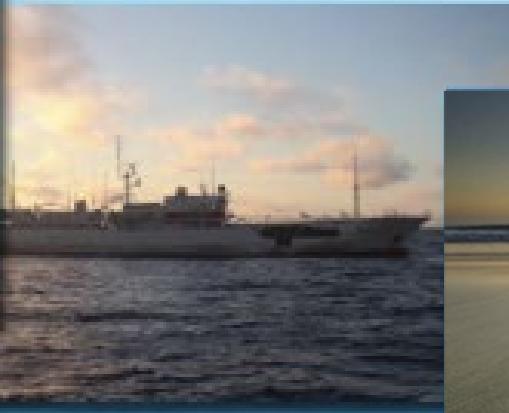


Comisión Interamericana del Atún Tropical Inter-American Tropical Tuna Commission



Final Report:
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



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 TORTUGAS MARINAS

- EP leatherbacks are in critically endangered; reducing fisheries mortality is vitally important
- IAC and IATTC Resolutions strengthen conservation management measures (CMMs) for monitoring and reduction of bycatch impacts on sea turtles
- Need to support implementation with viable options and resources



LAÚD OPO
RED LAÚD DEL OCEANO
PACIFICO ORIENTAL

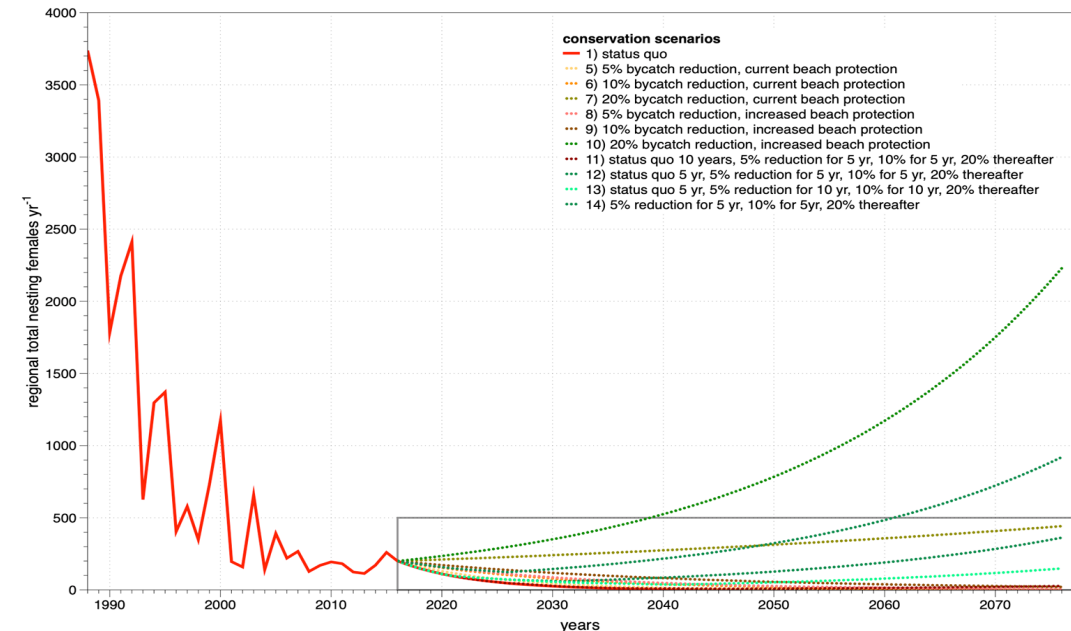
SCIENTIFIC
REPORTS

nature research

OPEN

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

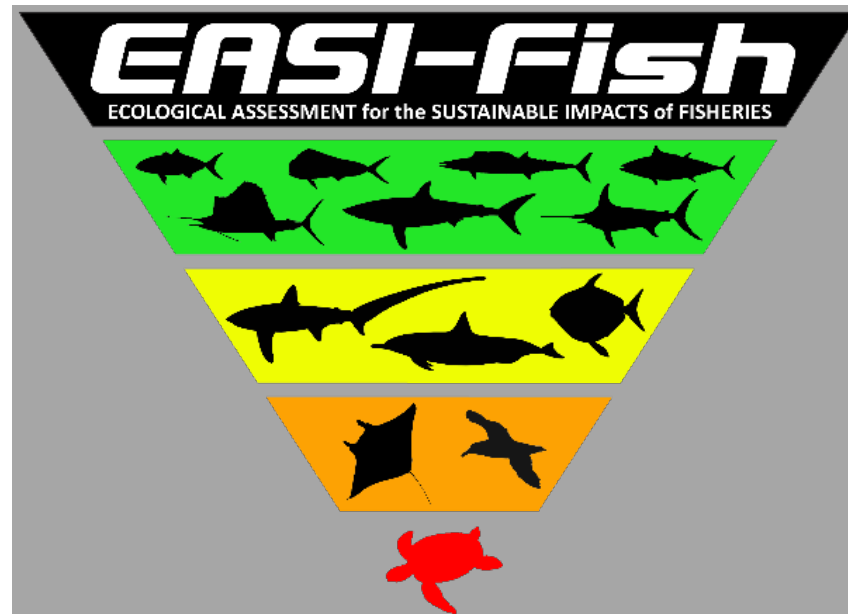
The Laúd OPO Network[†]



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 using the **EASI-Fish framework (Griffiths et al. 2019)**



EASI-Fish leatherback vulnerability project

Phase 1: 2019-2020 (Griffiths et al. 2019; BYC-INF-10)

- Explored several CMMs, individually and in combination
- Identified several areas for improvement
- Established a standing working group of IAC and IATTC collaborators

Key improvements/updates in Phase 2

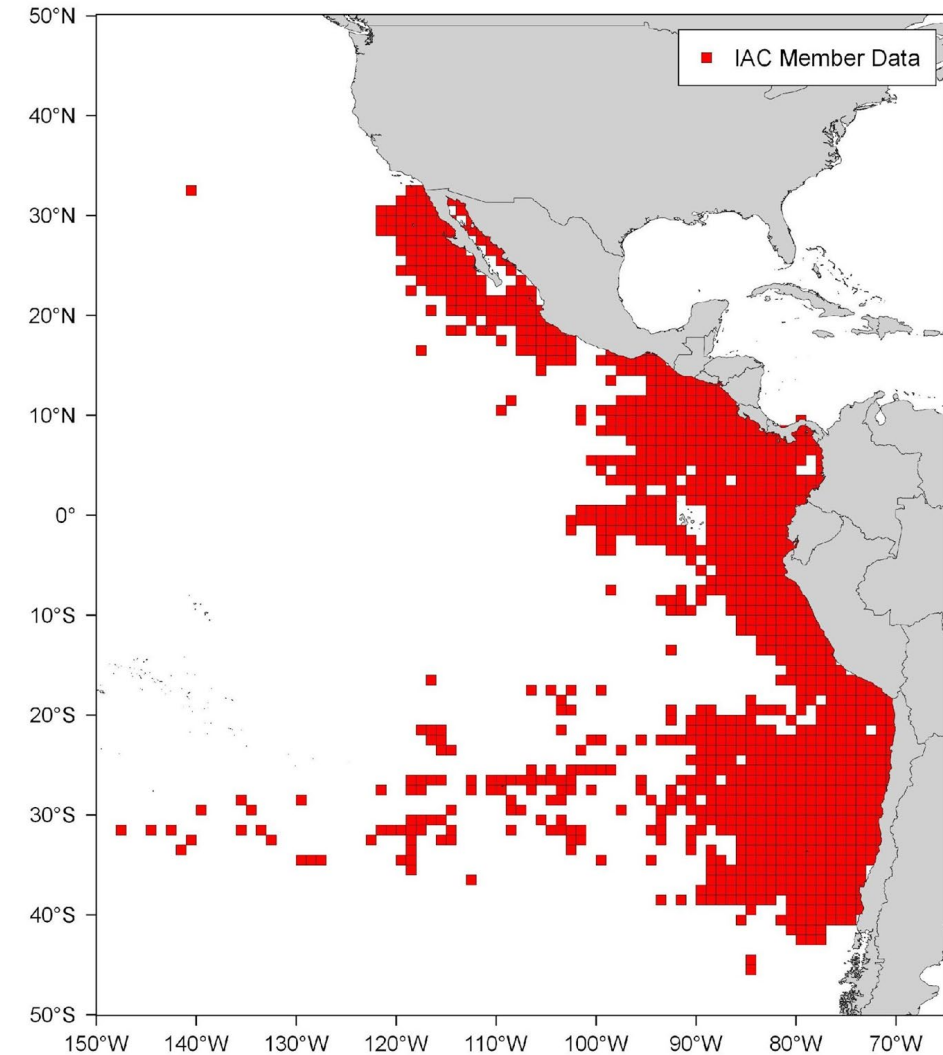
- 1. Updated species distribution map** to reflect regionally important areas (Dr. Jon Lopez, IATTC)
- 2. Updated data coverage and conservation scenarios** for industrial and artisanal fisheries to be included in EASI-Fish (Dr. Shane Griffiths, IATTC)



Improvements in Phase 2: Dec 2020-Dec 2021

2a. Updated data coverage and CMM scenarios for various fisheries to be included in EASI-Fish

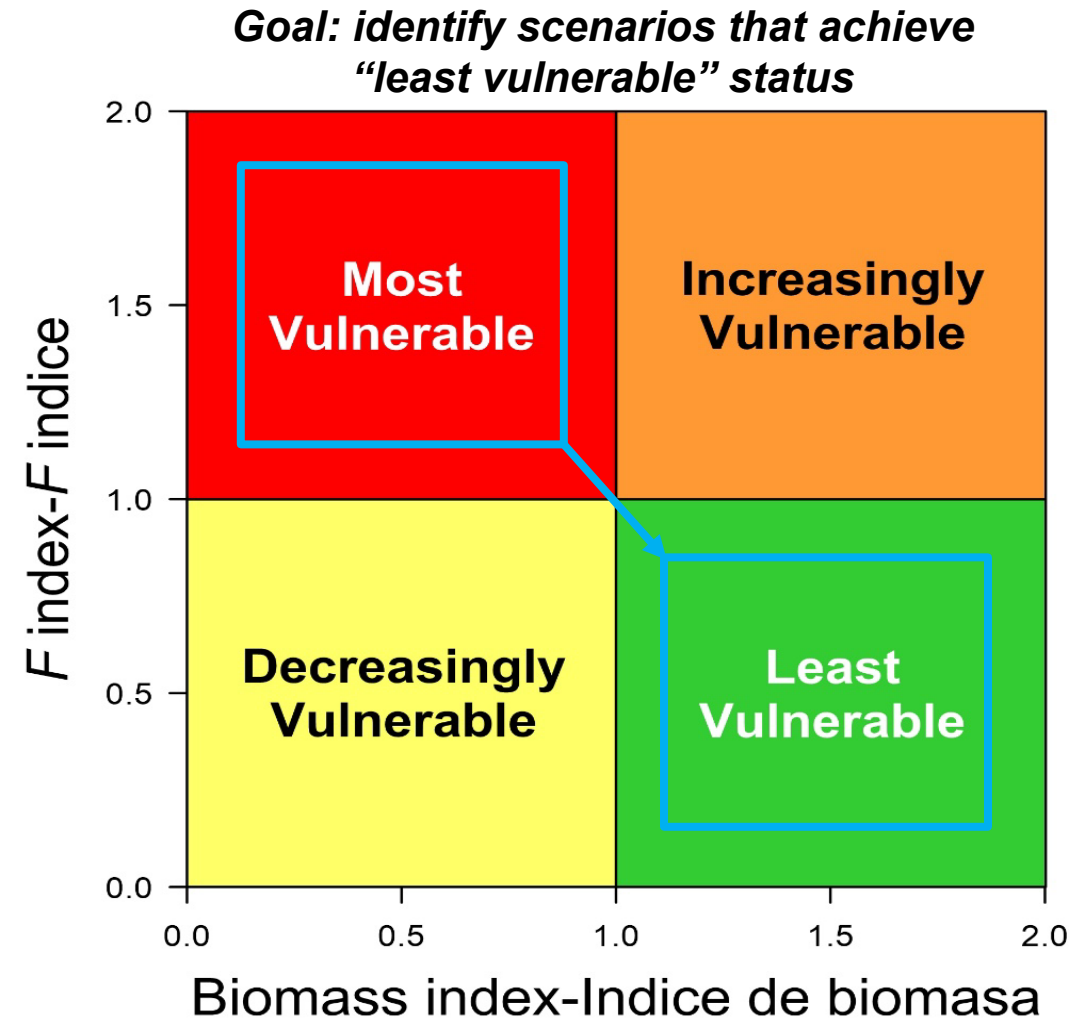
- Phase 1: published and IATTC fishing effort data
- **PHASE 2: Using fishing effort data from national (and IATTC) observer programs for industrial and artisanal fisheries regionally**



Improvements in Phase 2: Dec 2020-Dec 2021

2b. Updated data coverage and CMM scenarios for various fisheries to be included in EASI-Fish

- Phase 1: CMM scenarios based only on Resolution C-19-04
- **Phase 2: Expanded set of 70 scenarios**
 - Based on C-19-04 and hypothetical CMMs,
 - Includes EPO purse seine, industrial and artisanal longline and gillnet fisheries,
 - Vary CMM effectiveness (selectivity and post-capture mortality estimates)



Phase 3: EASI-Fish modeling, Jan 2022-present

Conservation Management Measure (CMM)

Scenarios:

- Circle hooks
- Fish bait
- Best handling practices
- Illuminated gillnets
- EPO-wide closures of industrial fisheries
- Combinations of above

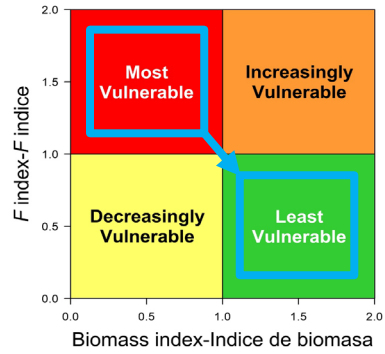
Fisheries included:

- Industrial longlines
- Purse seine fisheries, various set types
- Artisanal longlines
- Artisanal gillnets
- “egg collection”
- Combinations of above

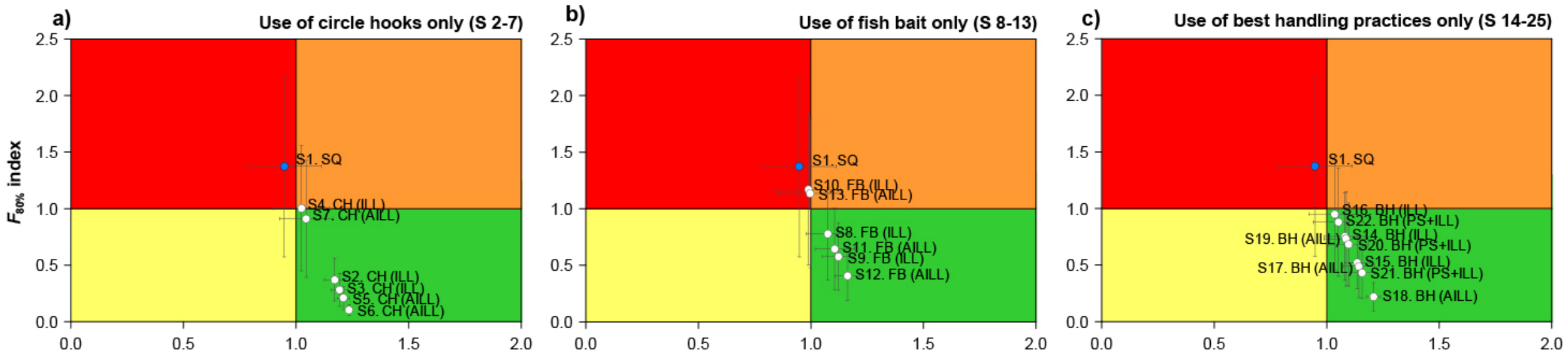
KEY ASSUMPTIONS:

- ***Robust CMM effectiveness values unavailable for most fisheries***
- ***Many estimates of CMM effectiveness used here are best-case***
- ***CMMs in each scenario implemented 100%, fleetwide***
- ***Model results answer “What if...” scenarios***



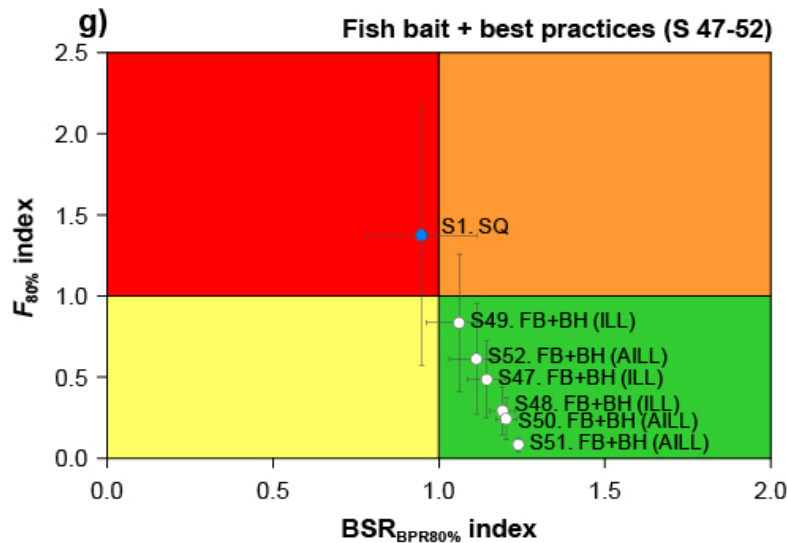
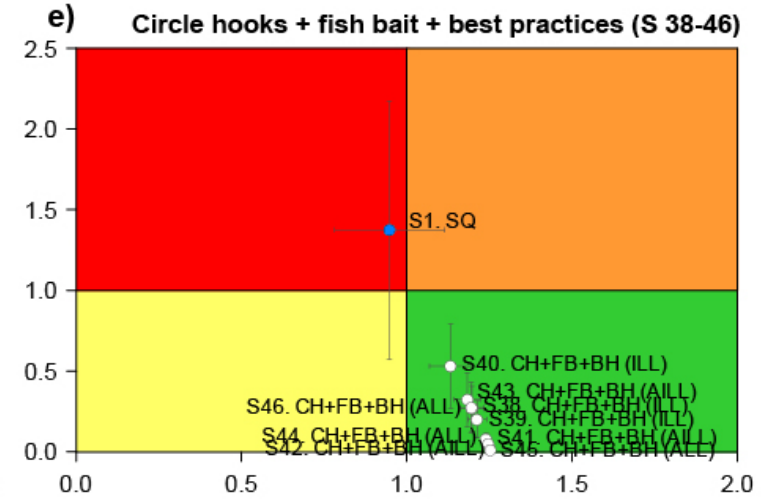
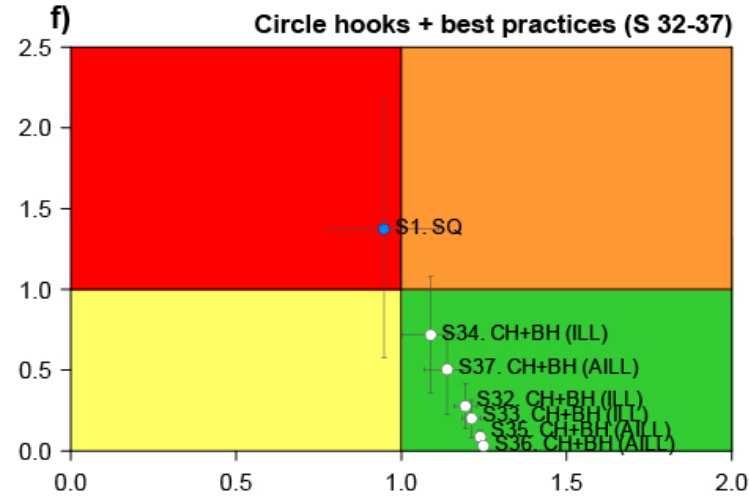
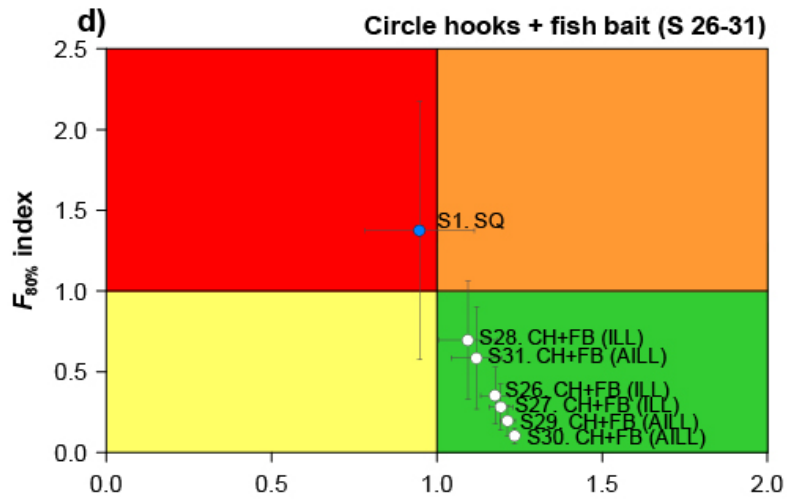
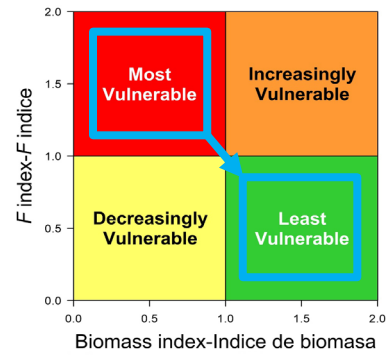


Results: single CMM scenarios, industrial and artisanal LL + PS



- Best and moderate efficacy = least vulnerable
- Industrial LL, all LL, or all fisheries = least vulnerable
- Best-case for best handling practices = least vulnerable

Results: CMM combination scenarios, industrial and artisanal LL + PS

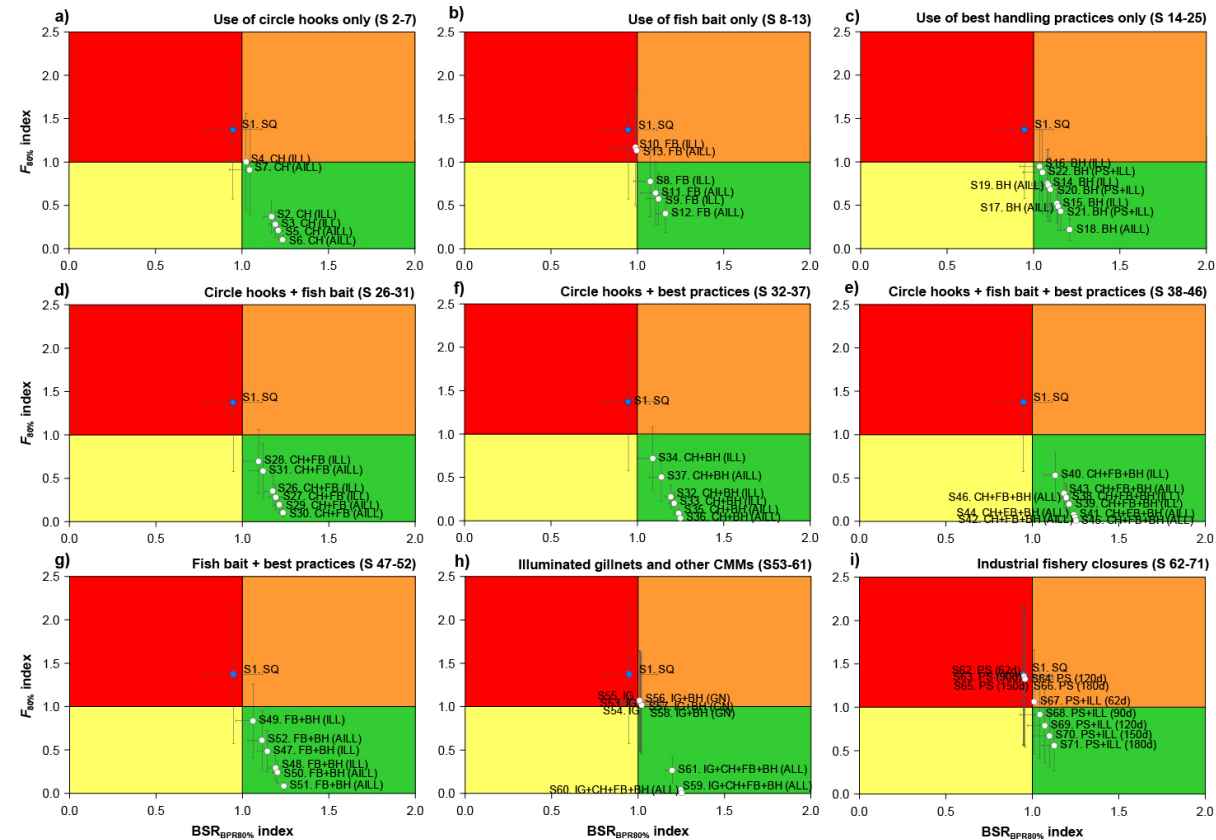


- Best and moderate efficacy = better results
- Circle hook effect > fish bait effect
- All 3 measures = best results

Phase 3: January 2022-present

SUMMARY

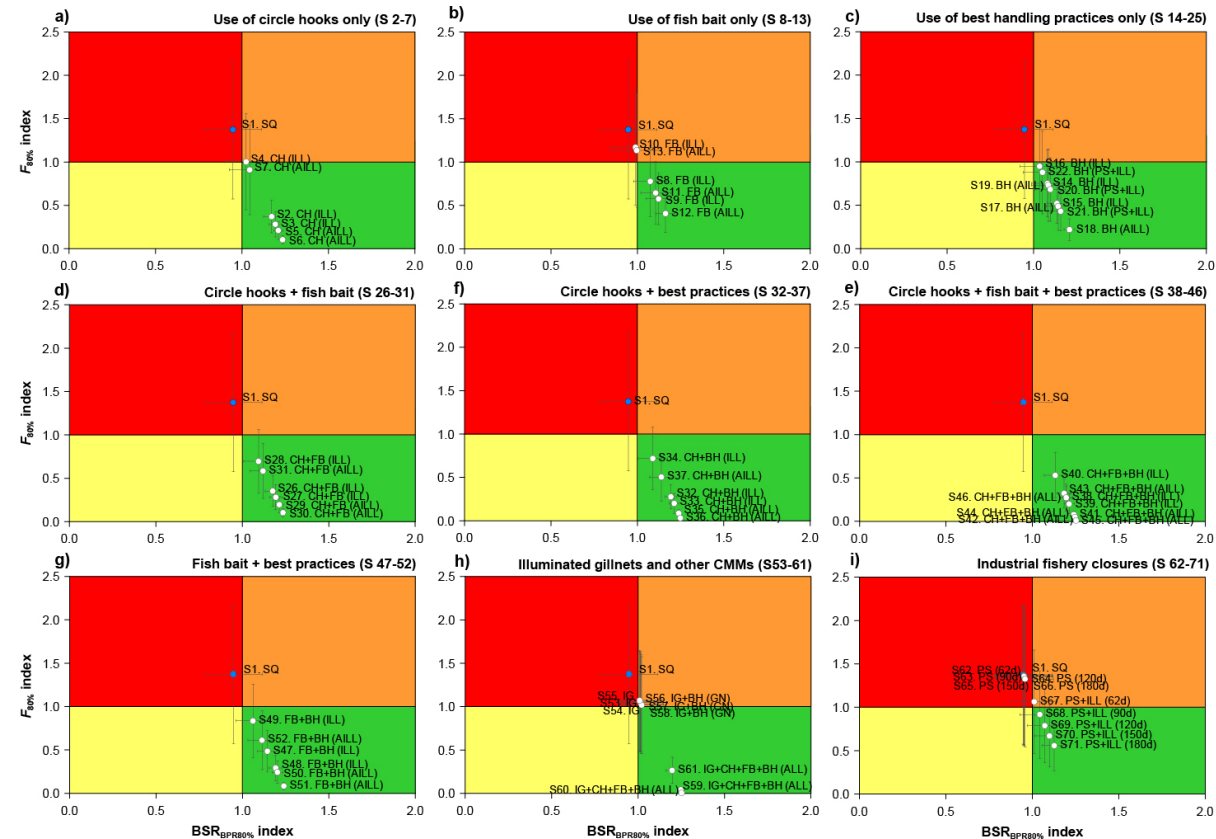
- Longline fisheries had greatest areal overlap with EP leatherback distribution
- Best-performing scenarios:
 - Combinations of measures
 - ‘Best-case’ values of bycatch reduction and post-capture mortality
 - Combination of fisheries



Phase 3: January 2022-present

SUMMARY

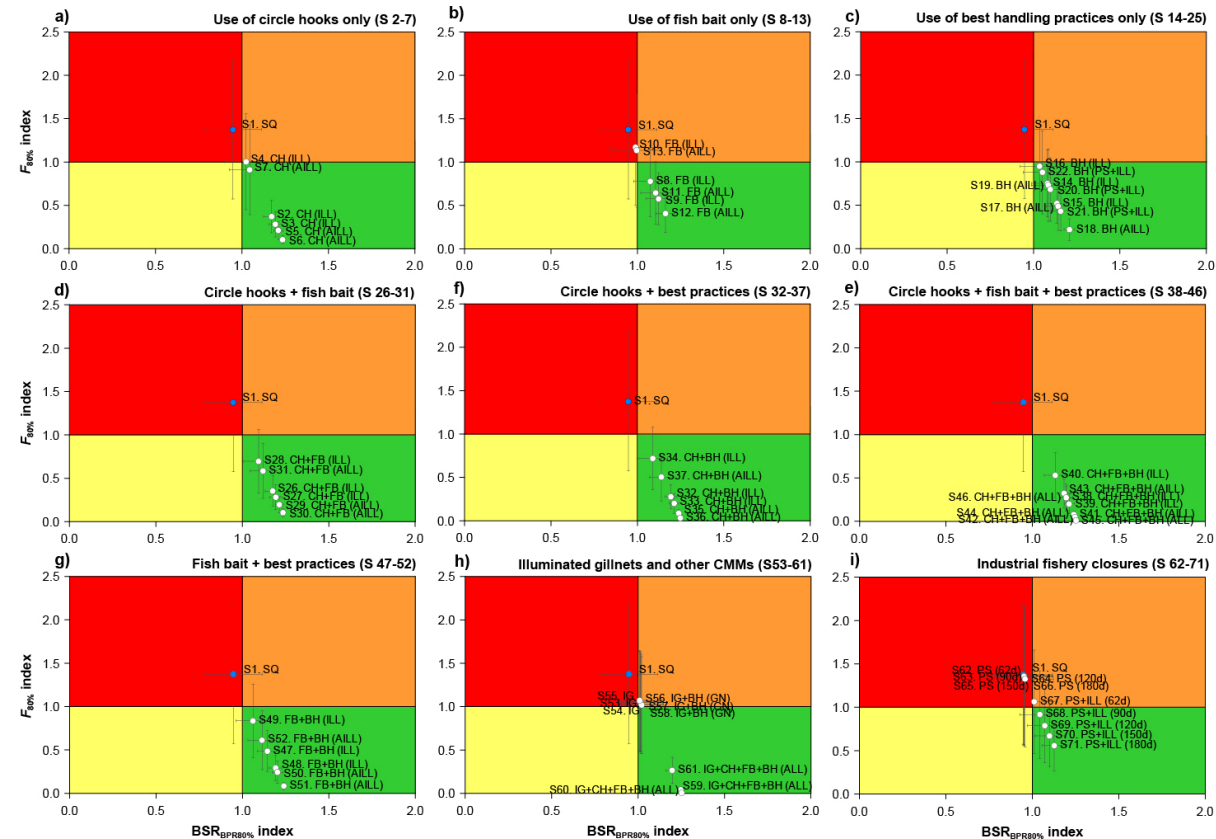
- Contact selectivity (bycatch rates) in longlines (via circle hooks, fish bait, or both) must be reduced by $\geq 50\%$
- Post-capture mortality (via best handling practices) in industrial LL must be reduced by $\geq 50\%$ OR
- By $\geq 25\%$ in industrial LL + $\geq 75\%$ in artisanal LL



Phase 3: January 2022-present

SUMMARY

- Minimum estimated effectiveness of best practices were only sufficient *if* combined with at least two other CMMs *and* implemented in multiple fisheries
- EPO-wide closures of both industrial longline and purse seine fisheries must extend 150 d or more to effectively reduce leatherback vulnerability; such extensive closures will likely be infeasible



Recommendations to IATTC and IAC COPs

Based on this collaborative effort, we recommend that:

- **Conservation management measures (CMMs) in C-19-04 should be implemented comprehensively across convention area**
- **Multiple CMMs to reduce bycatch rates as well as post-capture mortality should be implemented in multiple fisheries, options**
 1. *Most effective:* Use circle hooks + fish bait in industrial and artisanal longlines + best practices in all fisheries
 2. *Next most effective:* Best practices + 2 other measures applied in all fisheries
 3. *Moderately effective:* Reduce the bycatch rate industrial and artisanal longlines by $\geq 50\%$ (circle hooks + fish bait)
 4. *Least effective:* Implement best practices to reduce post-capture mortality by $\geq 50\%$ in industrial longlines
- **Bycatch data collection and reporting from tuna fisheries, as well as artisanal fisheries, must be improved to successfully implement and monitor effectiveness of CMMs**



IAC and IATTC Collaborators

Country	Collaborators
México	Heriberto Santana (Instituto Nacional de Pesca)
Costa Rica	José Miguel Carvajal (Instituto Nacional Costarricense de Pesca y Acuicultura); 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, Ljubitzta 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 Lopez



Questions? / ¿Preguntas?