

INTER-AMERICAN TROPICAL TUNA COMMISSION

SCIENTIFIC ADVISORY COMMITTEE

17TH MEETING

La Jolla, California (USA)

08-12 June 2026

SAC-17-INF-J

DORADO: ADVANCES IN COLLABORATIVE RESEARCH

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This document contains an executive summary of the 4th technical workshop on dorado in the eastern Pacific Ocean that took place in March 2026 in Costa Rica.

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SUMMARY

The Republic of Costa Rica, in collaboration with the IATTC staff and COREMAHI¹, organized and hosted the Fourth IATTC Technical Meeting on Dorado ([DOR-04](#)) in San José, Costa Rica, in March 10-12, 2026. Approximately forty participants from seven IATTC member countries attended, alongside observers and representatives from various non-governmental organizations. This document summarizes the discussions on conceptual model for the stock, identification of available data for the stock assessment, research needs to reduce uncertainty regarding dorado dynamics in the Eastern Pacific Ocean, and workplan for the next 2027 benchmark assessment.

1. BACKGROUND

The Antigua Convention indicates that the Inter-American Tropical Tuna Commission (IATTC) should adopt, as necessary, conservation and management measures and recommendations for species belonging to the same ecosystem and that are affected by fishing for tunas in the Eastern Pacific Ocean (EPO), such as dorado/mahi-mahi (*Coryphaena hippurus*), which is vital for artisanal and recreational fisheries in the region. Following the start of dorado research in 2012 and a first exploratory assessment of 2016 ([SAC-07-06a\(i\)](#)), the IATTC renewed its mandate in 2023 with Resolution [C-23-09](#) for a new stock assessment and, in 2025, established the Working Group on Dorado with Resolution [C-25-05](#). In this context, the Fourth Technical Meeting was held in Costa Rica ([DOR-04](#)), whose central objectives were to update the conceptual model for dorado in the EPO, review data availability, establish a work plan for the next stock assessment, and discuss strategies to advance scientific research and monitoring for supporting fisheries management.

The meeting focused on three aspects ([DOR-04](#)): 1) updating knowledge of the fishery and the conceptual

¹ Regional Committee of Producers and Processors of Mahi <https://www.coremahi.org/>

model for the stock, including discussion of challenges and opportunities for monitoring the dorado fisheries in the EPO; 2) discussion of a work plan for the next assessment; 3) discussion of priorities for dorado research. Approximately forty participants from seven IATTC members attended, along with observers and various non-governmental organizations.

2. RESULTS

2.1. Current state of knowledge of dorado fisheries in the EPO

The meeting highlighted marked regional variability in data quality and monitoring systems. Peru and Ecuador maintain the most robust systems, with Peru leading global catches and Ecuador providing detailed biometric and effort data since 1989, although both face challenges in sampling the artisanal fleet. Other countries, such as Costa Rica, Panama, and Colombia, have made significant progress in implementing tracking systems (VMS), catch and effort reporting, and biological sampling, but still face limitations. Mexico and Chile report minor or seasonal fisheries.

2.2. Data

A considerable discrepancy was identified between the catch data held by the IATTC and alternative sources. Catch estimates based on alternative data (such as those collected by the FAO on catches, imports/exports) suggest that catch data should be reviewed. Participating members committed to submit update data on catch, size, CPUE, among others, for the assessment. Participants identified five critical challenges for monitoring dorado in the EPO: financial and personnel limitations, lack of harmonization in data collection methods, low coverage of onboard observers, resistance from the fishing sector, and difficulties in tracking the artisanal fleet. Despite these obstacles, key opportunities for improving information generation for management were highlighted, including regional collaboration and exchange of methodologies (e.g., binational projects between Peru and Ecuador), implementation of new technologies such as electronic logbooks and satellite monitoring systems (VMS), fostering public-private partnerships to finance data collection, and integrating fishers' empirical knowledge to improve the conceptual model and promote participation in decision-making.

2.3. Conceptual model and stock structure

An emerging consensus suggests that dorado in the EPO function as a dynamic meta-population, strongly influenced by ocean currents, sea surface temperature, and climate/oceanographic events (El Niño/La Niña). Preliminary genomic studies and tagging work indicate that, although regional differentiations exist, there is potential connectivity. Tagging studies revealed sex differences in behaviour: females tend to migrate against currents toward coastal and spawning areas, while males disperse faster with the currents. The discussions support the need for an assessment model that can consider both the hypothesis of stock separation and the north-south connectivity hypothesis, as well as the seasonal and interannual variability of the habitat.

2.4. Goals for dorado research and stock assessment

Participants discussed the desired goals for dorado research and stock assessment. The priorities are:

- Consolidate the conceptual model for the dorado stock in the EPO, incorporating different hypotheses on population structure and integrating oceanographic factors (temperature, salinity, currents, etc.).
- Investigate stock structure using genetic/genomic methods, tagging, and spatio-temporal models.
- Conduct a benchmark stock assessment considering two hypotheses for stock structure assumptions:

H1: Separate stocks

- One stock in Peru and Ecuador, as assumed in the 2016 stock assessment.
- Another stock comprised by areas off Central and North America.

H2: Connected stocks: Extend the stock analysis limited to Peru and Ecuador to a larger area using available information for Central and North America.

2.5. Workplan for the stock assessment

The activities proposed to advance with the stock assessment are:

Conceptual model:

1. Finalize the conceptual model, including alternative hypotheses on population dynamics.
2. Incorporate environmental data to strengthen the conceptual model.
3. Use size, VMS, and country-specific knowledge to define the fisheries that will be included in the model.

Catches:

1. Review catch data and incorporate them into IATTC databases at the model scale (by month and fishery—vessel type, gear type, and area of operation).

Effort:

1. For countries that have already calculated this information, submit effort data as well (in number of days, sets, or number of hooks used). Other countries should estimate total effort.

CPUE and size data:

1. List all existing data.
2. Discuss data incorporation with the IATTC Data Group.
3. Submit data to the IATTC via focal points.
4. Incorporate data into IATTC databases.
5. Conduct exploratory analyses.

Assessment model:

1. Build a preliminary Stock Synthesis model using the data and approach from the Roa et al. model.
2. Incorporate size and catch data from other fleets.
3. Obtain abundance index(es) for the population.

Risk analysis

1. List the scenarios to be modeled.
2. Implement the scenarios in Stock Synthesis models

The timeline will be:

First semester of 2026: Submission of data (CPUE, sizes, catches) by the CPCs.

Second semesters of 2026: Progress report and pre-assessment workshop (preferably in September 2026, within the context of the Working Group on Dorado).

2027: Presentation of the final assessment document at the 2027 SAC meeting.

2.6. Suggestions for the operation of the Working Group on Dorado:

Participants discussed several aspects that could be useful for the functioning of the IATTC Working Group on Dorado (WGD):

- Appointment of two co-chairs for the WGD, one representing the south and the other representing the Central American and northern areas, given the heterogeneity of dorado population dynamics in the EPO.
- Continuation of the work initiated at [DOR-04](#) within the framework of the WGD.
- Encouragement of regional collaboration through the exchange of methodologies and experiences.
- Strengthening of regional data collection programs, including tagging.

- Harmonization of the collection of biological and fishery data.
- Search for funding sources (including for human resources) to support the development of scientific knowledge, stock assessment, and monitoring of dorado.
- Inclusion in the agenda of the first WGD meeting a pre-assessment workshop when an account of progress on the stock assessment will be given.

3. CONCLUSIONS

The [DOR-04](#) workshop allowed for the discussion of the conceptual model for the stock, identification of available data, determination of research needs to reduce uncertainty, and planning for the next reference assessment.

It is imperative to correct discrepancies in catch records before proceeding with the stock assessment. Future data collection would benefit from harmonizing data collection protocols (e.g., using only fork length) and improving observer coverage in the artisanal fleet.

Biological and oceanographic evidence points to a dynamic meta-population structure with variable connectivity influenced by climate. Future stock assessments must necessarily integrate two structural hypotheses (separate vs. connected stocks) and environmental data to be robust.

An operational calendar has been consolidated that links data delivery in 2026 with the final assessment in 2027, requiring a firm commitment from CPCs to meet information submission deadlines and participate in the pre-assessment workshop.

Effective resource management depends on regional cooperation to share methodologies, finance data collection, and strengthen technical capacities, as seen in the binational cooperation between Peru and Ecuador. The implementation of the objectives and activities planned under Resolution [C-25-05](#), which established the creation of a Working Group on Dorado, is vital for the continuation of collaborative work and for decision-making based on science.