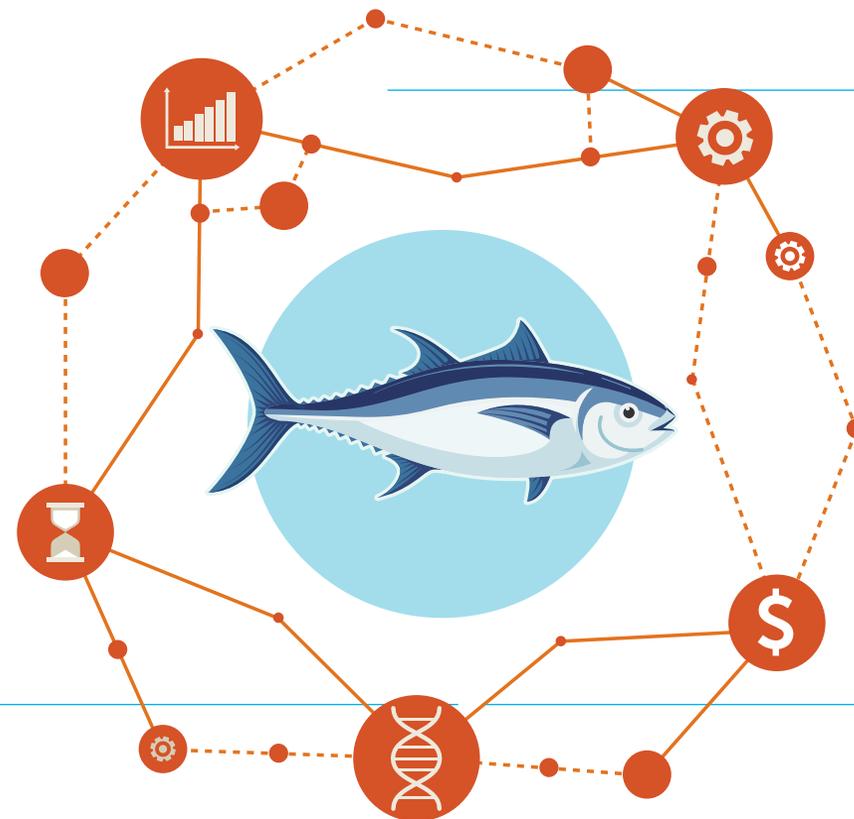# A Brief SCRS Update on BFT Management Strategy Evaluation (MSE) and Workplan

ICCAT October 6th 2021. Original presentation from the BFT WG Sep 21, 2021
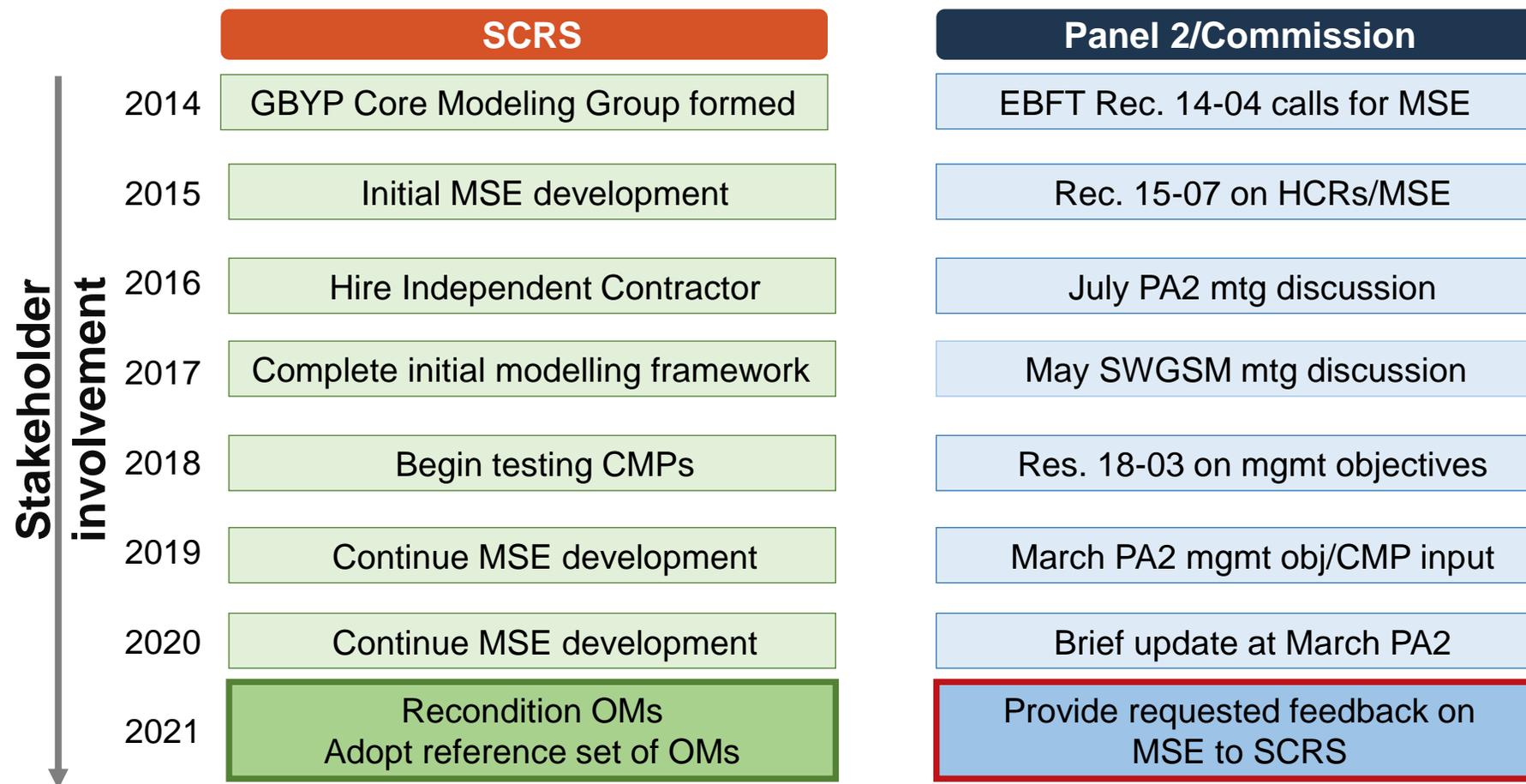
Presentation Overview:

- Overview of BFT MSE progress

- MSE in brief

- Next steps for 2021

- Proposed BFT MSE Ambassador program

- 2022 workplan, including SCRS-PA2 dialogue

SCRS on track to present 2-3 final Candidate Management Procedures (CMPs) to the Commission in 2022 for providing TAC advice starting in 2023, after feedback from Panel 2.

Timeline of ABFT MSE Development

	SCRS	Panel 2/Commission
2014	GBYP Core Modeling Group formed	EBFT Rec. 14-04 calls for MSE
2015	Initial MSE development	Rec. 15-07 on HCRs/MSE
2016	Hire Independent Contractor	July PA2 mtg discussion
2017	Complete initial modelling framework	May SWGSM mtg discussion
2018	Begin testing CMPs	Res. 18-03 on mgmt objectives
2019	Continue MSE development	March PA2 mgmt obj/CMP input
2020	Continue MSE development	Brief update at March PA2
2021	Recondition OMs Adopt reference set of OMs	Provide requested feedback on MSE to SCRS

**Stakeholder involvement**

Key BFT-MSE milestones completed in 2021

- Adopted **Reference grid** (48 OMs) and robustness test OMs (11)
- **Plausibility weighted grid** using 'remote' Delphi approach
- Development **tuned 9 CMPs**
- **Reconditioned OMs** with indices to 2019
- Formed a **Communications Team**
- Planning October 2021 "**Ambassador**" webinars in Spanish/French/English for informational purposes
- November 12, 2021 **rollout to Panel 2 ICCAT Commission**

# OM structure

- ## Area Spatial definitions
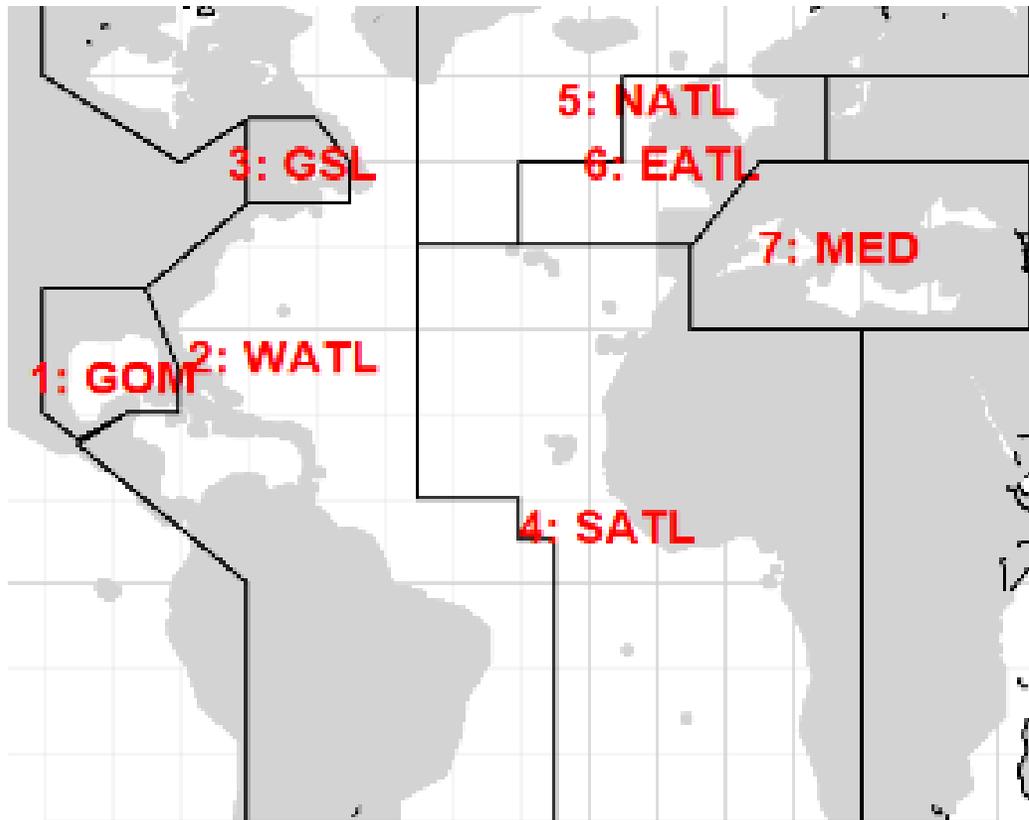
- ## **O**perating **M**odel Specifications

  - Time period (history) 1864-2019
  - 7-area model
  - 4 Quarters (Jan-Mar, Apr-Jun, Jul-Sept, and Oct-Dec)
  - Spawning occurs for both stocks in Qtr 2
    - Mediterranean for Eastern stock
    - Gulf of Mexico & Western Atlantic for Western stock
  - Age structured (3 age groups)
  - Multi-fleet (indices for fitting OM's)
    - 14 CPUE indices
    - 5 fishery independent indices

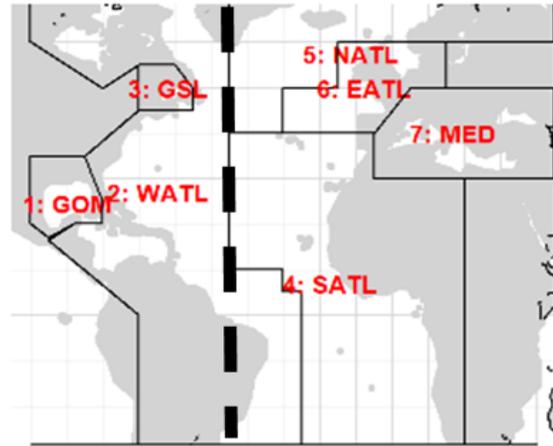# Movement (rate of fish moving) vs Mixing (proportion in each area)
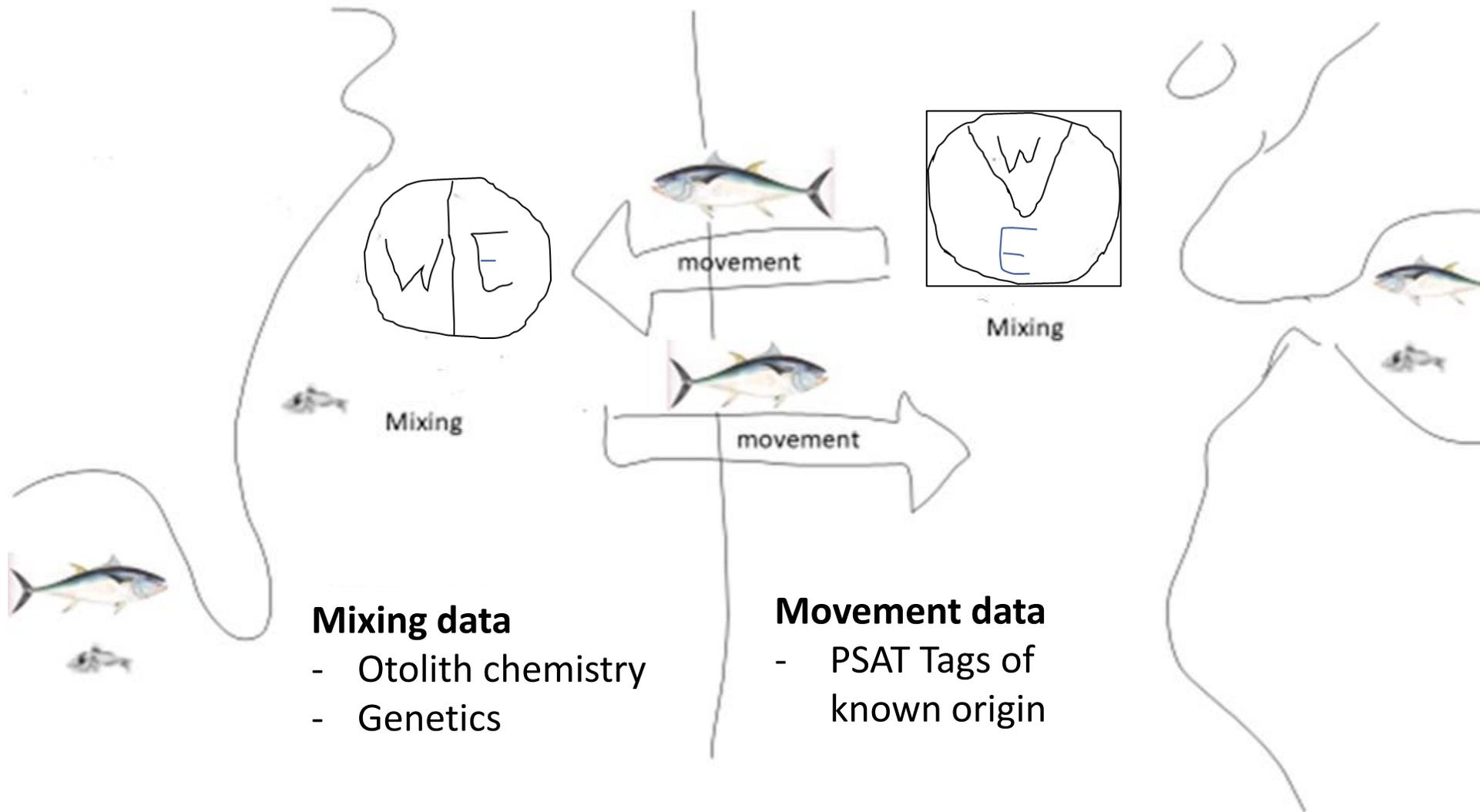
Mixing data
- Otolith chemistry
- Genetics

Movement data
- PSAT Tags of known origin

MP gives 2 catch rules, one for each area.

- Time series plots show historical period (shaded) and projections for one potential outcome from one example MP in a single operating model.

- MP gets index values, derives a TAC, TAC is taken from each area (East West) and stock biomass responds, resulting in new indices.

- Cycle repeats each iteration of MP application (2 years for now)

- Then compare the result against the Operational Management Objectives.
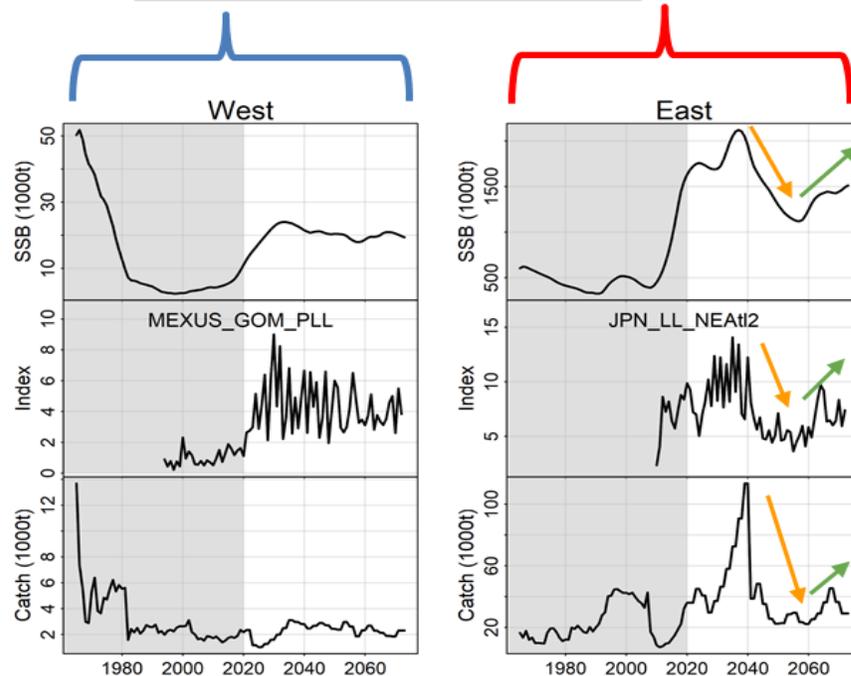
Statistics apply to "Biological" Stock, **Status** & **Safety**

Statistics apply to Area to **Yield** & **Stability** of catch

7

Candidate Management Procedures (9)

CMP	Indices used		Formulae for calculating TACs	References
	EAST	WEST		
FZ	FR AER SUV2 JPN LL NEAtl2 W-MED LAR SUV	US RR 66-144, CAN SWNS RR US-MEX GOM PLL	TACs are a product of stock-specific F0.1 estimates and an estimate of US-MEX GOM PLL for the West and W-MED LAR SUV for the East.	SCRS/2020/144 SCRS/2021/122
AI	All	All	Artificial intelligence MP that fishes regional biomass at a fixed harvest rate.	SCRS/2021/028
BR	FR AER SUV2 W-MED LAR SUV MOR POR TRAP JPN LL NEAtl2	GOM LAR SUV US RR 66-144 US-MEX GOM PLL JPN LL West2 CAN SWNS RR	TACs set using a relative harvest rate for a reference year (2018) applied to the 2-year moving average of a combined master abundance index.	SCRS/2021/121 SCRS/2021/152
EA	FR AER SUV2 W-MED LAR SUV MOR POR TRAP JPN LL NEAtl2	GOM LAR SUV JPN LL West2 US RR 66-144 US-MEX GOM PLL	Adjust TAC based on ratio of current and target abundance index.	SCRS/2021/032 SCRS/2021/P/046
LW	W-MED LAR SUV	GOM LAR SUV	TAC is adjusted based on comparing current relative harvest rate to reference period (2019) relative harvest rate.	SCRS/2020/127
NC	MOR POR TRAP	US-MEX GOM PLL	TAC is updated using an average of an index in recent years compared to and average in previous years. The scale of TAC increase/decrease is controlled based on the trend in catches and indices	SCRS/2021/122
PW	JPN LL NEAtl2	US-MEX GOM PLL	TAC is adjusted based on comparing current relative harvest rate to reference period (2019) relative harvest rate.	SCRS/2021/155
TC	MOR POR TRAP JPN LL NEAtl2 W-MED LAR SUV GBYP AER SUV BAR	US RR 66-144	TAC is adjusted based on F/F_{MSY} and B/B_{MSY}.	SCRS/2020/150 SCRS/2020/165
TN	JPN LL NEAtl2	US RR 66-144 JPN LL West2	Both area TACs calculated based on their respective JPN_LL moving averages, unless drastic drop of recruitment is detected by US_RR index.	SCRS/2020/151 SCRS/2021/041

MSE code review

General findings

• Correctness: no major errors found

• ICCAT can be confident about the validity of the
M3 (software BFT-MSE) implementation

**M3 & ABTMSE R PACKAGE
CODE REVIEW**

Emilius Aalto, Stanford University
Technical Contractor for
The Ocean Foundation
September 2nd, 2021

BFT-MSE process: Steps - 2021

September   October   November

Plan presented to PA-2 2nd intersessional meeting 2021 → Proposed Ambassador meetings → Panel 2 MSE meeting & Commission meeting

Proposed Terms of Reference for Ambassador Program
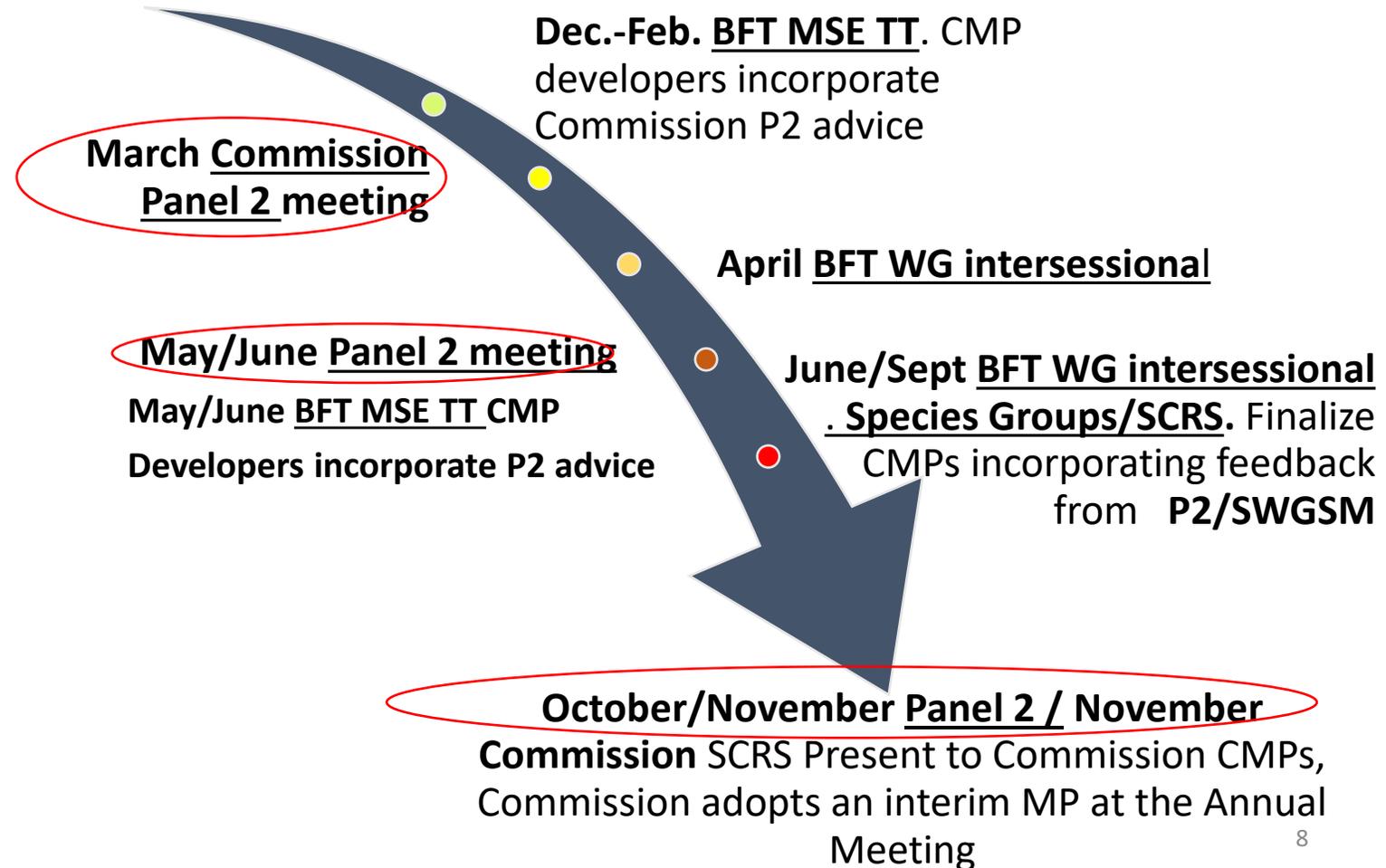
- Informational only; not decisional; policy discussions will be referred to Nov P2 mtg

- 2-hour sessions;1 each in English, French and Spanish

- Common set of materials for each session

- SCRS Chair and BFT Co-Chairs will attend each session

- CPCs are encouraged to recruit stakeholders to participate

- Ambassadors: English – John Walter; Spanish – Eider Andonegi; French – Tristan Rouyer

- Decision points:

  - Limited to accredited members and observers
  - Interventions by individual
  - Recorded

Next Steps - 2022

ICCAT Commission & SCRS work plan toward 2022 adoption

2022

Dec.-Feb. BFT MSE TT. CMP developers incorporate Commission P2 advice

March Commission Panel 2 meeting

April BFT WG intersessional

May/June Panel 2 meeting

May/June BFT MSE TT CMP

Developers incorporate P2 advice

June/Sept BFT WG intersessional. Species Groups/SCRS. Finalize CMPs incorporating feedback from **P2/SWGSM**

October/November Panel 2 / November Commission SCRS Present to Commission CMPs, Commission adopts an interim MP at the Annual Meeting

8

Draft November PA2 Agenda:

- BFT MSE essentials

- Overview of MP implementation

- Illustrating the tradeoff space

- Brief overview of CMPs

- Decision points on operational management objectives & performance statistics

- What to expect in 2022

- Nature of further SCRS/Panel 2 dialogue

Four Key MSE documents

4- pager (with 3 appendices): Atlantic Bluefin Tuna MSE – Structure & Preliminary Results

Appendix A. Motivation for and advantages of MSE
Appendix B. Management objectives (from Res. 18-03), 2019 guidance from Panel 2 on how to operationalize the management objectives and the proposed corresponding performance statistics.
Appendix C. Table of candidate management procedures
Appendix D. Key terminology

1- pager: Atlantic Bluefin Tuna MSE – Executive Summary Lite

Standardized presentation (TBD)

Other Resources

Harveststrategies.org MSE outreach materials (multiple languages)

Atlantic Bluefin Tuna MSE splash page, including interactive Shiny App (Eng only)

Atlantic Bluefin Tuna MSE

Tom Carruthers tom@bluemattersscience.com
28 July, 2021

Documentation

Trial Specifications Doc (.docx)
Trial Specifications Doc (.pdf)
CMP Developers Guide (.html)

Shiny App

Latest version
Legacy (2020) version

R package

ABTMSE R Package

Operating Model Reports

Summary Reports
Low length comp fit OM comparison (.html)
High length comp fit OM comparison (.html)

Index Statistic Summary Reports
Low length comp fit index stats (.html)
High length comp fit index stats (.html)

Individual OM Diagnostic Reports
Reference Grid OM summary and individual reports (.html)
Robustness Set OM OM summary and individual reports (.html)

Meeting reports

September 2020 Second Intersessional Meeting of the ICCAT ABT MSE technical group (ENG)(.pdf)
April 2021 First Intersessional Meeting of the Bluefin Tuna Species Group (ENG)(.pdf)

Acknowledgements

This work was carried out under the provision of the ICCAT Atlantic Wide Research Programme for Bluefin Tuna (GBYP), funded by the European Union, several ICCAT CPCs, the ICCAT Secretariat and by other entities (see: http://www.iccat.int/GBYP/en/Budget.htm). The contents of these materials do not necessarily reflect the point of view of ICCAT or other funders and in no ways anticipate ICCAT future policy in this area.