

**INTER-AMERICAN TROPICAL TUNA COMMISSION**  
**WORKSHOP TO DEVELOP A PILOT STUDY FOR A SHARK FISHERY SAMPLING  
PROGRAM IN CENTRAL AMERICA<sup>1</sup>**

La Jolla, California (USA)  
25-27 September 2017

## **OBJECTIVES AND WORKPLAN**

### **BACKGROUND**

The Antigua Convention requires that the Inter-American Tropical Tuna Commission (IATTC) adopt management measures and recommendations for shark species associated with the tuna fisheries in the eastern Pacific Ocean (EPO). There is a critical need for stock assessments of sharks to enable effective conservation measures to be developed.

Unfortunately, developing these stock assessments for sharks faces several major challenges, including the limited availability of reliable fishery statistics. Although data on incidental catches (bycatches) of sharks collected by IATTC and national observer programs from purse-seine tuna fisheries are of good quality, there is a great need for reliable fishery statistics from the artisanal longline multi-species fisheries of EPO coastal States. These fisheries, which target large pelagic species (mainly tunas, billfishes, sharks, and dorado), take the majority of the shark catches in the EPO.

In the framework of the United Nations Food and Agriculture Organization (FAO) [Common Oceans](#) program, and specifically the [Sustainable Management of Tuna Fisheries and Biodiversity Conservation in the Areas Beyond National Jurisdiction](#) (ABNJ) project, the IATTC received funding to improve data collection for shark fisheries in the EPO, particularly in Central America, where much of the shark catch is landed and where the need for better data collection is greatest.

Among the results of the IATTC ABNJ project to date are a [Metadata Report](#), which identifies the available sources of data on shark fisheries in Central America, and a [report](#) on challenges to collecting shark fishery data in the EPO and recommendations for improvement. Recommendation 5.1, to “develop and implement a pilot fishery/biological data sampling program for sharks in Central America”, was endorsed by the IATTC Scientific Advisory Committee (SAC) in May 2016. Another important development was the adoption by the IATTC of Resolution [C-16-06](#) on conservation measures for sharks, with an emphasis on silky sharks. However, without a good shark data collection program in place in Central America, it will be extremely difficult to establish the scientific basis necessary to determine the conservation status of shark stocks, and thus evaluate the impact of this resolution.

Following up on Recommendation 5.1., the funding for the IATTC project has been extended for an additional year to develop an experimental design for a long-term shark fishery sampling program in Central America. In collaboration with the Working Group on Sharks and Highly Migratory Species (GTEAM) of the Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), the IATTC staff will implement a pilot study to obtain the data necessary for evaluating alternative sampling designs (see details in Appendix 1).

The first task in this extended project is a workshop to develop a pilot study to sample shark fisheries in Central America. This document describes the structure, objectives, and work plan for the workshop.

---

<sup>1</sup> Organized under the FAO-GEF ABNJ project

## **OBJECTIVES**

The goal of the workshop is to develop recommendations for a pilot study to collect fishery data which can be used to design a long-term sampling program for IATTC countries in Central America.

The following elements should be considered for the pilot study:

1. The goal of the long-term sampling program is to provide data for the following:
  - a. Conventional stock assessments;
  - b. Indicators of stock status;
  - c. Productivity and Susceptability Analysis (PSA), Sustainability Assessment for Fishing Effects (SAFE).
2. The desired quantities to be estimated from the long-term sampling program are:
  - a. For stock assessments: total catch, catch-per-unit-effort (CPUE), composition;
  - b. For indicators: CPUE, average size;
  - c. For PSA/SAFE: species-specific composition of the catch; area occupied by the fishery; size composition of the catch; and (for SAFE) spatial distribution of catch and effort.
3. The species that are to be the focus of both the pilot study and the long-term sampling program need to be established (*e.g.*, most commonly-caught species, ecologically vulnerable species, all species)
4. The desired precision levels of the quantities to be estimated from the long-term sampling program are:
  - a. Total catch: 10% coefficient of variation (CV);
  - b. CPUE: 20% CV;
  - c. Size composition: 30% CV on average size.

## **STRUCTURE**

### **IATTC staff**

The staff coordinator of the ABNJ shark project at IATTC will chair the meeting. Prior to the workshop, IATTC staff members of the Stock Assessment Program will conduct a preliminary exploratory analysis of the available data and prepare background documents, in consultation with OSPESCA regional experts. IATTC staff members from other Programs (Biology and Ecosystem, Bycatch, Data Collection) will also attend the workshop and participate in discussions. The staff will also serve as rapporteurs.

### **External expert panel**

An external panel, consisting of four experts in fisheries sampling (Appendix 2), will be invited to review and help the IATTC staff and regional experts with the development of the best sampling design for the pilot study, to be summarized in a report of the workshop, with recommendations.

### **Regional expert panel**

During the workshop, scientific and/or technical experts from OSPESCA's GTEAM will provide advice on the feasibility and applicability of alternative sampling designs for the pilot study, and provide input on logistical aspects relevant to the development of the pilot study.

### **Deliverables**

The IATTC staff, in consultation with regional experts, will prepare two background documents for the

workshop: 1) Summary of shark fisheries and sampling opportunities in Central America; 2) Exploratory sampling design analyses with existing Central American shark fishery data. Subsequently, these papers could be submitted for publication, with improvements and revisions, and with regional experts as co-authors, as appropriate.

The sampling design for the pilot study developed during the workshop, along with any recommendations by the expert panel and the participants, will be documented in the workshop report to be prepared by IATTC staff.

## **PROVISIONAL AGENDA (Revised)**

### **Opening**

Welcome

Objectives and structure of workshop

### **1. Background documents** (*presentations by IATTC staff*)

1.1. Summary of shark fisheries and sampling opportunities in Central America

### **2. Logistical aspects relevant to the development of the pilot study** (*presentations by regional experts*)

2.1. Summary presentations by regional experts

2.2. Videos of unloading operations

### **3. Development of a resource allocation plan for the pilot study**

### **4. Development of a sampling design for the pilot study:** size composition

### **5. Development of a sampling design for the pilot study:** catch and effort

### **6. Additional recommendations**

### **7. Adjournment**

### **SCHEDULE:**

8:30-8:50 Registration (Monday only, open all day)

9:00 Start

10:30-10:45 Coffee break

13:00-14:30 Lunch

15:30-15:45 Coffee break

18:00 Close (flexible)

### **LOCATION:**

T-29 Martin Johnson House

Scripps Institution of Oceanography

8840 Biological Grade

La Jolla, CA 92037

USA

[Directions](#)

**Appendix 1.**

**Planned activities under the project “Development of the Experimental Design for a Long-term Shark Fishery Sampling Program in the Eastern Pacific Ocean”**

**Planned activities of the Project**

The activities (tasks) planned to meet the objectives of the project are:

1. *Workshop to develop a shark sampling pilot study (25-27 September 2017):*

The workshop will discuss and formulate an optimal design for a shark sampling pilot study in Central America. Prior to the workshop, IATTC and OSPESCA staff members will conduct preliminary sampling research and prepare background documents. An external panel of four experts in fisheries sampling will be invited to review and help the IATTC staff with the development of the best sampling design for the pilot study, to be summarized in a report of the workshop, with recommendations. Scientific and/or technical experts from IATTC Central American Member States (GTEAM-OSPESCA) will provide advice on the feasibility and applicability of alternative sampling designs for the pilot study.

2. *Implementation of shark sampling pilot study in Central American ports (January-December 2018).*

A one-year shark sampling pilot study, based on the recommendations of the workshop (Task 1) and carried out by teams of samplers from IATTC field offices, will be implemented in Central America during January-December 2018.

3. *Analysis of data collected under the shark sampling pilot study and preparation of final report (November-December 2018)*

The final task of the project will consist of analysis by IATTC staff of the data collected under the shark sampling pilot study (Task 2). A final report will be prepared, with recommendations for the design of a long-term shark sampling program which could be implemented through IATTC field offices, in coordination with OSPESCA.

**Workplan:**

Activity	2017												2018											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Task 1																								
Task 2																								
Task 3																								

## **Appendix 2.**

### **External expert panel**

#### **Pedro de Barros**

Pedro de Barros works on fisheries monitoring, assessment and management since 1987, when he joined the University of Algarve and started working on his first project on the monitoring of the crustacean fisheries in the South of Portugal.

He has since developed intensive work on these fields, and continues working on these areas.

Pedro de Barros is a Professor at the University of Algarve, Portugal, currently working at the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations (FAO) as Senior Fishery Resources Officer at the Inland and Marine Fisheries Branch. He has also worked as Scientific Adviser to the Angolan Fisheries Research Institute, and as a consultant on a number of projects on fisheries monitoring, assessment and management.

He has taught several University-level and professional courses on scientific monitoring and assessment of fisheries, and supervised several Master's thesis dealing with sampling and monitoring of fisheries.

He has co-authored an FAO Fisheries Technical Paper on sampling methods applied to fisheries science (FTP 434), and written a number of reports on the design and evaluation of scientific fisheries monitoring systems.

He has developed, or supervised the supervision, of several software tools for the management and analysis of data from the scientific monitoring of fisheries (namely for Angola and Mozambique, plus tailor-made tools for research projects).

He has also provided professional technical advice to the assessment, evaluation and improvement of scientific fisheries monitoring systems in Europe, Mediterranean countries and African countries.

#### **Marti McCracken**

Dr. Marti McCracken has worked for the Pacific Islands Fisheries Science Center, NOAA for over 17 years as a statistician. One of her primary responsibilities is to provide statistical advice to the Pacific Islands Regional Observer Program concerning sampling designs for observer placement in three different longline fisheries. Each of these fisheries presents its own challenges in developing a practical sampling design. Dr. McCracken created a novel sampling design for Hawaii's deep-set longline fishery that takes into account the practical constraints of the fishery and observer program. This sampling design has been used since year 2003. For the American Samoa longline fishery, it has not been practical to have a rigorous sampling design in place, so she continues to work with the observer program to establish measures to reduce the likelihood of selection bias and to collect additional information to assist in bycatch estimation. She is currently working on recommendations on a sampling design for Hawaii's shallow-set longline fishery. This fishery currently has 100% observer coverage and is managed under hard caps for leatherback sea turtles and loggerhead sea turtle interactions (the fishery closes for the remainder of the year if either of these hard caps is reached). There is interest in managing this fishery under these same hard caps but with reduced observer coverage. As Dr. McCracken is responsible for producing annual bycatch estimates for all species caught by these fisheries, she has been exposed to a wide variety of catch (bycatch) distributions and the challenges of handling these distributions when estimating or modeling bycatch or catch. In addition to this experience, Dr. McCracken has served as a member of the National Observer Program Advisory Team where she has been exposed to a wide variety of sampling designs used to sample a wide variety of fishing fleets in the United States. Prior to working for NOAA, she consulted on various fisheries and ecological projects under her different positions in United Kingdom, New Zealand,

and Chile.

### **Jean Opsomer**

Jean Opsomer is Professor in the Department of Statistics at Colorado State University. He obtained a PhD from Cornell University and an MBA from University of Chicago. He is a Fellow of the American Statistical Association and the Institute of Mathematical Statistics., and an Elected Member of the International Statistical Institute. His main research area is survey statistics, and he collaborates with several federal statistical agencies on survey-related topics. In the natural resource area in particular, he has worked on survey design and estimation for the National Resources Inventory conducted by the U.S. Natural Resources Conversation Service and on the redesign of the Marine Recreational Information Program, the recreational marine fisheries surveys program managed by the U.S. National Oceanic and Atmospheric Administration.

### **Jon Helge Vølstad**

Dr. Vølstad is chief scientist and leader of the Fishery Dynamics research group at Institute of Marine Research, Norway. His education includes a Ph.D. in quantitative fisheries biology (biometrics) from University of Bergen, Norway, and graduate studies in mathematical statistics (Oxford University, UK). Dr. Vølstad has more than 25 years of international research experience in statistical survey methods, quantitative fisheries biology, and statistical ecology from academia, national institutes, and private industry. He has directed the development and implementation of multiple large-scale research surveys and field experiments for ecological studies and the monitoring and assessment of fish stocks and the environment in marine, estuary and river systems. His research interests primarily focus on the development and optimization of statistical survey techniques for assessment of fisheries resources and the environment, and the quantification of uncertainty in stock assessments.