish Workshop was to review the program's progress, to examine the data currently available and to plan future activities.

The billfish stocks of the Caribbean are shared with all other countries fishing in the Atlantic Ocean. Hence, the accurate assessment of these stocks requires data from all areas of the Atlantic. In view of this, it was considered appropriate for CARICOM Fisheries Resource Assessment and Management Program (CFRAMP) to participate in the Second ICCAT Billfish Workshop (Mahon and Murray, 1992).

## **RATIONALE**

The rationale for CFRAMP participation at the Second ICCAT Billfish Workshop was:

1. To obtain the most recent appraisal of the status of Atlantic billfish stocks,
2. To learn of recent developments in billfish research so that RAU-related activities could be coordinated to complement work already being carried out in the Caribbean area as well as in the wider Atlantic, and
3. To contribute historical billfish catch and effort data from the Caribbean for comment and consideration by Workshop participants.

Biologist S. Singh-Renton represented CFRAMP at the Workshop, and presented a working document on historical billfish data from Barbados, Grenada, St. Vincent and the Grenadines and St. Lucia (Mahon et al, ICCAT Doc. SCRS/92/68).

## **WORKSHOP ACTIVITIES**

A copy of the Workshop agenda is appended. The meeting commenced with presentations of papers and working documents covering the following topics:

1. Progress of the at-sea and shore-based sampling program in the Western and Eastern Atlantic,
2. Reviews of historical catch and effort statistics,
3. Genetic studies of billfish population structure,
4. Progress of the development of field kits for species identification for dressed billfish,

5. Progress of tagging activities and the contribution of this in determining stock structure hypotheses and in age and growth validation studies,
6. Advancements in age and growth research and
7. Exploratory surplus-production analysis of blue and white marlin fisheries, using U.S. and Venezuelan recreational CPUE series.

The CFRAMP presentation noted that CARICOM billfish catches are usually not recorded separately by species. Also, except for Grenada, billfishes do not appear to comprise a large portion of the catch, probably because they are not targeted at present. The meeting was also informed of CFRAMP's intended effort to enhance current data collection systems in CARICOM states, and to identify and record billfish catches by species as far as possible. CFRAMP further noted that in the case of Grenada where sailfish is one of the principal components of the catch, size frequency sampling of this species is anticipated when its biological sampling work begins in 1993. Workshop participants were pleased to learn of these proposals to increase monitoring in the Caribbean area, and to report catches by individual species.

The Chairman of the Workshop and Western Atlantic coordinator for the program, E. Prince, noted that shore-based size-frequency sampling in the Western Atlantic had now extended to include several Caribbean states: Barbados, Grenada, Dominican Republic, Jamaica, Trinidad and Tobago and St. Martin. In addition, Barbados, Grenada, Jamaica and Trinidad and Tobago have been working in collaboration with E. Prince to promote billfish tag release activities in their waters. Scientists from Barbados, Grenada and Jamaica presented a review of their shore-based sampling programs (Barbados - Oxenford, ICCAT Doc. SCRS/92/71; Grenada - Phillip and Isaac, ICCAT Doc. SCRS/92/67; Jamaica - Harvey, ICCAT Doc, SCRS/92/76).

E. Prince commented on the difficulties of identifying species, particularly at transshipment ports. This is also an important issue for the Caribbean. Experiments to develop a field kit for species identification of dressed Atlantic billfish are still in progress. However, recent tests, including a 'blind' test conducted during the Workshop, indicated that at least Atlantic sailfish could now be distinguished from related billfish species.

During the Workshop, certain general problems were identified. Working groups were set up to address these in greater detail during the Workshop and to present their findings for consideration by participants.

Firstly, a concern was raised about the accuracy of the billfish data submitted to ICCAT by the Korean and Taiwanese fleets. It was decided to compare Task I catch (nominal annual catch data) with Task II catch and effort data (by small area-time strata) to check for inconsistencies between these. In addition, Japanese, Korean and Taiwanese nominal CPUEs were calculated and compared.

Secondly, the potential usefulness of the size frequency data so far collected remained to be tested. Consequently, a second working group was organised to undertake an exploratory

analysis of these data. Thirdly, the meeting acknowledged the need to incorporate additional CPUE series into the surplus production model, together with the U.S. and Venezuelan CPUE series, in order to achieve a more complete assessment of the stocks. Japanese, Taiwanese and Brazilian CPUE series for blue and white marlin and sailfish were standardised for inclusion in the models. Due to the time limitations, the Surplus Production Analysis Working Group was only able to redo the analyses for blue and white marlin stocks of the North Atlantic area for presentation during the Workshop.

Workshop modellers expressed interest in incorporating the Grenada CPUE series for sailfish and the marlins into the current version of the surplus production model used (Prager, Miami Lab. Doc. MIA-91/91-20). CFRAMP proposed to consult with Fisheries Division staff in Grenada on acquiring the Grenada CPUE series for this purpose.

## **CONCLUSIONS AND RECOMMENDATIONS**

1. At-sea and shore-based sampling programs were set up primarily to acquire size frequency data. At-sea sampling also facilitates the collection of data on sex, as well as time and location of landings. These data, used in conjunction with tagging information, are important to understanding age and growth. However, to date there are not sufficient data available to support any inferences of age and growth, and participants recommended that such sampling be continued and even expanded to ensure the acquisition of good size frequency data.
2. Historical catch and effort statistics were presented for the Japanese, Brazilian and Venezuelan commercial fleets, as well as for the artisanal fleets of Senegal, Ghana, Barbados, Grenada, St. Lucia, St. Vincent and the Grenadines and Jamaica. Historical data on recreational fishing were also presented for Senegal, Venezuela, Barbados, Grenada, Jamaica, Mexico, Bermuda and Brazil. These data are to be entered into the IC CAT databases.
3. Certain differences in the genetic makeup of Atlantic and Pacific billfish species appear to exist, but further work is warranted. There is also the need to determine if there are genetic differences among billfish populations from different areas of the Atlantic Ocean.
4. To date, a test has been developed which could be used to positively identify Atlantic sailfish. Workshop participants advised that additional 'blind' tests be carried out before issuing field kits. As soon as CFRAMP receives further information regarding availability and cost of these kits, this will be passed on to Member States. Field kits for species identification of dressed billfish may be very useful especially for sampling at Caribbean transshipment ports.
5. Preliminary tagging results indicate a possible seasonal pattern in the movement of the marlins and sailfish. Fish tagged in more temperate waters during the summer months,

were recaptured in the Caribbean and other tropical waters during the winter months. However, the sailfish do not appear to move as far north as the marlins.

Transatlantic migrations were only observed for blue marlin, and no transequatorial migrations were reported. A number of recaptures occurred near the Eastern Caribbean: this may be due to the advertising efforts of ICCAT samplers in the area and, the fact that immediate rewards are offered for recaptured fish in those islands actively participating in the tagging program. Since recapture locations may be limited by the extent of the tagging program, participants acknowledged the need to include more of the Eastern Atlantic and Brazil in the tagging program, as well as to print recapture cards and advertisements in more languages than used at present. Participants also recommended that the size frequency sampling program be continued and even expanded, so as to obtain enough good data for supporting tagging and growth studies. The use of oxytetracycline injections, in addition to tagging, was recommended to further assist with age and growth research.

6. Participants also noted that further age and growth research is urgently needed to estimate age at first spawning and to determine seasonality of spawning.
7. One of the main achievements of the workshop was the development and standardisation of current CPUE series and the incorporation of these in the surplus production analyses. Participants recommended that an attempt be made to obtain data from fleets not covered at present, such as Spanish vessels operating off the East coast of Africa. CFRAMP, in collaboration with Grenadian Fisheries Division staff, hopes to prepare the Grenadian billfish CPUE series for inclusion in these surplus production analyses.

## **REFERENCES CITED**

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