

**INTER-AMERICAN TROPICAL TUNA COMMISSION**

**SCIENTIFIC ADVISORY COMMITTEE**

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**DOCUMENT SAC-09-01**

**IATTC STRATEGIC SCIENCE PLAN, 2019-2023**

This document presents the framework of the IATTC Strategic Science Plan, prepared by the staff in response to the recommendation by the 8<sup>th</sup> Meeting of the Scientific Advisory Committee, that will be presented to the Commission at its 93<sup>rd</sup> Meeting in August 2018. The details of the research projects that will be undertaken as part of the plan are presented in Document SAC-09-02, Staff Activities and Research Work Plan.

**1. DATA COLLECTION FOR SCIENTIFIC SUPPORT OF MANAGEMENT**

**Strategic Goal A: Database maintenance, preservation, and access**

- A.1. Routine work
- A.2. Improve internal documentation
- A.3. Standardize and automate data submissions

**Strategic Goal B: Conduct a review of current IATTC/AIDCP data collection programs, identify and prioritize opportunities to improve data quality and expand data types and coverage**

- B.1. Evaluate and improve data collected by the purse-seine On-Board Observer Program for scientific research
- B.2. Expand on-board data collection to small purse seiners
- B.3. Evaluate and improve the port sampling data collection program
- B.4. Develop and implement a long-term life-history data collection program to support scientific research for stock assessment and management

**Strategic Goal C: Facilitate the improvement of data quality, coverage, and reporting by CPC data collection programs**

- C.1. Purse-seine fleet
- C.1. Longline fisheries
- C.2. At-sea transshipments
- C.3. Artisanal fisheries (coastal developing CPCs)
- C.4. Other fisheries

**Strategic Goal D. Investigate the use of new technologies to improve data quality**

- D.1. Evaluate the functionality of electronic data collection and reporting systems
- D.2. Evaluate the feasibility of implementing on-board electronic monitoring (EM) systems for data collection purposes

## 2. LIFE-HISTORY STUDIES FOR SCIENTIFIC SUPPORT OF MANAGEMENT

### **Strategic Goal E: Obtain life history and stock structure information for spatially-structured stock assessments for tropical tunas**

- E.1. Initiate a long-term age and growth data collection and research program for tropical tunas
- E.2. Conduct spatiotemporal research on the reproductive biology of tropical tunas
- E.3. Analyze historical tagging data to improve the assumptions about movement and stock structure in spatially-structured stock assessments of tropical tunas
- E.4. Initiate a multi-year tagging program for tropical tunas
- E.5. Conduct genetic studies to improve the assumptions about life history and stock structure in stock assessments of tropical tunas

### **Strategic Goal F: Obtain key life history information for assessment and mitigation of ecological impacts on prioritized species**

- F.1. Conduct life-history studies of dolphins under the AIDCP
- F.2. Conduct life-history studies of shark species
- F.3. Conduct life-history studies of prioritized species

### **Strategic Goal G: Investigate the early life history of tunas to improve understanding of recruitment processes to improve assessments and management**

- G.1. Investigation of the effects of density dependence and the environment on the pre-recruit survival of yellowfin tuna
- G.2. Conduct comparative studies of the early life histories of yellowfin and Pacific bluefin tunas
- G.3. Develop tools to forecast recruitment

## 3. SUSTAINABLE FISHERIES

### **Strategic Goal H: Improve and implement stock assessments, based on the best available science**

- H.1. Undertake the research necessary to develop and conduct at least one benchmark stock assessment for yellowfin and bigeye tunas
- H.2. Develop a spatially-structured stock assessment model for bigeye tuna as a basis for management advice, and initiate a similar model for yellowfin tunas
- H.3. Develop a benchmark stock assessment for skipjack tuna (conditional on implementation of tagging program (E.4))
- H.4. Develop update assessment and/or stock status indicators for tropical tunas to ensure that management advice is current
- H.5. Undertake the research necessary to develop and conduct data-limited assessments for prioritized species
- H.6. Maintain active participation in ISC stock assessments
- H.7. Develop conventional stock assessments for data-rich prioritized species and species of specific interest
- H.8. Assess the status of dolphin stocks in the eastern tropical Pacific

### **Strategic Goal I: Test harvest strategies using Management Strategy Evaluation (MSE)**

- I.1. Conduct a comprehensive MSE for bigeye tuna and plan MSEs for the other tropical tuna species, including the multi-species fishery for tropical tunas
- I.2. Collaborate with ISC in Pacific-wide MSEs for albacore and Pacific bluefin tunas
- I.3. Initiate MSE work to evaluate indicator-based harvest strategies for prioritized species and species of specific interest

**Strategic Goal J: Improve our understanding of the effects of the operational characteristics of the fishery on fishing mortality, stock assessments, and management advice**

- J.1. Identify and monitor changes in technology and fishing strategies to improve stock assessments and management advice
- J.2. Improve our understanding of the relationship between the operational characteristics of the purse-seine fishery and fishing mortality
- J.3. Study the impact of FAD operations on fishing mortality to improve FAD management advice

**Strategic Goal K: Improve our understanding of the socio-economic aspects of sustainable fisheries for tropical tunas**

- K.1. Collaborate in socio-economic studies by other organizations

**4. ECOLOGICAL IMPACTS OF FISHERIES: ASSESSMENT AND MITIGATION**

**Strategic Goal L: Evaluate the ecological impacts of tuna fisheries**

- L.1. Develop analytical tools to identify and prioritize species at risk for data collection, research and management
- L.2. Conduct ERAs of EPO fisheries to identify and prioritize species at risk

**Strategic Goal M: Mitigate the ecological impacts of tuna fisheries**

- M.1. In collaboration with the industry, conduct scientific experiments to identify gear technology that will reduce bycatches and mortality of prioritized species
- M.2. In collaboration with the industry, conduct scientific experiments to develop best practices for the release of prioritized bycatch species
- M.3. Conduct spatiotemporal analyses to identify areas of high bycatch/catch ratios for potential use in spatial management
- M.4. Investigate alternative tools for bycatch mitigation
- M.5. In collaboration with the industry, conduct experiments to develop best practices for mitigating the impacts of fishing on habitats in the EPO

**5. INTERACTIONS AMONG THE ENVIRONMENT, THE ECOSYSTEM, AND FISHERIES**

**Strategic Goal N: Improve our understanding of the interactions among environmental drivers, climate, and fisheries**

- N.1. Conduct spatiotemporal analyses to better understand the effect of key environmental drivers on the short-term fluctuations of abundance of tunas and prioritized bycatch species
- N.2. Conduct spatiotemporal analyses to better understand the effect of long-term climate drivers (regime shifts) on the abundance of tropical tunas

**Strategic Goal O: Improve our understanding of the EPO ecosystem**

- O.1. Conduct trophodynamic studies for defining key assumptions in EPO ecosystem models
- O.2. Improve analytical ecological tools to evaluate anthropogenic and climate impacts on the EPO ecosystem

**6. KNOWLEDGE TRANSFER AND CAPACITY BUILDING**

**Strategic Goal P. Respond in a timely manner to external requests for information and technical support**

- P.1. Respond to requests by CPCs
- P.2. Respond to requests from other organizations

**Strategic Goal Q. Provide training opportunities for scientists and technicians of CPCs**

- Q.1. Host visiting scientists and students from CPCs
- Q.2. Implement the IATTC capacity-building scholarship

Q.3. Facilitate training workshops

**Strategic Goal R: Improve communication of scientific advice**

- R.1. Improve communication of the staff's scientific work to CPCs
- R.2. Participate in global initiatives for the communication of science

**Strategic Goal S: Facilitate participation of CPCs in the scientific process and in training events**

- S.1. Improve communication and coordination with the Scientific Advisory Committee and scientific and technical working groups
- S.2. Facilitate participation of scientific and technical personnel from developing CPCs at IATTC scientific meetings and training events (IATTC capacity building fund)

**7. SCIENTIFIC EXCELLENCE**

**Strategic Goal T. Implement external reviews of the staff's research**

- T.1. Facilitate external reviews of stock assessments
- T.2. Facilitate external reviews of scientific studies

**Strategic Goal U. Strengthen research at the Ashotines Laboratory**

**Strategic Goal V. Recruit and retain highly-qualified personnel**

**Strategic Goal W. Promote training and advancement of scientific staff**

**Strategic Goal X. Promote the advancement of scientific research**

- X.1. Continue the annual CAPAM workshops