WORKSHOP TO IMPROVE THE LONGLINE INDICES OF ABUNDANCE OF BIGEYE AND YELLOWFIN TUNAS

IN THE EASTERN PACIFIC OCEAN

La Jolla, February 11- 15 2019

Outline

- Introduction of the participants
- Workshop in the context of the IATTC Strategic Science Plan 2018-2023
- Preparatory work: timeline
- Goals and products
- Agenda and dynamic
- Logistics/practical matters

INTER-AMERICAN TROPICAL TUNA COMMISSION

93RD MEETING

San Diego, California (USA)
24-30 August 2018

DOCUMENT IATTC-93-06a

IATTC STRATEGIC SCIENCE PLAN, 2019-2023

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

PROJECT H.1.d: Improve indices of abundance based on longline CPUE data	
THEME: Sustainable fisheries	
GOAL: H. Improve and implement stock assessments, based on the best available science	
TARGET: H.1. Undertake the research necessary to develop and conduct at least one benchmark stock assessment for yellowfin and bigeye tunas	
EXECUTION: Stock Assessment Program	
Objectives	• Improve the yellowfin and bigeye indies of relative abundance from longline data • Determine methods to identify targeting in longline fisheries • Develop spatio-temporal models for creating indices of relative abundance from longline data • Develop appropriate longline length composition data for the index of abundance and for the catch

$50,000 approved by the commission: partially to support a small working group (two external collaborators for two weeks + IATTC staff), in preparation for the workshop, the rest to support the workshop

Background	• Indices of relative abundance derived for longline CPUE data are the most important piece of information in the bigeye and yellowfin stock assessments • Only the Japanese data are currently used to create these indices • The characteristics, tactics, and spatial distribution of the fishery have been changing over time • The same length composition data is used for the index and for the catch, but these could differ • New methods, such as spatio-temporal modelling, have been developed and should be used in the creation of the indices	
Relevance for management	The indices have direct impact on the stock assessment and any improvements in the indices will directly improve the management advice for bigeye and yellowfin	
Duration	18 months, starting June 2018	
Work plan and status	• June-Dec 2018: Evaluate the data available in the IATTC database and implement the spatio-temporal models • Jan-Feb 2019: Hold a one-week workshop to discuss approaches to resolve issues in using the longline CPUE data • May-June 2019: Hold a two-week working group to analyse the data	
External collaborators	• NRIFSF, Japan • Invited speakers	
Deliverables	• Workshop report • Working group report • Indices of relative abundance • Project report to SAC	
Budget (US$)	Postdoctoral researcher	223,000
	Workshop expenses and invited participant travel costs	50,000
	Working group expenses	50,000
	Computer equipment	20,000
	Total	343,000

DOCUMENT IATTC-93-03

RECOMMENDATIONS OF THE NINTH SCIENTIFIC ADVISORY COMMITTEE MEETING

The ninth meeting of the Scientific Advisory Committee (SAC) makes the following recommendations to the Commission:

10.   **Longline abundance indices**. The SAC notes that the primary abundance indices for the yellowfin and bigeye tuna assessments are currently based on data from the Japanese longline fleet. However, Japanese longline effort in the EPO has decreased substantially, from about 101 million hooks in 2003 to about 31 million hooks in 2016, and is now a minor component (<20%) of reported longline effort in the EPO. Therefore, in order to improve the abundance indices, the SAC recommends that CPCs with large-scale longline fleets: 1) share the operational-level data with the IATTC through an appropriate way; and/or 2) collaborate with IATTC staff and other CPCs with large-scale longline fleets to develop improved abundance indices.

Preparatory work:

Considerable preparatory work was undertaken which included:

- Signature of Memorandum of Understanding with the main distant water fleets CPCs to make the operational level data available for the staff and external collaborator (Dr. Simon Hoyle)

Availability of the Operational level data

CPC	CPUE data	Size composition data	Spatial range
Korea	Nov 8 2018, May 17 2019	Nov 8 2018, May 17 2019	EPO + WCPO
Chinese Taipei	December 27 2018, May 17 2019		EPO + WCPO
China	January 20 2019, May 17 2019		EPO
Japan	January 21 2019, February 15 2019	January 21 2019, February 15 2019	EPO

In addition the 1 by 1 – month data (C/E and size composition) was made available from Japan from December 20 2018 to May 17 2019

Preparatory work:

- Visit of CPCs scientists to collaborate with the staff on analyses: Dr. Sung Il Lee (Korea – 8 to 28 November 2018), Dr. Keisuke Satoh (Japan – January 21 to February 16th 2019)

- Visit of external collaboration Dr. Simon Hoyle (January 28 to February 15th 2019), with partial support from the International Seafood Sustainability Foundation

Previous work:

INTER-AMERICAN TROPICAL TUNA COMMISSION

SCIENTIFIC ADVISORY COMMITTEE

EIGHTH MEETING

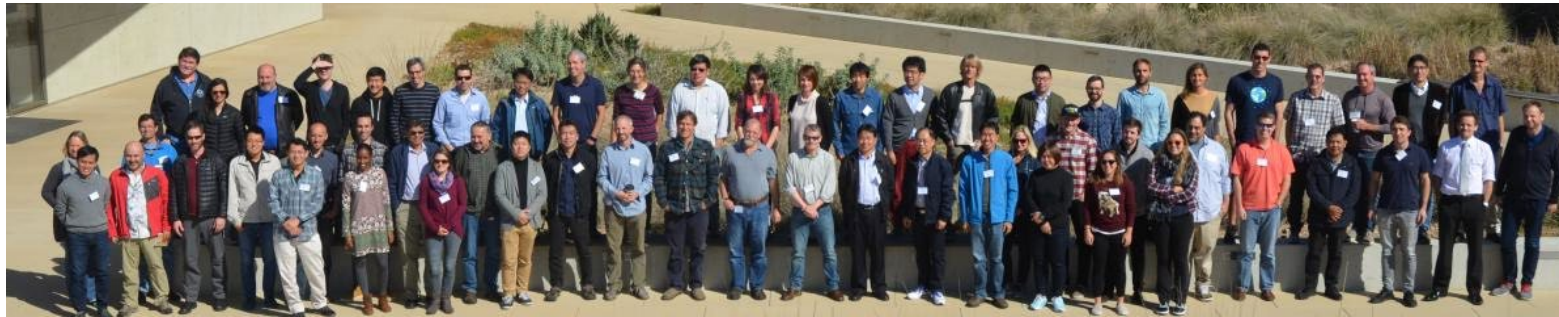La Jolla, California (USA)
8-12 May 2017

DOCUMENT SAC-08-05d

THE NEED FOR SPATIAL-TEMPORAL MODELING OF CATCH-PER-UNIT-EFFORT DATA WHEN USED TO DERIVED INDICES OF RELATIVE ABUNDANCE TO INCLUDE IN STOCK ASSESSMENT MODELS

Maunder, M.N., Thorson, J.T., Lee, H.H., Kai, M., Chang, S.K., Kitakado, T., Albertsen, C.M., Lennert-Cody, C.E., Aires-da-Silva, A.M., Piner, K.R.

Previous work:

February 2018: CAPAM workshop on the development of spatio-temporal models of fishery catch-per-unit-effort data to derive indices of relative abundance
http://www.capamresearch.org/Spatio-Temporal-Modelling-Mini-Workshop

May 2018:

INTER-AMERICAN TROPICAL TUNA COMMISSION

SCIENTIFIC ADVISORY COMMITTEE

NINTH MEETING

La Jolla, California (USA)
14-18 May 2018

DOCUMENT SAC-09-09

SPATIOTEMPORAL DYNAMICS OF THE DOLPHIN-ASSOCIATED PURSE-SEINE FISHERY FOR YELLOWFIN TUNA IN THE EASTERN PACIFIC OCEAN

Haikun Xu, Cleridy E. Lennert-Cody, Mark N. Maunder, and Carolina Minte-Vera

January 2019:

Fisheries Research

Volume 213, May 2019, Pages 121-131

ELSEVIER

Spatiotemporal dynamics of the dolphin-associated purse-seine fishery for yellowfin tuna (*Thunnus albacares*) in the eastern Pacific Ocean

Haikun Xu, Cleridy E. Lennert-Cody, Mark N. Maunder, Carolina V. Minte-Vera

Previous work

In the IATTC, collaboration with Japan

e.g. Satoh et al 2017 SAC8, Lennert-Cody et al 2012 SAC4

In other t-RFMO: indices of abundance from combined data sets

e.g. Hoyle et al 2018a,b, McKechnie et al 2015

Effect of decreasing longline effort and changes in species composition on standardized CPUE for tuna in the EPO

Keisuke Satoh, Cleridy E. Lennert Cody, Carolina V. Minte-Vera, Alexandre Aires-da-Silva, Mark N. Maunder and Takayuki Matsumoto

Collaborative work between NRIFSF and IATTC

☐ On-going work
☐ No documentation for SAC8

8th Meeting of the Scientific Advisory Committee La Jolla, 8-12 May 2017

FRA

CIAT IATTC

La Jolla, California (USA)
29 April - 3 May 2012

DOCUMENT SAC-04-05B

ANALYSES OF JAPANESE LONGLINE OPERATIONAL-LEVEL CATCH AND EFFORT DATA FOR BIGEYE TUNA IN THE EASTERN PACIFIC OCEAN

Cleridy E. Lennert-Cody, Hiroaki Okamoto and Mark N. Maunder

SCRS/2018/058

COLLABORATIVE STUDY OF BIGEYE TUNA CPUE FROM MULTIPLE ATLANTIC OCEAN LONGLINE FLEETS IN 2018

Simon D. Hoyle[1], Julia Hsiang-wen Huang[2], Doo Nam Kim[3], Mi Kyung Lee[3], Takayuki Matsumoto[4], and John Walter III[5].

SCIENTIFIC CO...
ELEVENTH REGULAR SESSION
Pohnpei, Federated States of Micronesia
5-13 August 2015

Longline CPUE indices for bigeye tuna based on the analysis of Pacific-wide operational catch and effort data

WCPFC-SC11-2015/SA-WP-02

IOTC-2018-WPM09-12

S McKechnie[1], L Tremblay-Boyer, and S J Harley

Collaborative study of yellowfin tuna CPUE from multiple Indian Ocean longline fleets in 2018.

Simon D. Hoyle[1], Emmanuel Chassot[2], Dan Fu[3], Doo Nam Kim[4], Sung Il Lee[4], Takayuki Matsumoto[5], Kaisuke Satoh[5], Sheng-Ping Wang[6], Yu-Min Yeh[7], and Toshihide Kitakado[8].

Workshop goals

Data:
- [Review and revise longline catch data for all CPCs] (to be done with the data group)
- Review and revise longline catch, effort and size data with spatial information for the main longline CPCs

Analyses:
- Improve the indices of relative abundance for yellowfin and bigeye tuna based on longline catch and effort data:
  - Determine methods to identify targeting in longline fisheries
  - Develop spatio-temporal models

Assessment:
- Develop appropriate longline length composition data for the index of abundance and for the catch

Workshop products
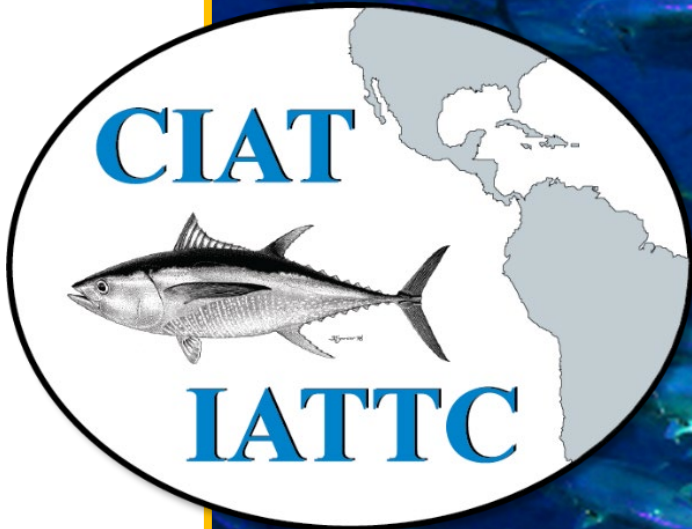
1. Presentations
2. Group recommendations
3. Candidate indices
4. Workplan for follow up work:
   4.1 Indices
   4.2 Size composition data
   4.3 Documents for external review of bigeye tuna and SAC
5. Report

Agenda

- Overall view
- Any additions or changes?

Logistics / practical matters

- Socials and transportations

- IATTC support team

- Group photo: Monday, morning coffee break

Thank you all for coming !

Photo: Jeff Muir

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