

Comisión Interamericana del Atún Tropical Inter-American Tropical Tuna Commission



Update on the vulnerability assessment for the East Pacific leatherback turtle (*Dermochelys coriacea*) stock using the EASI-Fish approach:

A continued collaboration between IATTC and IAC Sea Turtle Convention staff

Antecedentes

Recent publication:

- Current status is grave, but there is still time
- Must reduce adult and subadult mortality by 20% (or more), starting immediately
- Also critical to sustain leatherback nesting beach protection and increase hatchling production

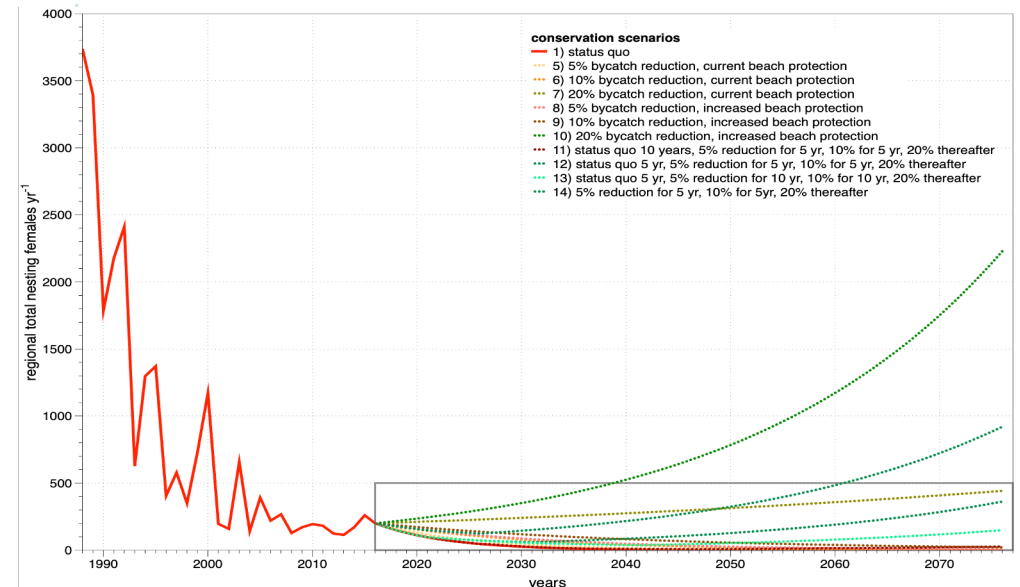


LAÚD OPO
RED LAÚD DEL OCEANO
PACÍFICO ORIENTAL

OPEN

Enhanced, coordinated conservation efforts required to avoid extinction of critically endangered Eastern Pacific leatherback turtles

The Laúd OPO Network[†]



Antecedentes



Convención Interamericana para la Protección y Conservación de las
Tortugas Marinas
Séptima Conferencia de las Partes
24-26 de Junio, 2015 – Ciudad de México

CIT-COP7-2015-R2

Resolución sobre la Conservación de la Tortuga Baula (*Dermochelys coriacea*) del Pacífico
Oriental

COMISIÓN INTERAMERICANA DEL ATÚN TROPICAL

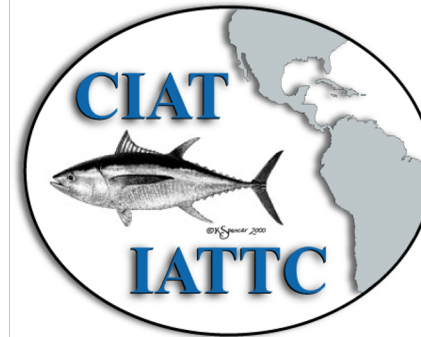
94ª REUNIÓN

Bilbao, España

22-26 de julio de 2019

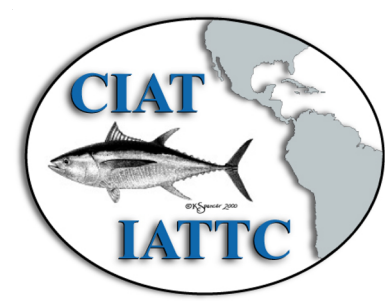
RESOLUCION C-19-04

RESOLUCIÓN PARA MITIGAR LOS IMPACTOS SOBRE LAS TORTU-
GAS MARINAS



- Strengthens measures for monitoring and reduction of bycatch impacts on sea turtles
- A major focus on Eastern Pacific leatherbacks
- Need to support implementation with viable options and resources

Antecedentes



- Following recommendation of Bycatch Working Group May 2019, Collaboration between IAC Leatherback Task Force and IATTC under 2011 MoU
- Assessing leatherback vulnerability to impacts of bycatch in various fisheries, and potential efficacy of bycatch reduction measures

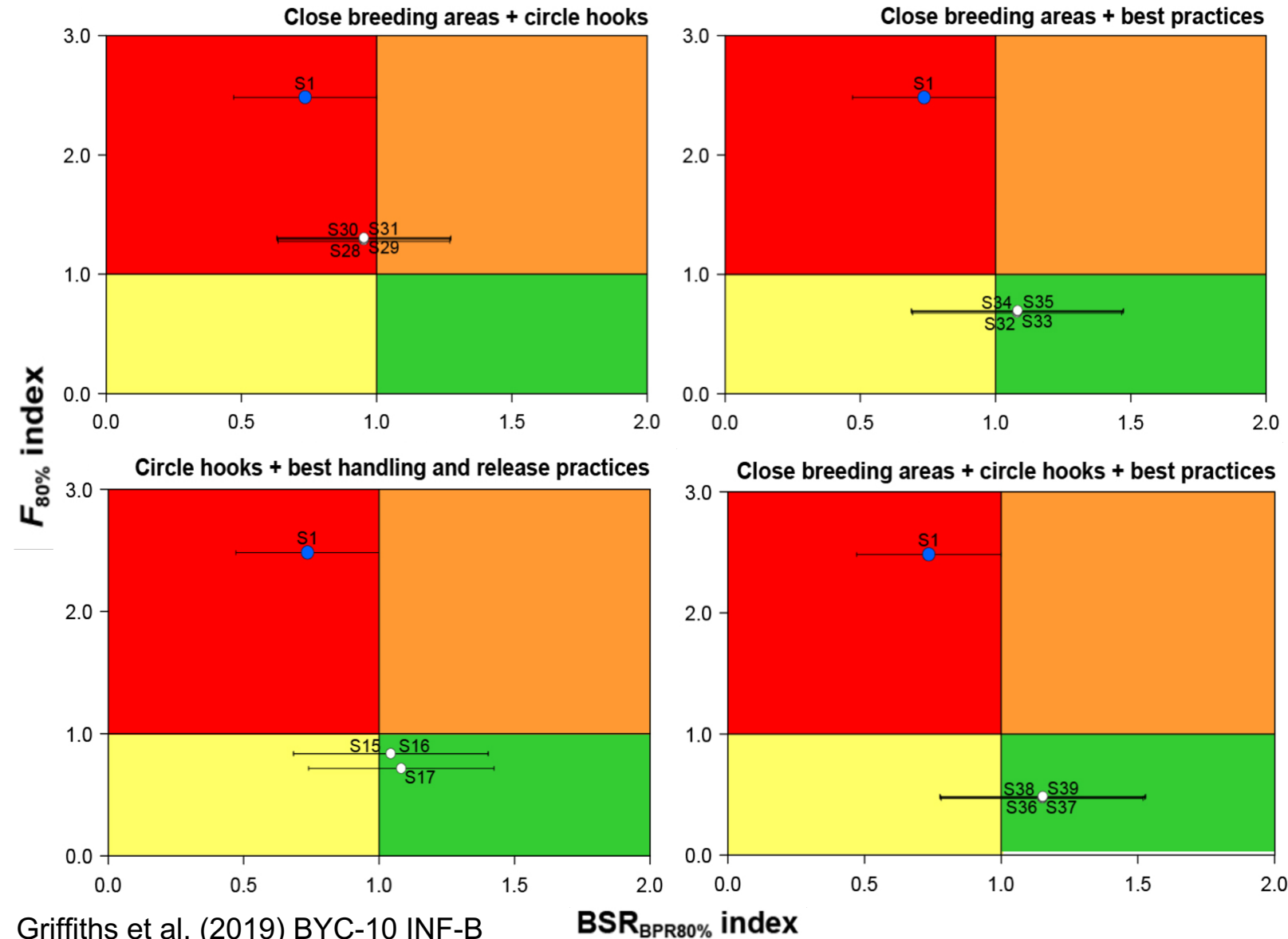


@ProDelphinus



28/04/2018
@ProDelphinus

EASI-Fish Phase 1: May 2019-May 2020



- Phase 1 demonstrated feasibility of method
- Explored several CMMs, individually and in combination
- Identified several areas for improvement
- Establish a standing working group of IAC and IATTC collaborators



Improvements in Phase 2: December 2020-present

Key improvements/updates in Phase 2

- 1. Updated species distribution map** to reflect regionally important areas (Dr. Jon Lopez, IATTC)
- 2. Updated data coverage and CMM scenarios** for industrial and artisanal fisheries to be included in EASI-Fish (Dr. Shane Griffiths, IATTC)



Completed Activities in Phase 2: December 2020-April 2021

1. **Continued collaboration between IAC and IATTC experts**
2. Compiling data on fishing effort, leatherback observations, and conservation management scenarios under data use and quality standards
3. Series of working group meetings, December 2020 - April 2021
4. Discussions addressed:
 - data types, their availability and use
 - fisheries that interact with leatherbacks in the region
 - potential conservation and management measures
 - biological and susceptibility inputs to EASI-Fish model scenarios



Improvements in Phase 2: December 2020-present

1. Updated species distribution map to reflect important areas regionally (Dr. Jon López, IATTC)

Summary of the data contributed up to date

No. Countries	No. Gears	Range	Data type	Effort	No presences	Total individuals	Total points	% av. Presences	Source
6 + IATTC	Several (LL, PS, gillnet, etc.)	1995 (2001)-2020	Abundance, presence only (Y/N)	Some	1148	1193	>500K	0.20	Various (observer, NGO, logbooks, etc.)



Improvements in Phase 2: December 2020-present

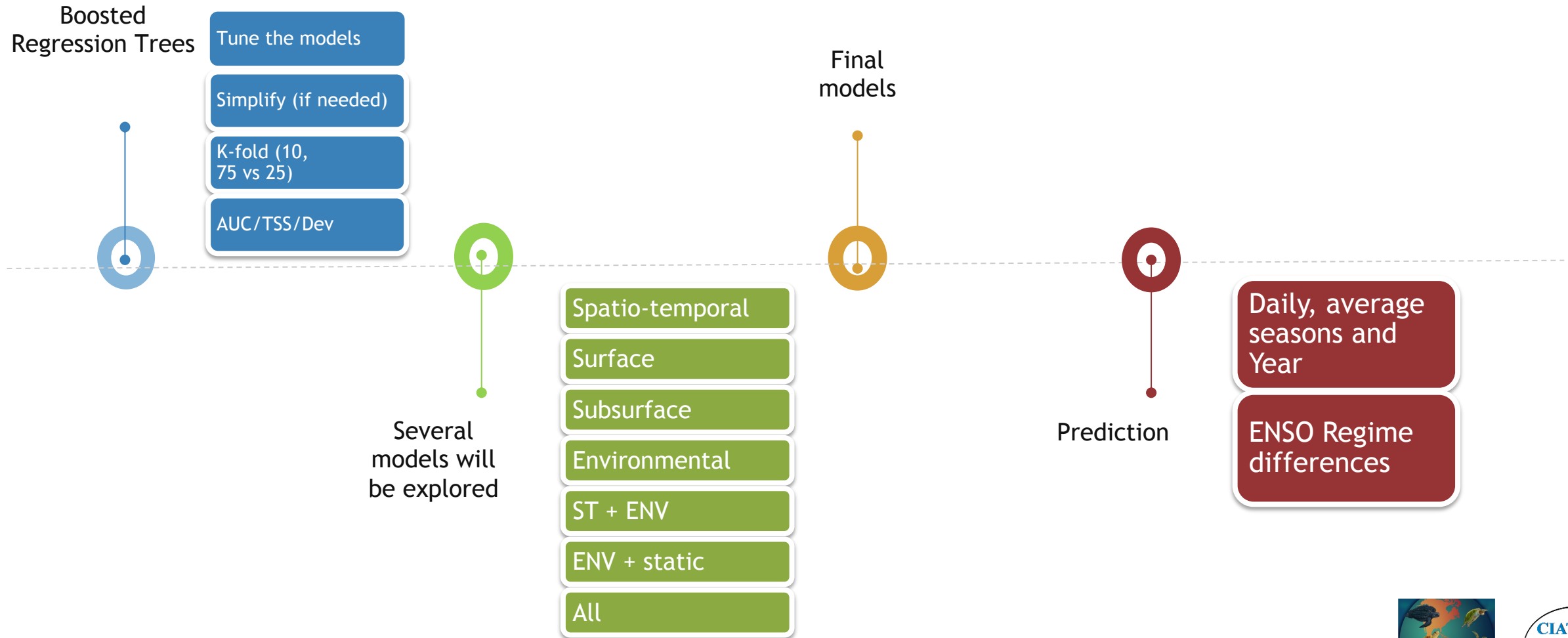
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Available environmental variables

Spatio-temporal	Surface						Subsurface			Static
	Abiotic	Sp. Res	T. Res	Biotic	Sp. Res	T. Res		Sp. Res	T. Res	
Latitude	SST	1/4	D	CHL	1/4	W	Temp 100m	1/4	D	Bathymetry
Longitude	Δ SST	1/4	D	Δ CHL	1/4	W	ILD	1/4	D	Distance to coast
Day of the year	Salinity	1/4	D	Oxygen	1/4	W	BF	1/4	D	
	SSH	1/4	D				MLD	1/4	D	
	VOL	1/4	D							
	Speed	1/4	D							
	Heading	1/4	D							
	EkE	1/4	D							
	FSLE	1/25	D							
	Front index	1/4	W							

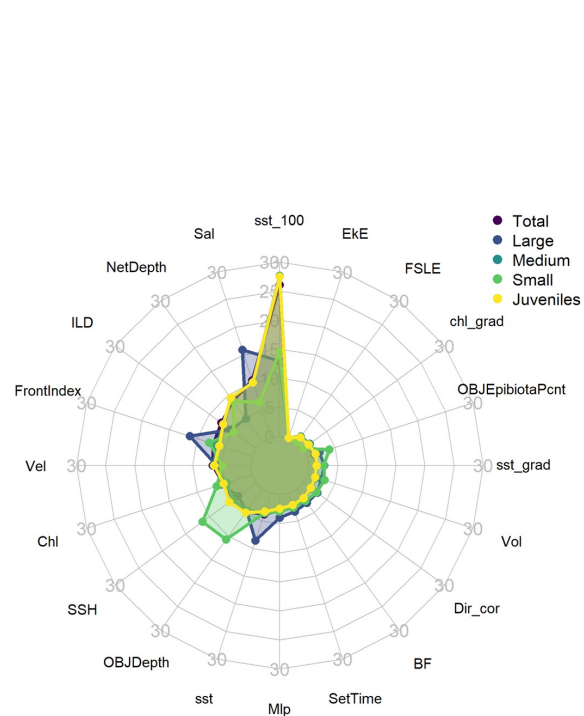
Improvements in Phase 2: December 2020-present

Methods –machine learning models

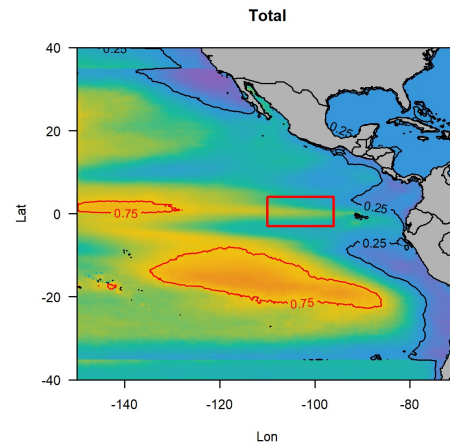


Improvements in Phase 2: December 2020-present

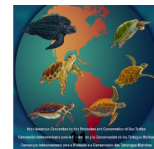
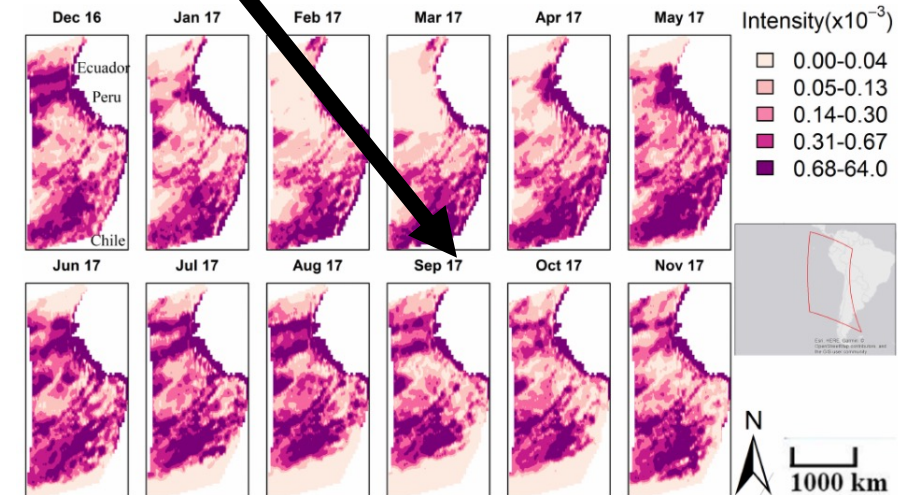
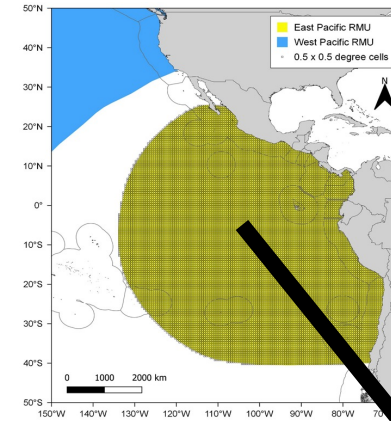
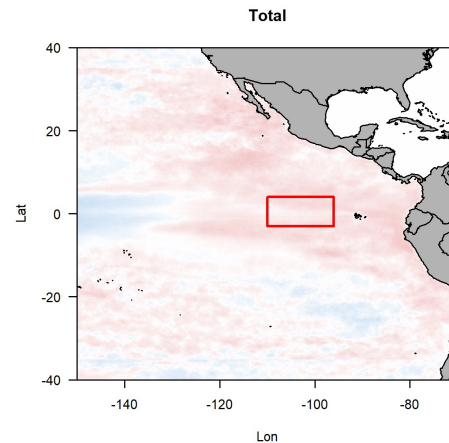
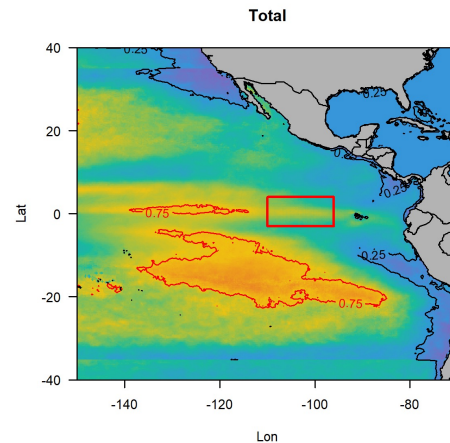
Expected results – example of the Bigeye tuna



Average study period



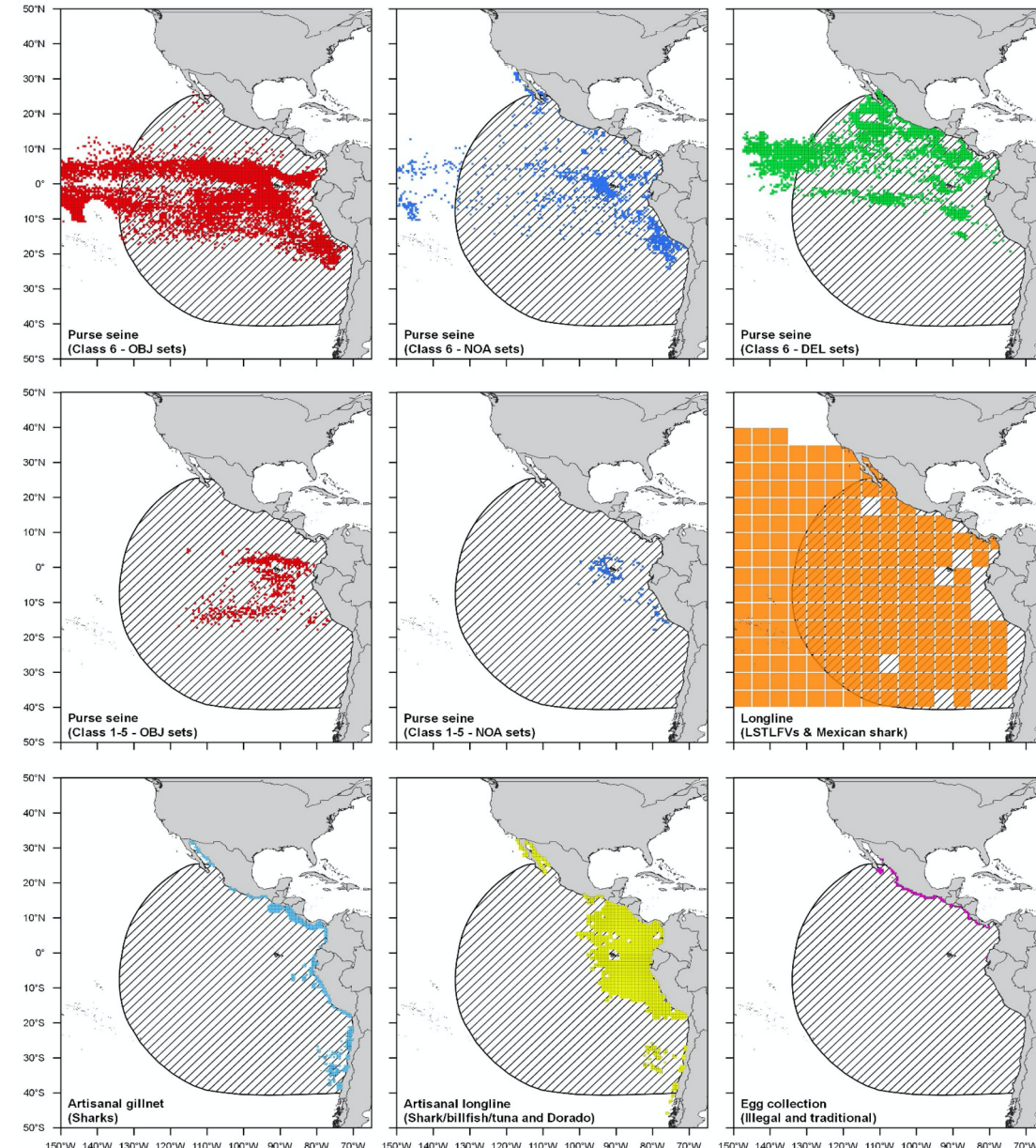
Average ENSO regimes and differences (e.g. El Niño).



Improvements in Phase 2: December 2020-present

2. Updated data coverage and CMM scenarios for various fisheries to be included in EASI-Fish (Dr. Shane Griffiths, IATTC)

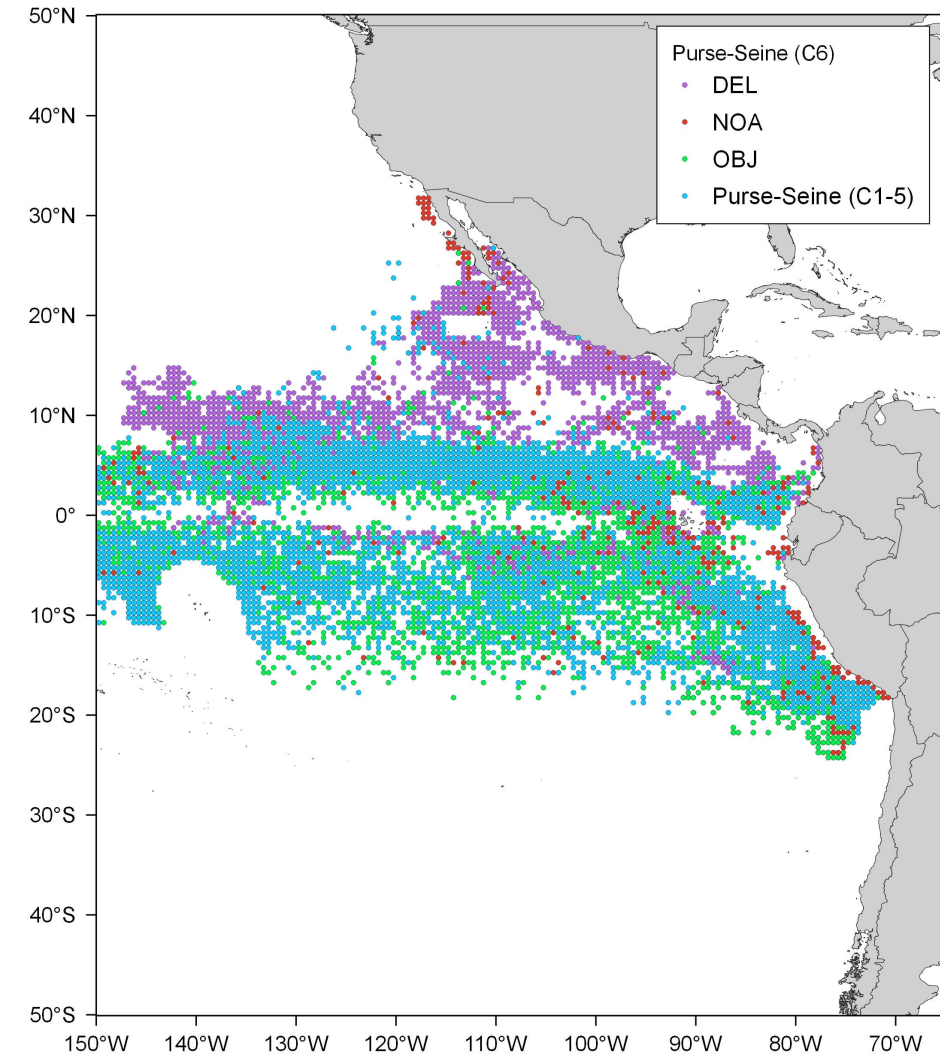
- Phase 1: published and IATTC fishing effort data



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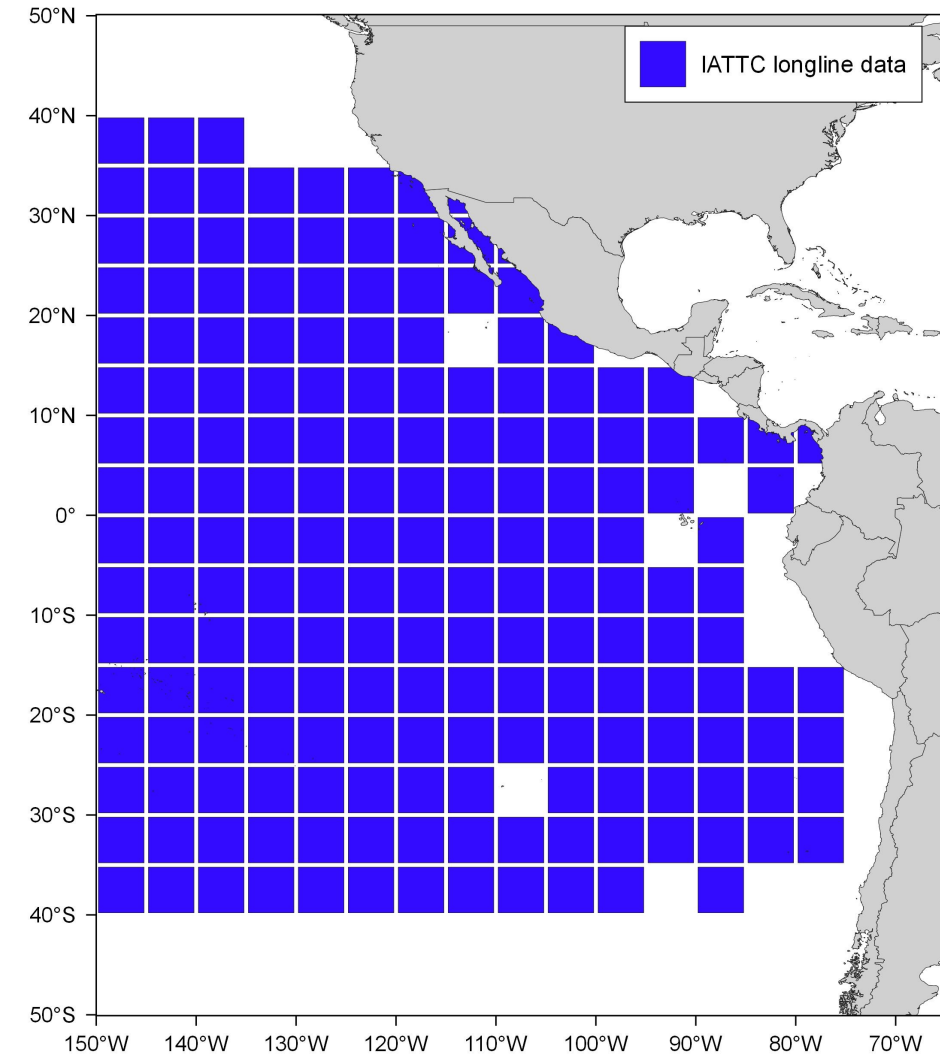
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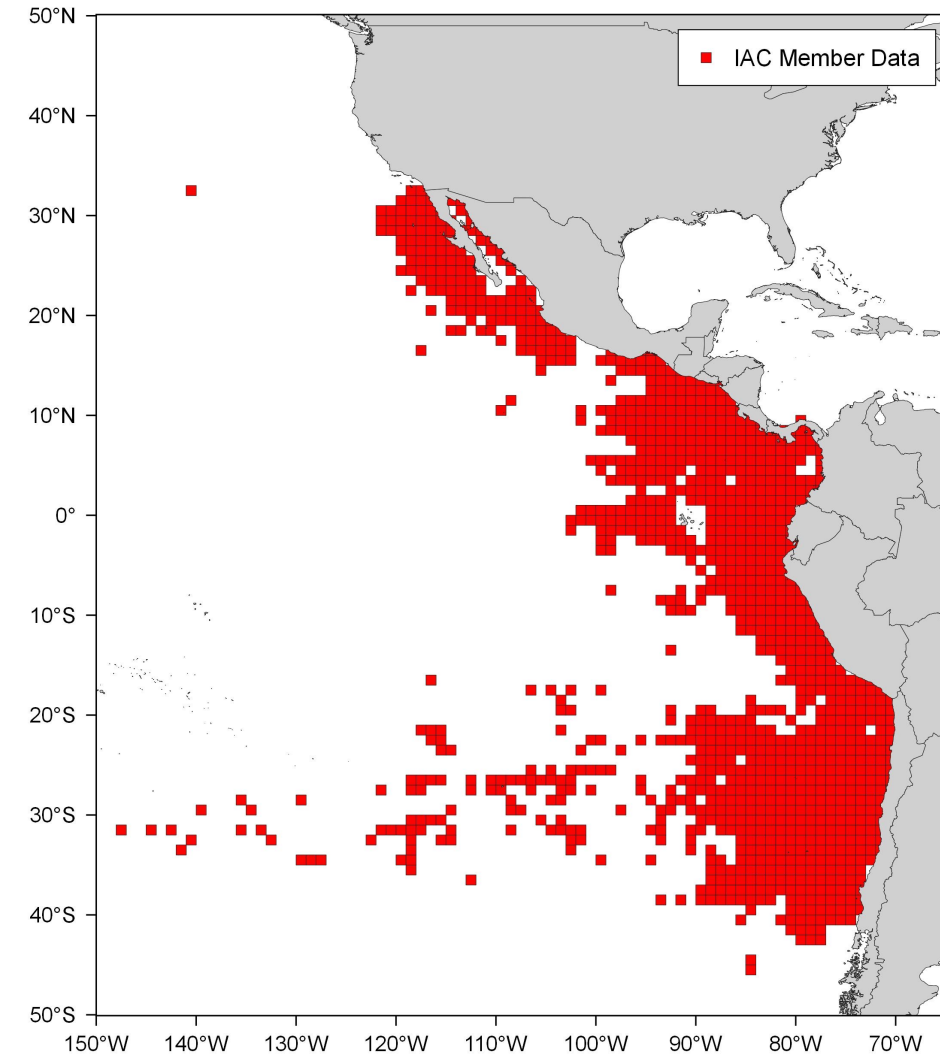
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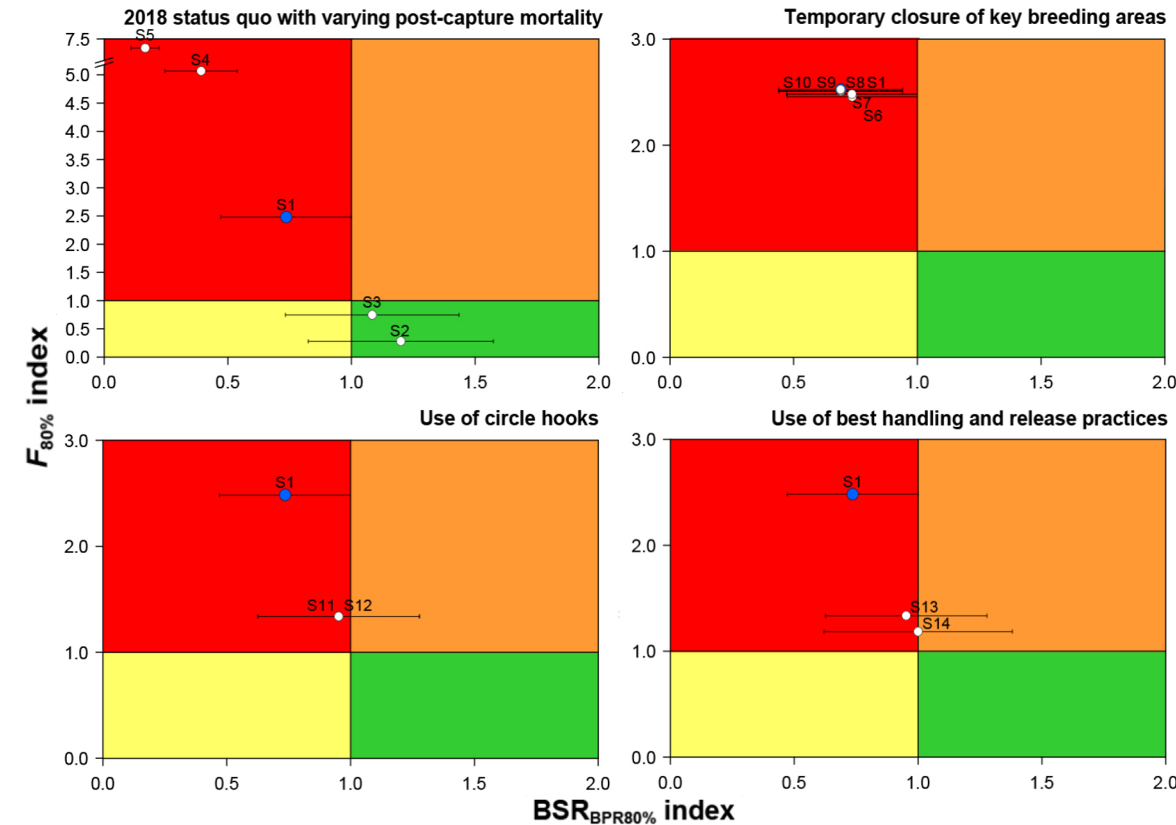
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- Phase 1: CMM scenarios based only on Resolution C-19-04



Improvements in Phase 2: December 2020-present

2. Updated data coverage and CMM scenarios for various fisheries to be included in EASI-Fish (Dr. Shane Griffiths, IATTC)

- Phase 1: CMM scenarios based on Resolution C-19-04
- **PHASE 2: Expanded set of 50+ scenarios**
 - Based on C-19-04 and including other CMMs
 - Industrial and artisanal fisheries throughout the region
 - Examining variation in effectiveness and degree of implementation
 - Variation in post-capture mortality estimates to incorporate uncertainties



Next Steps in Phase 2

1. Complete new leatherback distribution model
2. Finalize CMM scenarios
3. Incorporate new distribution map and scenarios into new EASI-Fish
4. Review preliminary results with project participants (multiple cycles)
5. Finalize results and draft report
6. Circulate report to IAC Members and IATTC
7. Present at 10th IAC Conference of Parties and IATTC SAC/BYCWG



IAC and IATTC Collaborators

Country	Collaborators
México	Heriberto Santana (Instituto Nacional de Pesca)
Costa Rica	José Miguel Carvajal (Instituto Nacional Costarricense de la Pesca); Rotney Piedra (Sistema Nacional de Áreas de Conservación); Sandra Andraka and Lilian Rendón (EcoPacífico+)
Panamá	Marino Abrego (Ministerio de Ambiente Panamá); Callie Veelenturf (The Leatherback Project)
Colombia	Juan Manuel Rodríguez-Baron (JUSTSEA Foundation, University of North Carolina Wilmington)
Ecuador	Marco Herrera (Instituto Nacional de Pesca); Jenifer Suárez (Parque Nacional Galápagos)
Perú	Javier Quiñones and Miguel Perez (Instituto del Mar del Perú); Joanna Alfaro and Jeff Mangel (ProDelphinus); Nelly de Paz (ACOREMA)
Chile	Camila Bustos and Luis Cocas (Subsecretaría de Pesca y Agricultura); Rodrigo Vega, Patricia Zárate, Ljubitza Clavijo, Ilia Cari (Instituto del Fomento Pesquero)
USA	Ann Marie Lauritsen, Yonat Swimmer, Barbara Schroeder, Brian Stacy (NOAA)
IAC Secretariat	Verónica Cáceres, Luz Helena Rodríguez, Bryan Wallace
IATTC	Shane Griffiths, Jon López



Questions?