Report of the ICCAT Enhanced Programme for Billfish Research (EPBR)
(Expenditures/Contributions 2024 and Programme Plan for 2025)

Summary and Programme objectives

The ICCAT Enhanced Programme for Billfish Research (EPBR) continued its activities in 2024. The Secretariat coordinates the transfer of funds and distribution of tags, information, and data. The overall programme coordinator and East Atlantic Coordinator during 2024 was Dr. Fambaye Ngom Sow (Senegal), and Ms. Karina Ramírez López (Mexico) remained as the West Atlantic Coordinator.

The original plan (established in 1986) for EPBR included the following objectives: 1) to provide more detailed catch and effort statistics, particularly for size frequency data; 2) to initiate an ICCAT tagging programme for billfish; and 3) to assist in collecting data for age and growth studies. During past Billfish Species Group (BIL SG) meetings it was requested that the objectives of EPBR be expanded to evaluate adult billfish habitat use, study billfish spawning patterns, and billfish population genetics. The Billfish Species Group considers these studies to be essential for improving billfish stock assessments. Efforts to meet these goals since 2019 are highlighted below.

The specific funding for EPBR previously available has now been combined with the general research fund (ICCAT Science Envelope). Project funding will now be allotted on a competitive basis with other species working groups.

2024 activities

In June 2024 a new contract was awarded to the Senegalese Institute for Agricultural Research (*Institut Sénégalais de recherches agricoles, ISRA)*, Center for Oceanological Research of Dakar-Thiaroye (*Centre de Recherches Océanologiques de Dakar-Thiaroye*, *CRO*) (CRODT, Senegal) to continue the activities of the previous contract for a six-month period (until December 2024). Over this period, EPBR engaged research teams from Senegal, Côte d'Ivoire and Gabon to sample billfishes from the artisanal fleet. An EU-Portugal research team was also engaged, which has significantly enhanced the collection of samples onboard industrial vessels operating in the eastern Atlantic area and supported the analysis of data on length and age for estimating the growth parameters of the main billfish species that occur in the eastern Atlantic (*Makaira nigricans*, BUM; *Kajikia albida*, WHM; and *Istiophorus albicans*, SAI). Obtaining the samples requested by the Billfish Species Group has been difficult, and it is easier to collect spines rather than the otoliths. The Secretariat made several contacts with the scientists working on the EU purse seine fleet to help obtain additional samples.

Under the most recent contract, four samples were collected by the Center for Oceanological Research, Côte d'Ivoire (*Centre de Recherches Océanologiques, CRO*), 13 additional samples collected by CRODT (Senegal) and 27 by Instituto Português do Mar e da Atmosfera (IPMA, EU-Portugal) from June to August 2024. Overall, a total of 567 samples have now been collected from those three species. All otoliths collected until 2023 were sent to the Fish Ageing Services in Australia for age reading, and the data were made available to the Consortium and analysed. The preliminary results of a study to evaluate the use of otoliths to estimate the age and provide otolith-based estimates of potential longevity of Atlantic blue marlin (*Makaira nigricans*) were provided and used for blue marlin during the 2024 Atlantic Blue Marlin Stock Assessment Meeting (ICCAT, 2024).

All other activities of the billfish work plan for EPBR 2024 could only be partially performed, namely those involving mostly field work, due to the difficulties encountered by the teams involved in this project, the difficulty of deploying observers in the longline fleets and from adding additional tasks to the observer deployed in purse seiners.

Derived from the 2024 Atlantic Blue Marlin Stock Assessment Meeting (ICCAT, 2024) and from the discussions on the EPBR, and in view of the fact that the administrative problems before the 2024 Commission could not be resolved, ICCAT Circular #07036/2024 was issued to carry out the Study of the reproductive biology of Atlantic blue marlin in the Gulf of Mexico, in which the Mexican Institute for Research in Sustainable Fisheries and Aquaculture (*Instituto Mexicano de Investigación en Pesca y Acuacultura Sostenibles,* IMIPAS) again attended, and whose offer was accepted. In accordance with the Reference Terms, a SCRS presentation was provided during the 2024 Billfish Species Group meeting (Madrid, Spain, September 2024). Such presentation described, in detail, the methodology and activities to be carried out during the study, to discuss the current knowledge, with the aim to highlight the knowledge contribution made by the study in the Gulf of Mexico.

In 2024, a new contract was signed to carry out a billfish tagging campaign in the northeastern Atlantic (southern Portugal), within the EPBR. The campaign started on 8 August, with the operations carried out along the temperate NE Atlantic area, off the southern Portuguese coast. Until 3 September, a total of 9 fishing trips were carried out devoted to billfishes satellite tagging, and one tournament was used for opportunistic deployment of conventional tags. A total of 2 WHM specimens were tagged with satellite tags, and 29 additional WHM specimens were tagged opportunistically with conventional tags. There are plans to carry out several more additional trips in September and October 2024 devoted to satellite tagging, so that a minimum of three billfishes, possibly even more, can be tagged this season as planned. Overall, the original campaign objectives were achieved and the final results provided to the SCRS.

2025 plan and activities

The highest priorities for 2025 are to support the objectives established by the Billfish Species Goup Workplan and those of the EPBR, with specific emphasis on the collection of biological samples for the growth and reproductive biology studies that were heavily impact during the COVID-19 pandemic period and to enhance the collection of fisheries data in developing countries. Specific activities include the following:

1. The sampling of hard parts for the growth studies on billfish caught off West Africa mainly:

    - Advance in direct validation of aging protocols through bomb radiocarbon, genetics, and other latest scientific techniques.

    - Continue building a reference set for both spines and otoliths in 2025.

2. Start the biological sampling of blue marlin on Mexican longline fisheries, aiming to study the species reproduction in the Gulf of Mexico.

3. Electronic tagging, continue the satellite tagging of blue and white marlin on the South Portugal coast in the recreational fishery and start sailfish e-tagging in eastern Atlantic waters.

4. Support the monitoring of billfish catches from West African artisanal fishing fleets (i.e., Côte d'Ivoire, Ghana, São Tomé e Príncipe, and Senegal);

All these activities depend on successful coordination, sufficient financial resources and adequate in-kind support by the CPCs involved. Details of EPBR funded activities for 2025 are provided below.

Shore-based sampling

Sampling of artisanal and small-scale fisheries to support the estimation of catch and effort statistics will be focused on fleets contributing the largest parts of the catch and/or those that in the past have provided high quality data, to ensure the preservation of an uninterrupted time series of catch and relative abundance indices. In the eastern Atlantic, monitoring and sample collection will be supported for the artisanal fisheries of Côte d'Ivoire, Ghana, São Tomé, and Príncipe and Senegal.

Biological studies

Efforts to finalize the collection of biological samples for age and growth studies for marlins and sailfish caught off West Africa, either from directed or bycatch billfish fisheries of both artisanal and industrial fleets, will also continue. In 2025, increasing effort will be made for processing and analyzing the available samples, which is expected to continue in subsequent years. Such activities require the continuation of financial support from ICCAT and additional voluntary contributions from CPCs.

The current priority area for the 2025 tagging, as set by the BIL-SG in 2024, in the temperate NE Atlantic. If there are opportunities to tag additional billfishes integrated in other ICCAT tagging campaigns for other species, then sailfish e-tagging will also be carried out, as for example in the central eastern Atlantic area (Gulf of Guinea).

Coordination

Training and sample collection

Programme coordinators need to travel to less accessible locations to promote EPBR activities and ICCAT data requirements regarding billfish. This includes travel to West African countries, as well as the Caribbean and South America by the general Coordinator and the Coordinator for the West. Coordinated activities between EPBR, ICCAT/Japan Capacity-Building Assistance Project (phase 3) (JCAP-3) and ICCAT data funds will continue to be required.

Programme management

The EPBR budget is now part of the ICCAT Science Envelope and management is assumed by the programme coordinators, with the support of the Secretariat. Reporting to the SCRS is a responsibility of the Coordinators. Countries that are allocated budget lines for programme activities need to contact the respective programme Coordinators for approval of expenditures before the work is carried out. Invoices and brief reports on activities conducted need to be sent to the programme Coordinators and ICCAT to obtain reimbursement. Funding requests need to follow ICCAT protocols for the use of funds (see Addendum 2 to Appendix 7 of *Report for Biennial Period 2010-2011, Part II (2011), Vol. 2*).

Conclusion

The EPBR is an important programme for meeting the goal of having the highest quality information to assess billfish stocks. The EPBR has been credited for major improvements in the data supporting the last ICCAT billfish assessments and the SCRS advice to the Commission. The EPBR is the only programme that focuses exclusively on billfish, and now has the added benefit of including sampling and data collection from both artisanal and industrial fleets. Therefore, programme continuation is paramount for facilitating the collection of biological and fishery information on billfish species. The EPBR will continue to require support from ICCAT and other sources to operate and address the needs of the Commission.