SAC-08-10a
Staff activities and research plans

IATTC RESEARCH PROGRAM

Four programs:

A. Stock Assessment;
B. Biology and Ecosystem;
C. Data Collection and Database;
D. Bycatch and International Dolphin Conservation Program (IDCP).

https://www.iattc.org/ResearchENG.htm

1. Routine stock assessments
2. Stock assessment research
   - Bigeye tuna
   - Investigation of capacity and its relationship with fishing mortality (F)
   - CAPAM stock assessment methodology workshop series
   - Dolphin assessments
   - Management Strategy Evaluation (MSE) and reference points
   - Stock assessment and MSE of dorado
   - Trends in abundance of silky sharks

ROUTINE STOCK ASSESSMENTS

Principal responsibility: Prepare assessments of bigeye, yellowfin, and skipjack for the meetings of the SAC and the Commission

Three types of stock assessments:

- **Full assessments -** All major assumptions reviewed and improved
- **Updated assessments -** New or updated data analyzed, using current assumptions
- **Exploratory assessments -** New assumptions investigated, but not used for management advice.

For SAC-08:

- Yellowfin and bigeye: Update assessments.
- Skipjack tuna and silky shark: Indicators.

2017-2018:

- Bigeye: Full assessment, to be presented at SAC-09 in 2018
- Yellowfin: Update assessment
- Skipjack: Indicators

Assessments of tunas and other species by IATTC staff

Species	Last assessed	2017	2018	2019
IATTC				
Yellowfin tuna	2016	Update	Update	Full
Skipjack tuna	2004	Indicators	Indicators	Indicators
Bigeye tuna	2016	Update	Full	Update
Swordfish (south EPO)	2011			
Swordfish (north EPO)	Never as a separate stock			
Sailfish	2013			
Black marlin	Never			
Silky shark	Never	Indicators	Indicators	Indicators
Dorado	2016			
COLLABORATIONS				
Pacific bluefin tuna	2016		Update	
Albacore tuna	2014	Full		
Blue marlin	2013 (full), 2016 (update)			
Swordfish (north Pacific)	2014	Indicators		
Blue shark	2014	Full		
Striped marlin				Full
Shortfin mako shark			Full	
Silky shark (Pacific-wide)			Exploratory	

BIGEYE:

- Research to determine base case assessment for SAC-09

- **Catches on FADs**: statistical analyses of purse-seine observer data to:

    - study characteristics of FADs

    - determine which factors increase catches of bigeye

DOLPHINS:

- Workshop on methods for assessing dolphin stock status

- Background document on potential line-transect methodologies to be published in a peer-reviewed journal

DORADO:

- Preliminary stock assessment and MSE

- 3rd Technical Meeting

SILKY SHARK:

- Purse-seine indices of relative abundance updated with 2016 data

CAPAM STOCK ASSESSMENT METHODOLOGY WORKSHOP SERIES:

- Research projects presented in 2015 published in a special issue of *Fisheries Research* in 2017.

- Scheduled workshops:

  - Spatio-temporal modeling of CPUE data (2018);

  - Natural mortality of bigeye (2019)

MANAGEMENT STRATEGY EVALUATION (MSE) AND REFERENCE POINTS:

- Participation in Joint MSE Technical Working Group.

- Preliminary MSE work for bluefin, bigeye, dorado

Early life history of tunas:

- Studies of reproductive biology of pre-recruit ecology of yellowfin
- Comparative studies of early life history of Pacific bluefin and yellowfin
- Studies of improved rearing and ecology of early life stages of yellowfin
- Ocean acidification impacts on tropical tunas

- Joint IATTC-University of Miami workshops on yellowfin

Growth:
- Growth model based on age at length data from otoliths from Mexico and Ecuador.
- Statistical comparisons of growth, maturity, and fecundity functions.

Maturity and fecundity :
- Histological analysis of ovaries taken by observers at sea to determine reproductive condition of individual females.

TUNA TAGGING STUDIES

- **Analyse archival tag data for yellowfin in the EPO**, to describe geographic variability in movements, behavior, habitat utilization, and plausible stock boundaries.

- **Analyse archival tag data for bigeye and yellowfin in the EPO** to evaluate behavior relative to environmental data (collaboration with Marine Biological Association of the United Kingdom)

- **Evaluate tagging data for bigeye in the Pacific**, to describe dispersion, mixing, and plausible stock boundaries (collaboration with South Pacific Commission and others)

- **Model abundance of bigeye, using archival tag** and fisheries data from the EPO (collaboration with IRD, France)

- Seek funding for IATTC **Regional Tuna Tagging Project**

- Effects of fisheries on EPO ecosystem:
  - Collaboration with FAO-GEF Common Oceans Tuna Project: Ecosystem Approach to Fisheries
- Ecological Risk Assessment (ERA):
  - Develop database for improving ERAs
  - Develop and update ERAs (purse seine and longline)
  - Develop species distribution models for assessing susceptibility

Work plan for 2017-2018:

- **Develop databases** for
    a) improving ERAs for the large-scale longline fishery, and
    b) parameterizing PSAs and ecosystem models.
- **Develop and update PSAs** of fisheries in the EPO.
- **Develop species distribution models** as base maps for future ERAs.
- **Prepare research proposals** for:
    a) field experiments on consumption and evacuation for key species, to improve biological data used in ERAs and ecosystem models;
    b) program to monitor key species identified by the ERAs;
    c) biological sampling to assess predator-prey interactions and trophic levels.
- **Continue collaboration** with:
    a) CLIOTOP-IMBER international research program: analyses of isotope composition of top predators.
    b) FAO-GEF Common Oceans Tuna Project: Ecosystem Approach to Fisheries.
- **Routine reporting** of bycatch estimates and aggregate indicators.

DATA COLLECTION AND DATABASE

- Entry and editing of data from 528 trips by IATTC observers during 2016

Ongoing work

- Improvements to reporting workflow
- Conversion to Microsoft dot net framework
- Development of new website
- Development of documentation library
- Documentation of internal data processing

Planned work

- Dedicated Vessel Register database and application redesign
- Development of data request management application
- User interface for use with Best Scientific Estimate (BSE) program
- Length-frequency data management database and application improvements

BYCATCHES

- Bycatches on FADs
- Sharks and mobulid rays
- Sea turtles
- Dolphins
- Seabirds

IATTC ON-BOARD OBSERVER PROGRAM

- Primary source of data on the purse-seine fishery.
- AIDCP requires 100% observer coverage of Class-6 purse-seine vessels; IATTC program covers 50% of trips.

Class 6		2016			
		Coverage			
		IATTC		WCPFC*	
Flag	Total trips	Trips	%	Trips	%
Colombia	45	21	(47)	-	-
Ecuador	350	231	(66)	-	-
El Salvador	14	14	(100)	-	-
European Union (Spain)	13	6	(46)	-	-
Guatemala	4	4	(100)	-	-
Mexico	212	102	(48)	-	-
Nicaragua	23	12	(52)	-	-
Panama	76	38	(50)	-	-
Peru	21	20	(96)	-	-
United States	54	40	(74)	12	(22)
Venezuela	45	26	(58)	-	-
Total	857	514	(60)	12	(1)

*Operating under a Memorandum of Cooperation with the IATTC

Training
- AIDCP observer training
- WCPFC-IATTC observer training
- AIDCP seminars for crew, vessel managers, and government officials
- Alignments of dolphin safety panels

Technical support and advice to governments and outside organizations
- Shark fisheries
- Sampling
- Workshops on stock assessment of sharks
- Data reporting
- Biological parameters
- Fisheries data studies
- Development of landings database in collaboration with OSPESCA

Staff publications in 2016 include:

24 publications in peer-reviewed journals
IATTC meeting documents and reports

Full list in SAC-08-10a Staff Activities

Questions?