

Comisión Interamericana del Atún Tropical  
Inter-American Tropical Tuna Commission



Overview of MSE for tropical tunas at IATTC, recap of previous MSE workshops

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# ¿Que son las Estrategias de Ordenación?

## What are Management Strategies?

- Combination of monitoring, stock status evaluation, control rule and management actions **designed to achieve fisheries objectives.**

*Combinación de monitoreo, evaluación stocks, regla de control y acciones de manejo diseñadas para lograr **objetivos de ordenación***

- Strategies can't be properly evaluated without **specific** management objectives, data, analyses, control rule, uncertainty, other components

*Estrategias no pueden ser evaluadas sin **especificar** objetivos, datos, análisis, regla de control, incertidumbre y otros componentes*

- Development and success of Management Strategies benefit from **involvement of all stakeholders** in the planning stage

*El desarrollo y éxito de Estrategias de Ordenación se benefician con el involucramiento de **todas las partes interesadas** en su planificación*

- Management Strategy Evaluation components/*Componentes de EEO*

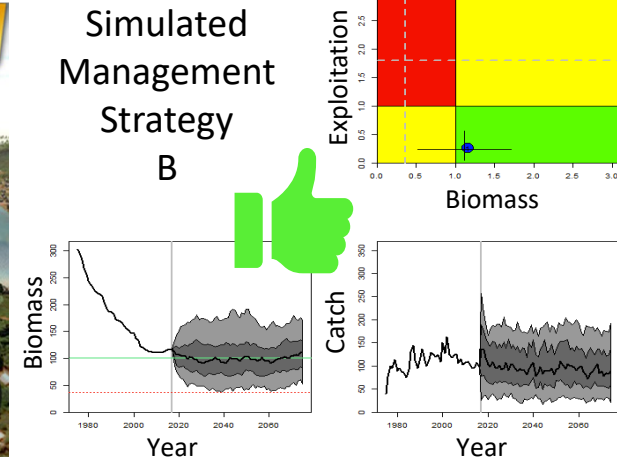
- **Dialogue:** define alternative strategies to evaluate/*Diálogo: definir estrategias a evaluar*

- **Technical:** evaluate strategies via simulations/*Técnico: evaluar estrategias con simulación*

# Evaluación de Estrategias de Ordenación (EEO)

## Management Strategy Evaluation (MSE)

- Used to evaluate management alternatives via computer simulations:  
*Usadas para evaluar alternativas de ordenación vía simulación con computadoras*
  - Quotas / *Cuotas*
  - Closures (time, spatial) / *Vedas (temporales, espaciales)*
  - Fishing effort limits (number of sets, FADs, etc) / *Límites de esfuerzo (núm. lances, FADs, etc)*
  - New data (tagging, ageing, genetics, etc) / *Nuevos datos (marcado, edad, genética)*
  - Alternative harvest control rules / *Reglas de control alternativas*



# EPO tropical tuna Management Strategy Evaluation

- Tropical Tuna Harvest Control Rules ([Resolution C-16-02](#), [Resolution C-23-06](#))

“...management strategy evaluation (MSE) is necessary to evaluate the HCR; and alternative HCRs should be considered that include hard and soft limit reference points, that use reference points based on biomass, and that establish well-defined scientific management recommendations”

- Workshops Terms of Reference ([Resolution C-19-07](#))

- SAC Recs. supported staff’s MSE workplan

- 5-year IATTC staff MSE Workplan ([SAC-12-01](#))

- Intro workshops (2015-2019), 3 IATTC MSE workshops (2019-2022) ([WSMSE-1](#); [WSMSE-2](#); [WSMSE-3](#))

- 2021-2023 MSE funding from the European Union

- Two components:

- Consultative/dialogue process (e.g. series of MSE workshops)

- Technical implementation of MSE

- 2024 new permanent harvest strategy IATTC staff position, securing MSE work



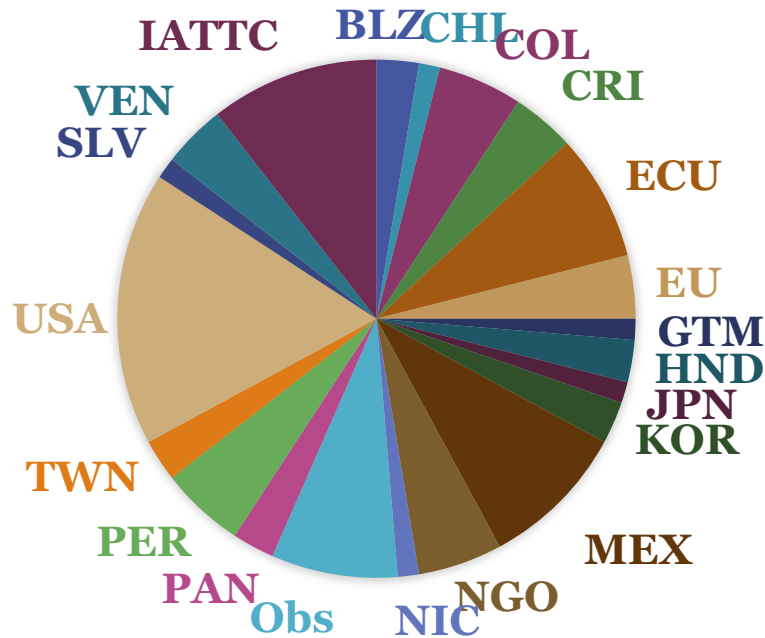
# MSE dialogue and stakeholder input

- Training and enhancing dialogue / communication among scientists, managers, and other stakeholders regarding harvest strategies and the MSE process
- Input and feedback on important elements to use in the MSE process
- Intro Harvest Strategy workshops and MSE workshops
- Requests by stakeholders for the establishment of a dedicated dialogue Working Group (WG), to enhance or replace the MSE workshops.
- Recommendations from SAC-14 and from staff in SAC-15 for the Commission consider a Science-Management Dialogue (SMDWG) or informal workshops approach to continue the MSE process.
- Resolution C-24-08: creation of an *ad hoc* Working Group to strengthen the dialogue among scientists, managers and other stakeholders on Management Strategy Evaluation

# 3rd IATTC Tropical Tuna MSE Workshop, December 2022, participants

## 3er Taller CIAT sobre EEO, Diciembre 2022, participantes

80 participants / *participantes*



	1st MSE WS	2nd MSE WS	3rd MSE WS
Cooperating Non-Members	FALSE	FALSE	FALSE
	FALSE	TRUE	TRUE
	FALSE	FALSE	TRUE
	FALSE	FALSE	FALSE
	FALSE	FALSE	FALSE
Members	TRUE	TRUE	TRUE
	FALSE	TRUE	FALSE
	FALSE	FALSE	FALSE
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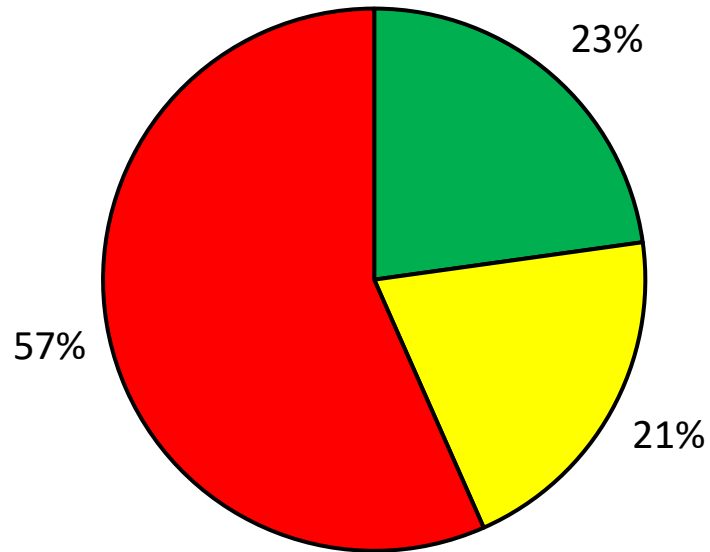
Participants	44	97	80
Members (%)	13 (62%)	15 (71%)	16 (76%)



# Participation in previous EPO tropical tuna MSE workshops

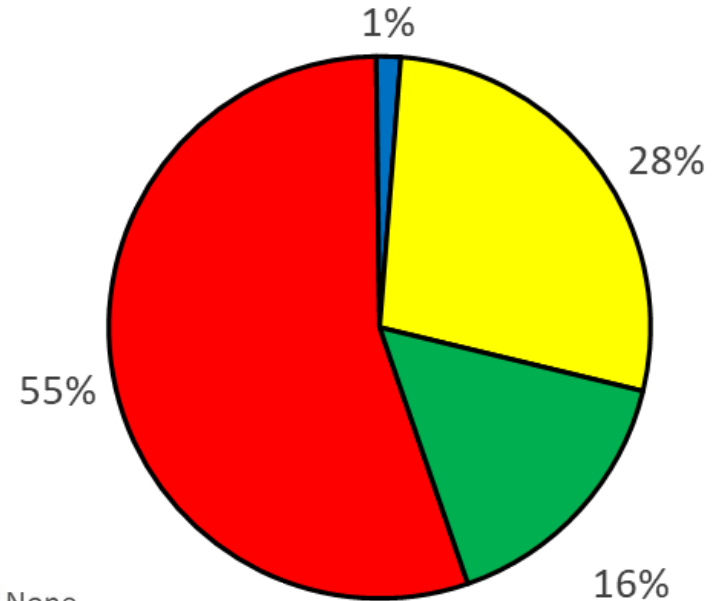
## *Participación en talleres previos de EEO de atunes tropicales en el OPO*

### 2<sup>nd</sup> Workshop / 2<sup>do</sup> Taller



■ 1st IATTC MSE WS ■ Other EPO MSE WS ■ None  
*1er Taller CIAT EEO* *Otro Taller EEO en OPO* *Ninguno*

### 3<sup>rd</sup> Workshop / 3<sup>er</sup> Taller



■ None ■ 1st IATTC MSE WS ■ 2nd IATTC MSE WS ■ Both IATTC MSE WS

# Objectives, quantities, performance indicators

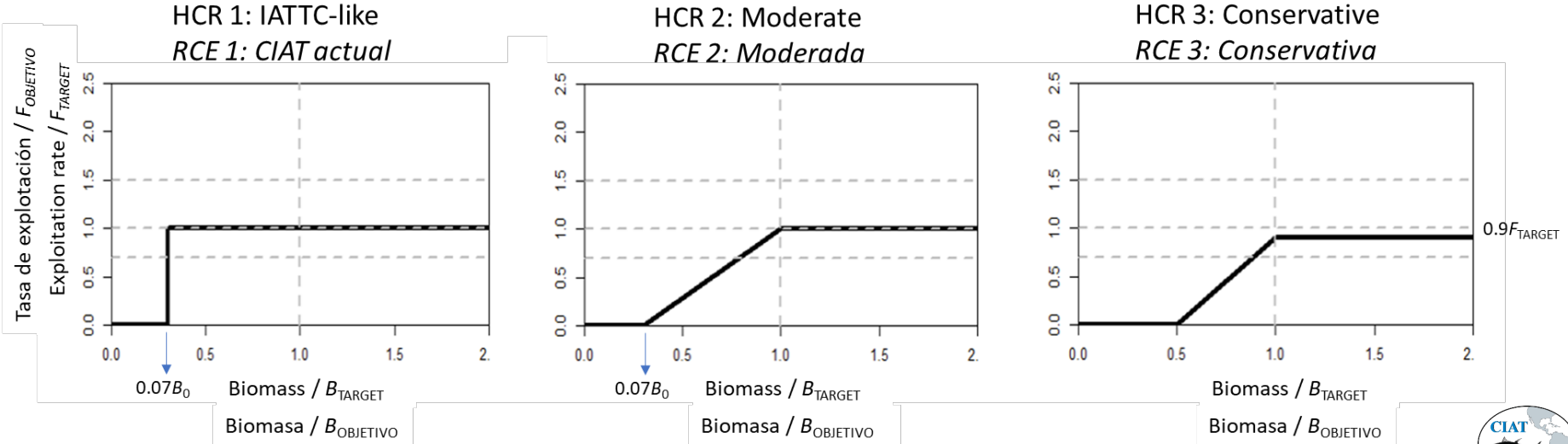
OBJECTIVE	Quantity	Performance Indicators
<b>Safety</b> Maintain stock above limit reference points	Equilibrium virgin spawning biomass $SB_0$ <ul style="list-style-type: none"> <li>&lt; 10% probability SB below 7.7% of <math>SB_0</math></li> <li>&lt; 5% probability SB below 7.7% of <math>SB_0</math></li> </ul> $< 10\% P SB < SB_{msy}$ $Flim (< 5\% P F > F_{msy})$	Ratio of $SB_{yr}$ over $SB_0$ Probability calculated over projected 30 years (All years, any year by replicates)
<b>Status</b> Maintain stock in green quadrant of Kobe plot	$SB \geq \text{dynamic } SB_{MSY} \text{ and } F < F_{MSY}$ <ul style="list-style-type: none"> <li>60% probability</li> <li>75% probability</li> </ul>	% of simulated runs falling in Kobe's green quadrant Probability calculated over projected 30 years
<b>Stability</b> Maintain low variability of catch and effort limits, gradual changes in management measures. Caps at 10% (effort), 15% (catch)	Standard deviation of annual catch, effort Average interannual proportional change (catch, effort)	% change in catch and/or effort between years Calculated over projected 3, 15 and 30 years
<b>Yield/Abundance</b> Maintain catches/effort/CPUE above historical ranges	Average catch/effort/CPUE by fishery (PS and LL) <ul style="list-style-type: none"> <li>1994-2019 (since FAD expansion)</li> <li>2017-2019 (latest status quo)</li> </ul>	Ratio of projected 3, 15 and 30-year average catch/effort/CPUE by fishery over historical period
<b>Status quo</b> Maintain the stock at levels near the (2017-2019) status quo	Spawning biomass, Index (LL CPUE)	Ratio of projected 3, 15 and 30-year average SB, Index (LL CPUE) over status quo period (2017-2019)



# Management Model / Modelo de Ordenación

3 model-based Harvest Control Rules, based on surplus production model (ASPM-R)

Evolving staff view on Target Reference Points for tropical tunas (SAC-15-05), from MSY-based quantities to MSY proxies ( $0.3B_0$ )



Summarized during the 3<sup>rd</sup> IATTC MSE workshop (from SAC-15-07)



# Challenges / *Desafíos*

- **COVID-19 pandemic / *Pandemia de COVID-19***
  - Limitations of virtual workshops, changes to workplan timeline  
*Inhabilidad de tener talleres en persona, cambios en el cronograma de trabajo*
- **Limited-representation** by some CPCs, high turnover of representatives  
*Representación limitada de algunas CPCs, alto recambio de representantes*
- Multiple extraordinary meetings during 2020-2021  
*Múltiples reuniones extraordinarias durante 2020-2021*
- Some challenges expected to ameliorate/*Algunos desafíos se espera que mejoren*
  - End of COVID pandemic
  - Full time harvest strategies position at staff since January 2024
  - 2024 BET assessment resolved structural issues of previous BET assessments, new OMs to update MSE should result in a better strategy being selected

# IATTC BET MSE focus of work at the onset

- Recent large changes in the modeling of BET in the EPO
  - 2020 benchmark BET assessment issues (bimodal results, recruitment shift)
  - Review of data and modelling for tropical tuna assessments (Oct-Nov 2023)
  - Substantial changes and improvements on modelling for BET assessment (2024)
- Revisiting Tropical Tuna reference points ([SAC-15-05](#))
- Continue technical work on BET MSE
  - Preliminary work with OMs based on last benchmark assessment (2020)
  - Updated runs with OMs from current benchmark assessment
  - Incorporate stakeholder feedback between
- Finalize BET MSE and plan to present results during 2025 / 2026
- MSE work has been institutionalized at IATTC by establishing a permanent harvest strategy staff position in 2024



Questions? / ¿Preguntas?

