Operating models and estimation model for EPO bigeye tuna MSE

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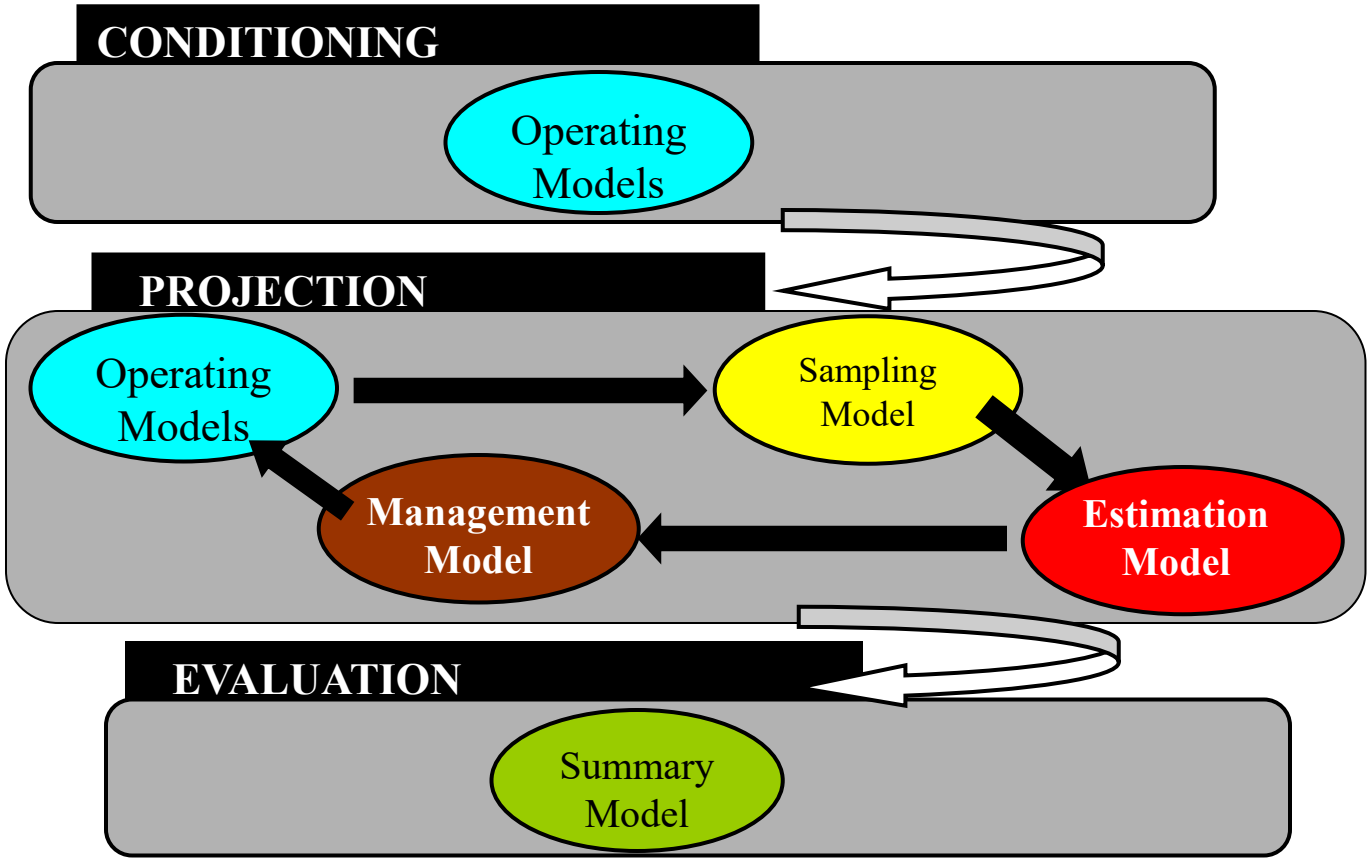
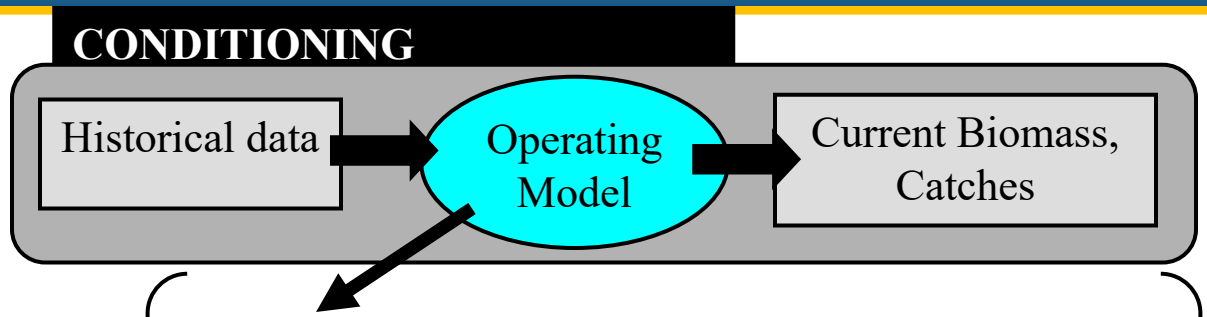
Evaluación de Estrategias de Ordenación: Componentes
Management Strategy Evaluation: Components

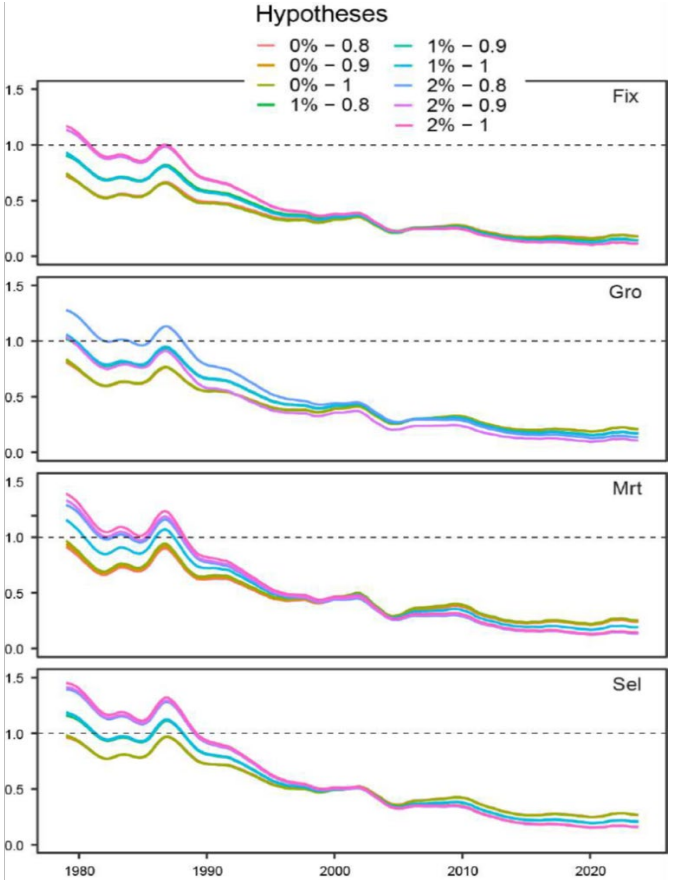


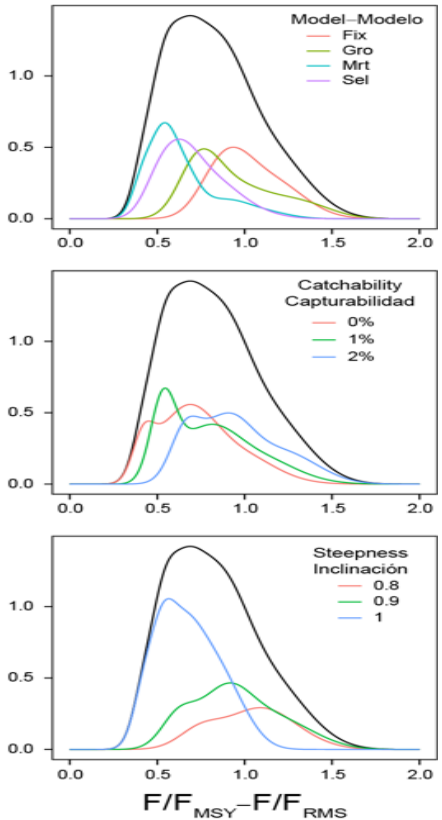
Operating Models and Conditioning



- Describes fishery and population dynamics
- Different **hypotheses** / model configurations to incorporate real world uncertainty; e.g.:
  - -Spawner / recruit relationship
  - -Selectivity / catchability changes
  - -Changes in fleet composition
  - -Natural mortality
  - -Alternative growth scenarios
  - -Etc, etc, etc…
- **Consistent with historical data!**

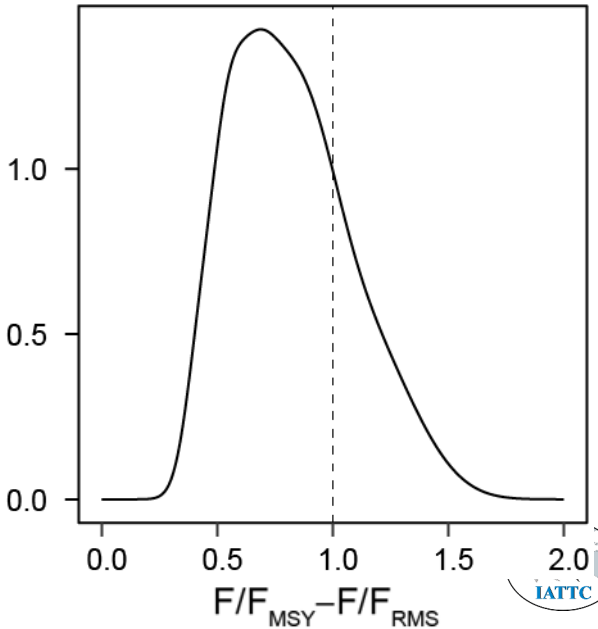
OMs from 2024 BET reference models





Operating Models

New Operating Models
2024 BET Assessment



Sample design for OMs from BET reference models

Reference set OMs

Operating Models

Level 1 hypothesis: **1)** Model Fix,
2) Gro (estimate growth),
3) Sel (all selectivities dome-shape),
4) Mrt (Natural mortality *M* values for adult male 0.1, 0.12, 0.125, 0.13)

Level 2 hypothesis: Annual increase in longline catchability (effort creep) **0%,** 1%, **2%**
Level 3 hypothesis: Steepness of the Beverton-Holt stock-recruit relationship (h) of **1.0,** 0.9, **0.8**

- The combination of the three hypothesis yields $4 \times 3 \times 3 = \mathbf{36}$ **models**
- The combination of the three hypothesis yields $4 \times 2 \times 2 = \mathbf{16}$ **models**

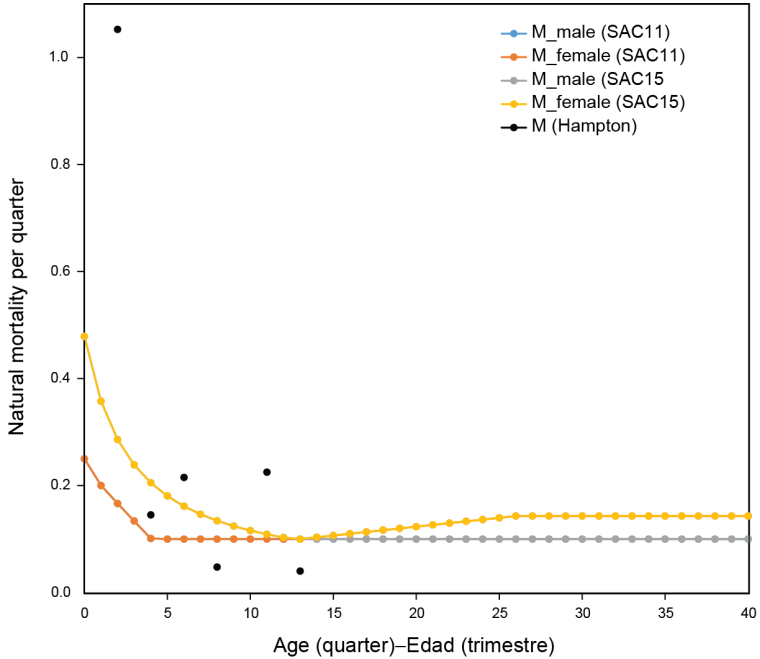
- **Models will be given equal weights in the MSE**

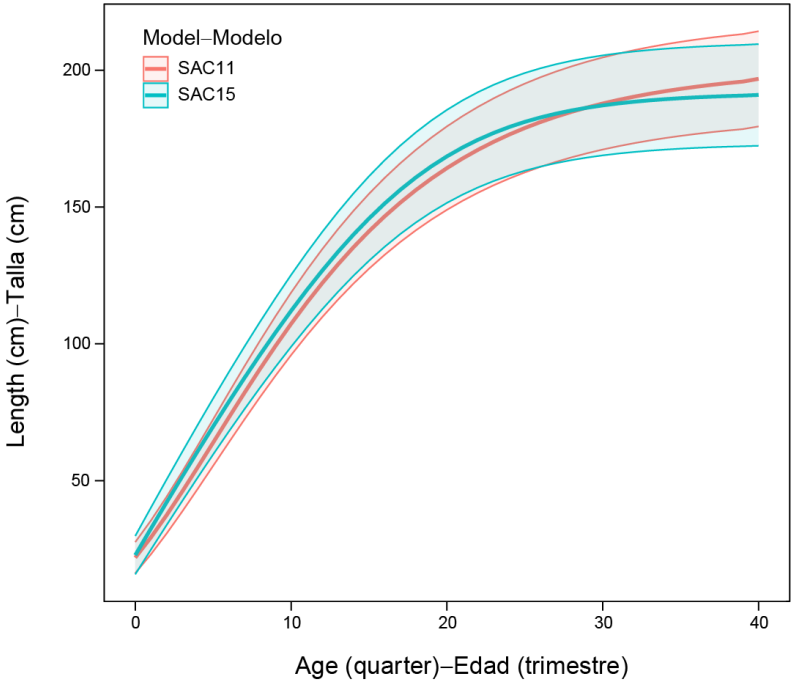
Sample design for OMs from BET reference models

Robustness set OMs

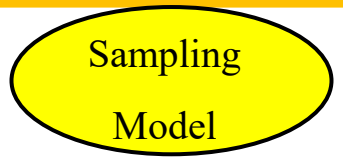
Operating Models

Alternative Models with previous benchmark Natural Mortality, Growth, Selectivity assumptions





Sampling model



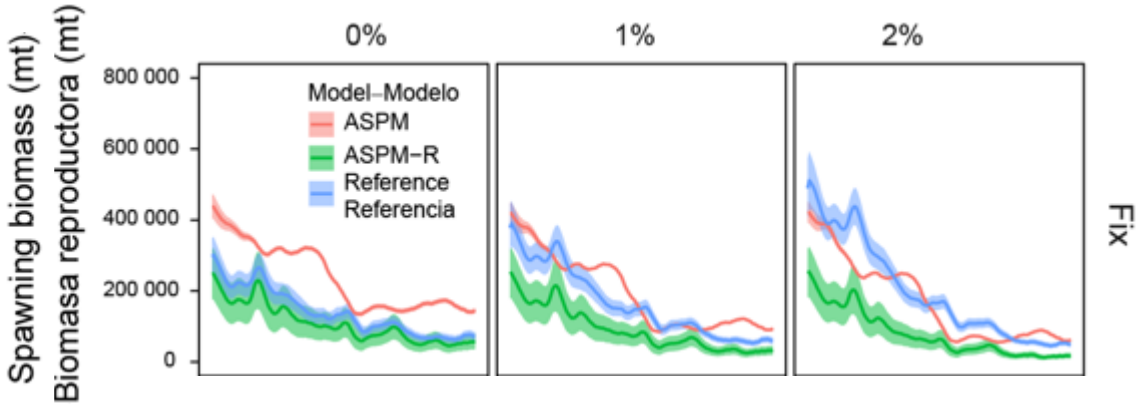
- Define how data (e.g., catches, size compositions, CPUE) are collected from the simulated “true” population (including observation uncertainty, the effect of measurement error and bias).
- The bootstrap functionality of Stock Synthesis is used to generate the observed data.

    - Standardized Japanese longline index of abundance and total catches

EM for BET (simpler assessment model)

- ASPM-Rdevs in *Stock Synthesis*

Estimation Model



Questions? / ¿Preguntas?