Summary of the Pacific saury SS3 assessment in 2025

NPFC SWG MSE PS 07

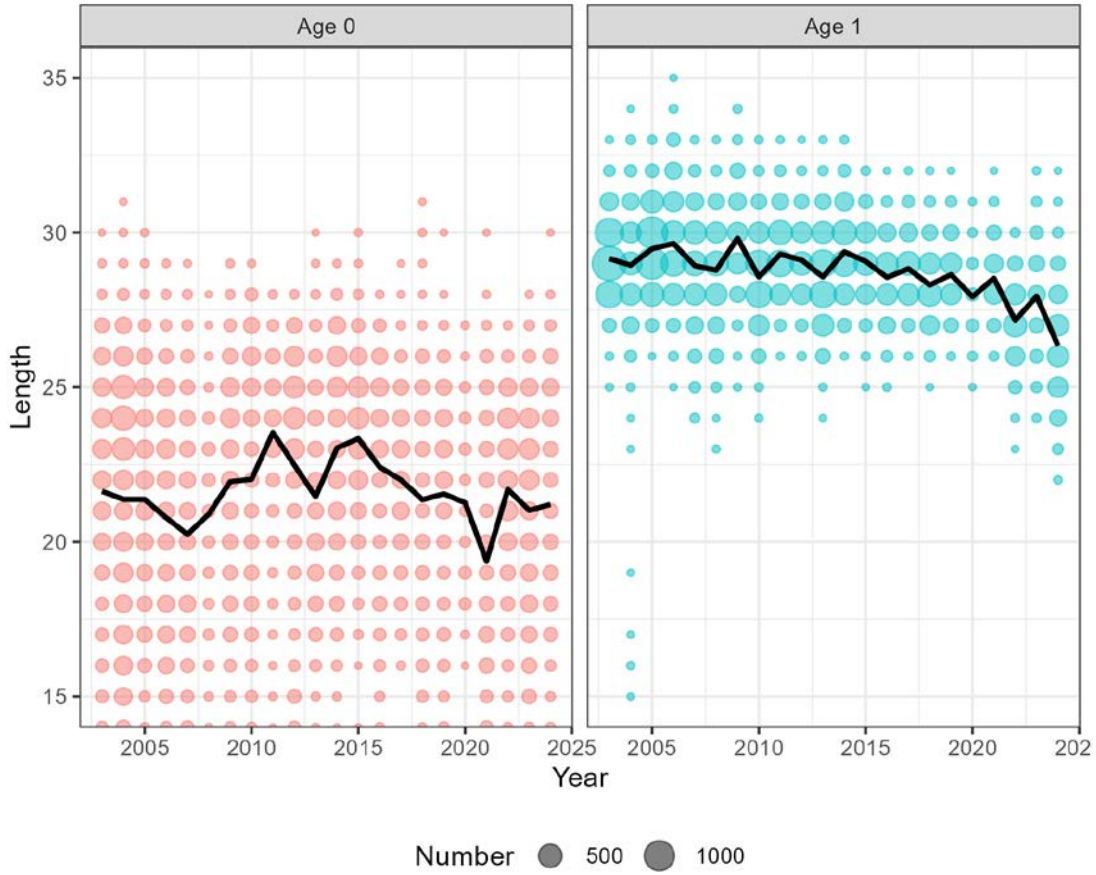
February 2026

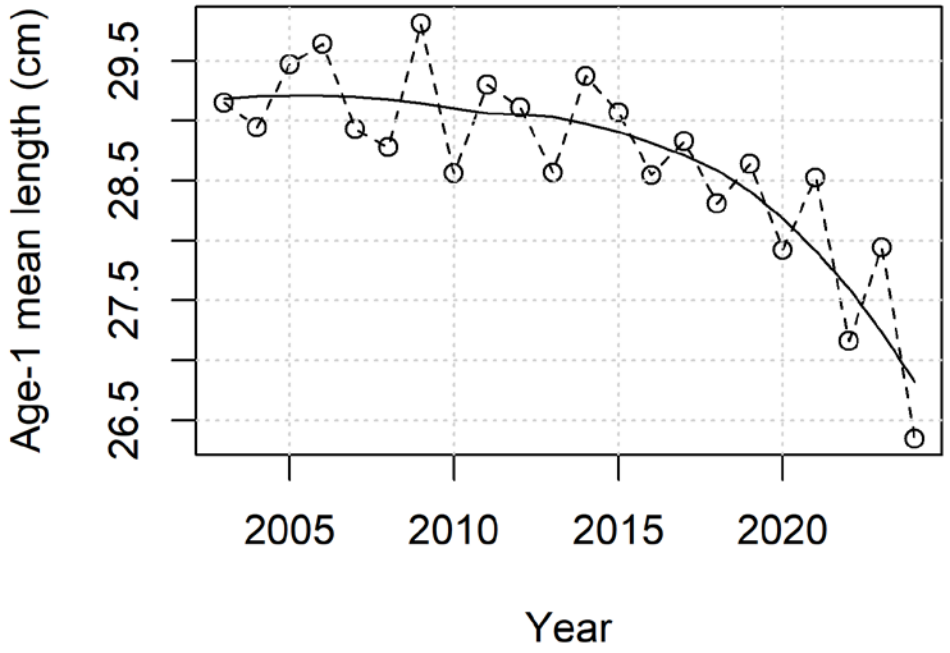
Quang Huynh

bluematter

Evaluation of growth

- Age-structured model can incorporate changes in growth for Pacific saury

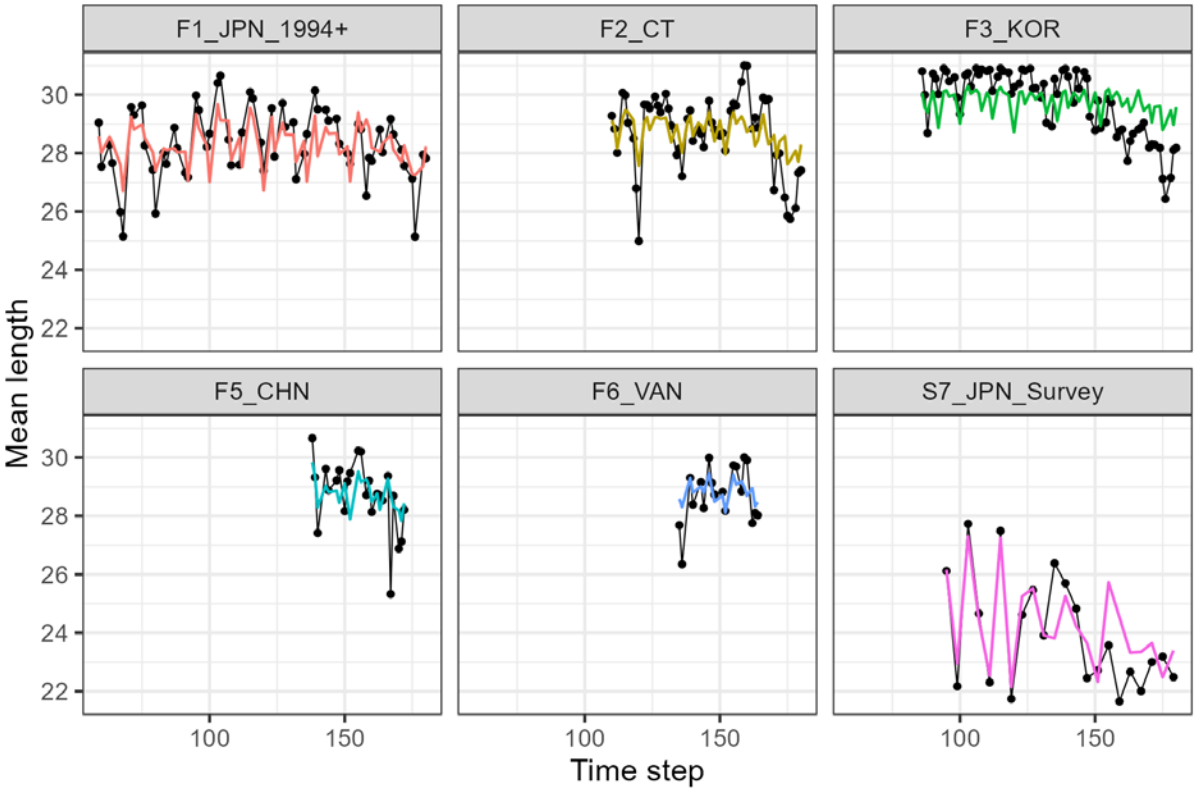




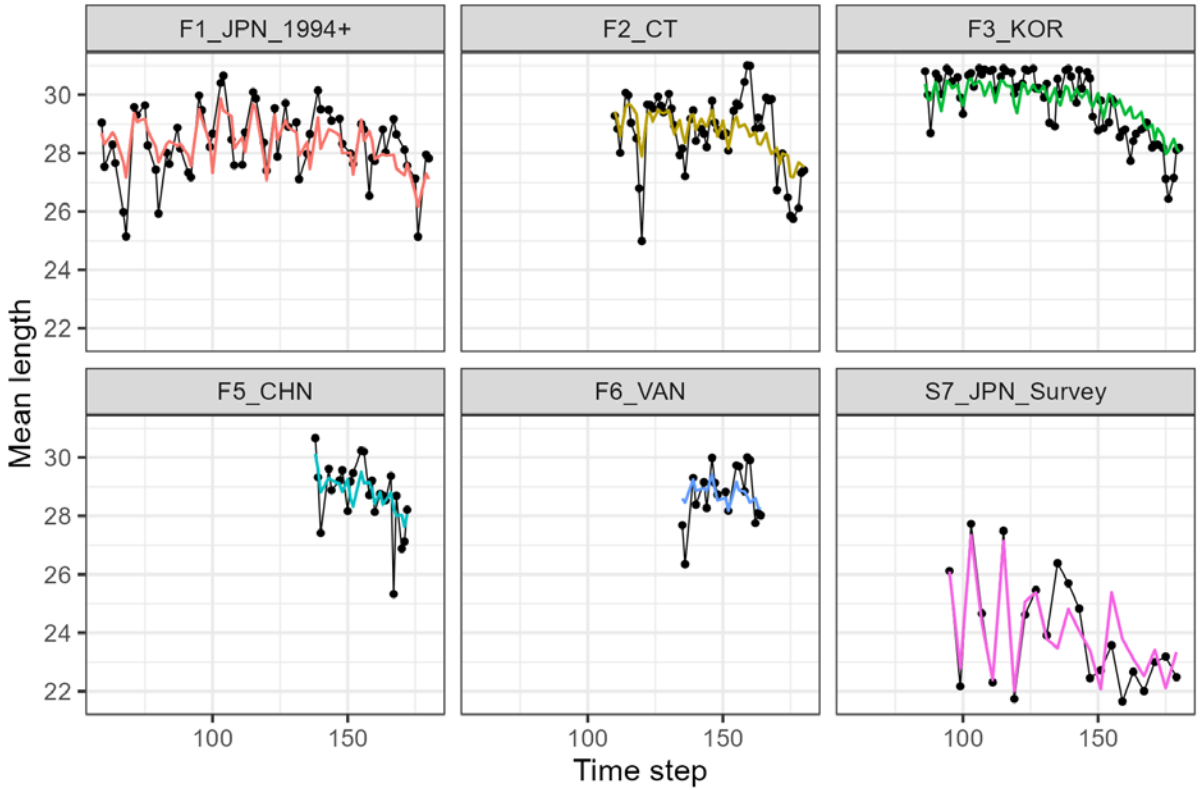
Fit to length composition

- The decrease in asymptotic length improves fit to fishery length composition, particularly for KOR fleet
- Indirect evaluation with observed vs. predicted mean length time series

Model with constant growth (Step 22)



Model with declining growth (Step 22c)



Diagnostics for acceptance of assessment models

1. Does the model fit the data well?

2. Can the model reliably estimate parameters?

3. **Does the model have good predictive ability?**

- Improved retrospective and hindcasting behaviour in latest model
- Short-term projection will remain challenging for short-lived species

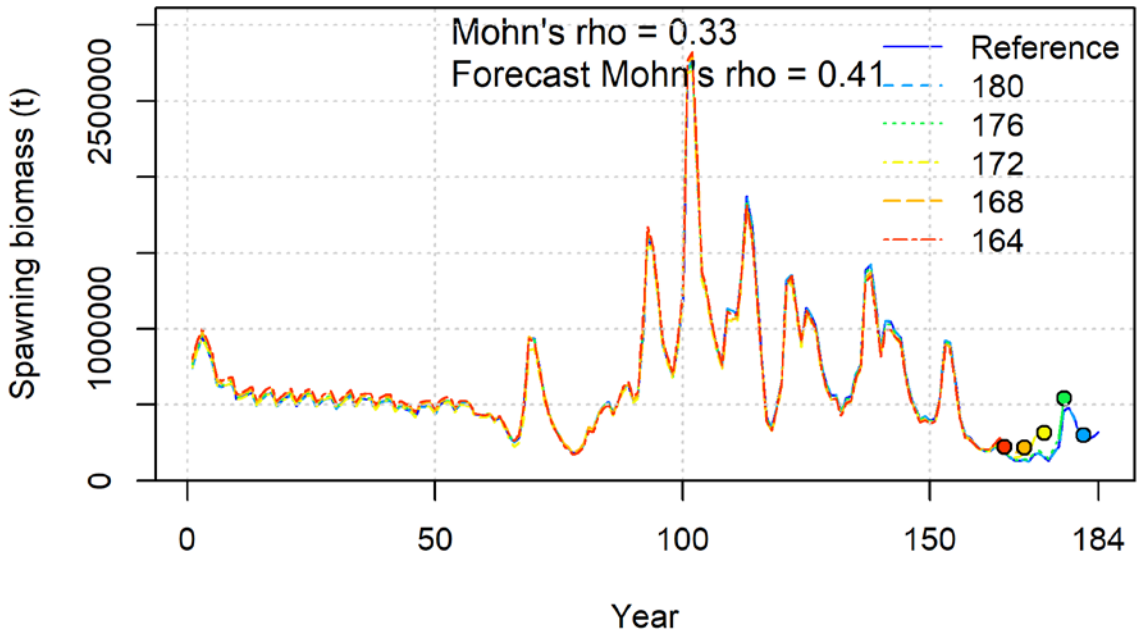
- Why? Short-term projection requires assumption on strength of current cohorts (typically stable and reliable because estimated from data) and new cohort (not observed).

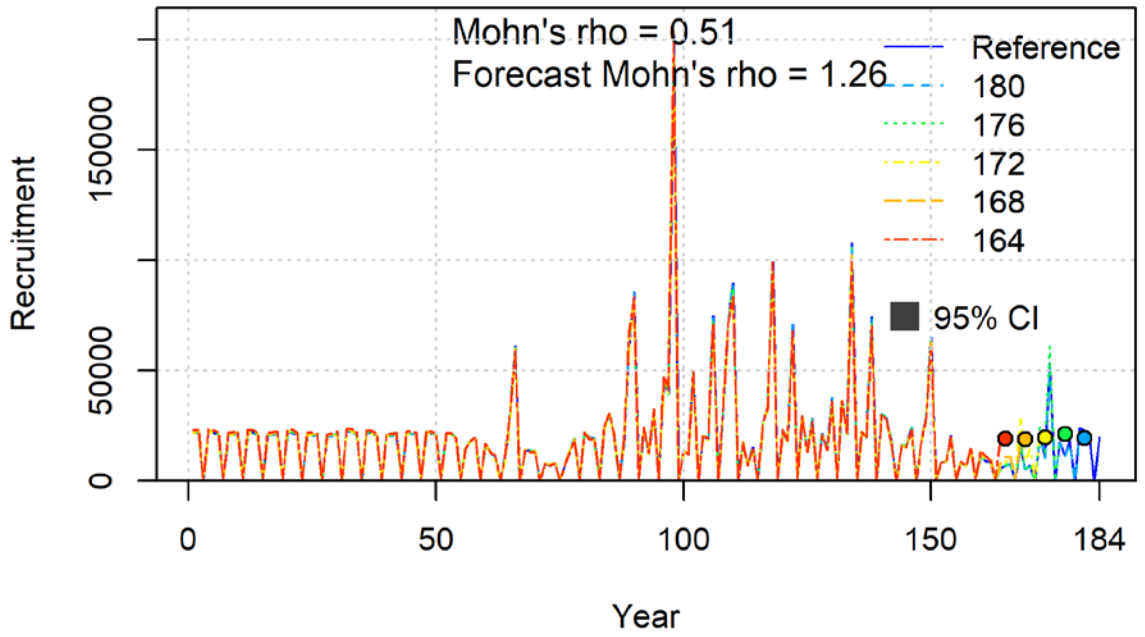
- Pacific saury only has 2 annual cohorts. Estimation error of new cohort has a stronger impact on advice compared to longer-lived species (one of many cohorts)

Base model retrospective

Better predictive ability in retrospective compared to previous models

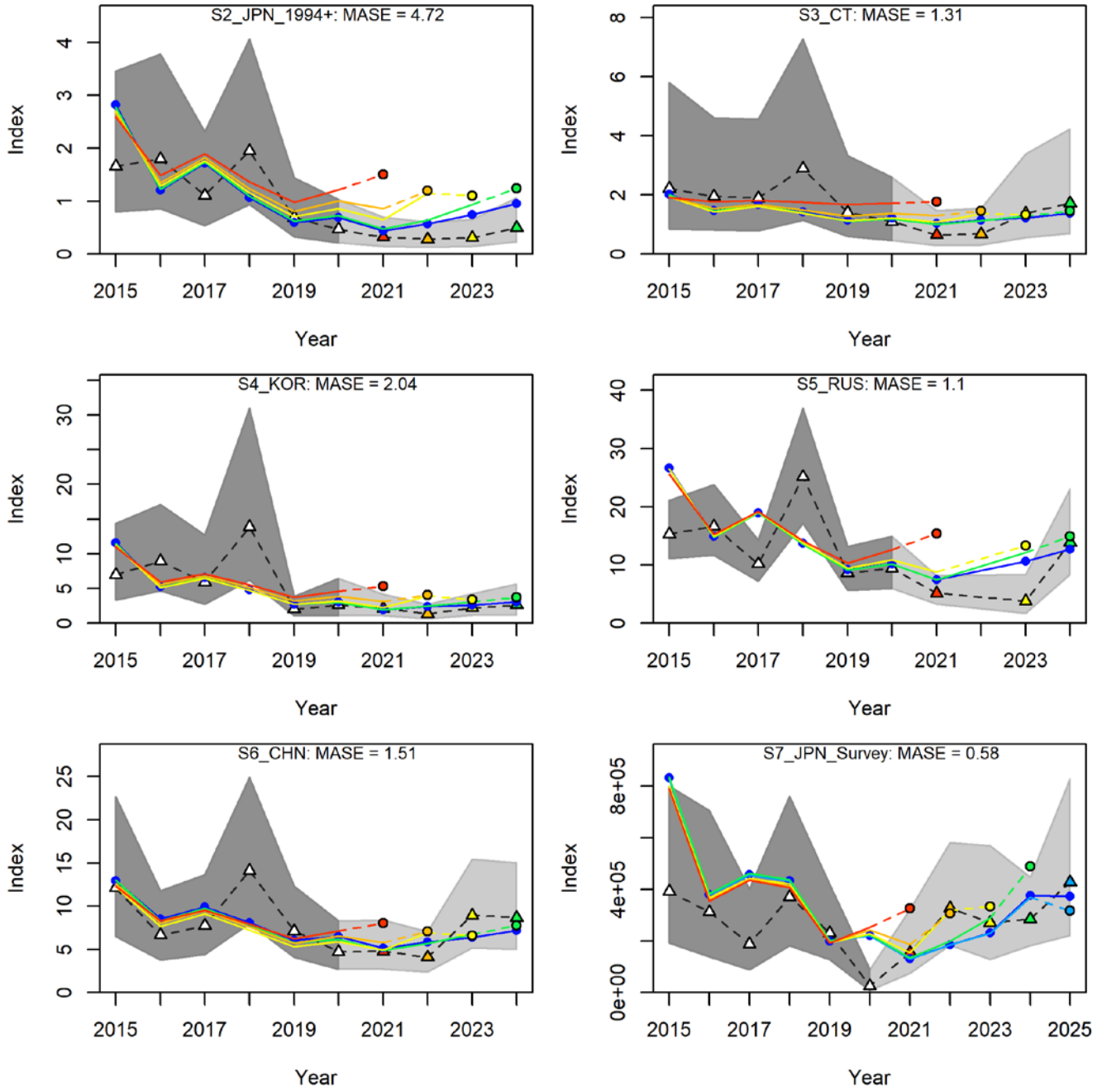
I believe the model with growth decline has partially addressed the retrospective issue





Base model hindcast

- White + grey are data
- Colour lines are index/CPUE predictions from retrospective runs
- Colour points are first projection year prediction from retrospective runs. Good prediction skill when coloured points closer to data points
- We have better prediction skill with survey than with CPUE

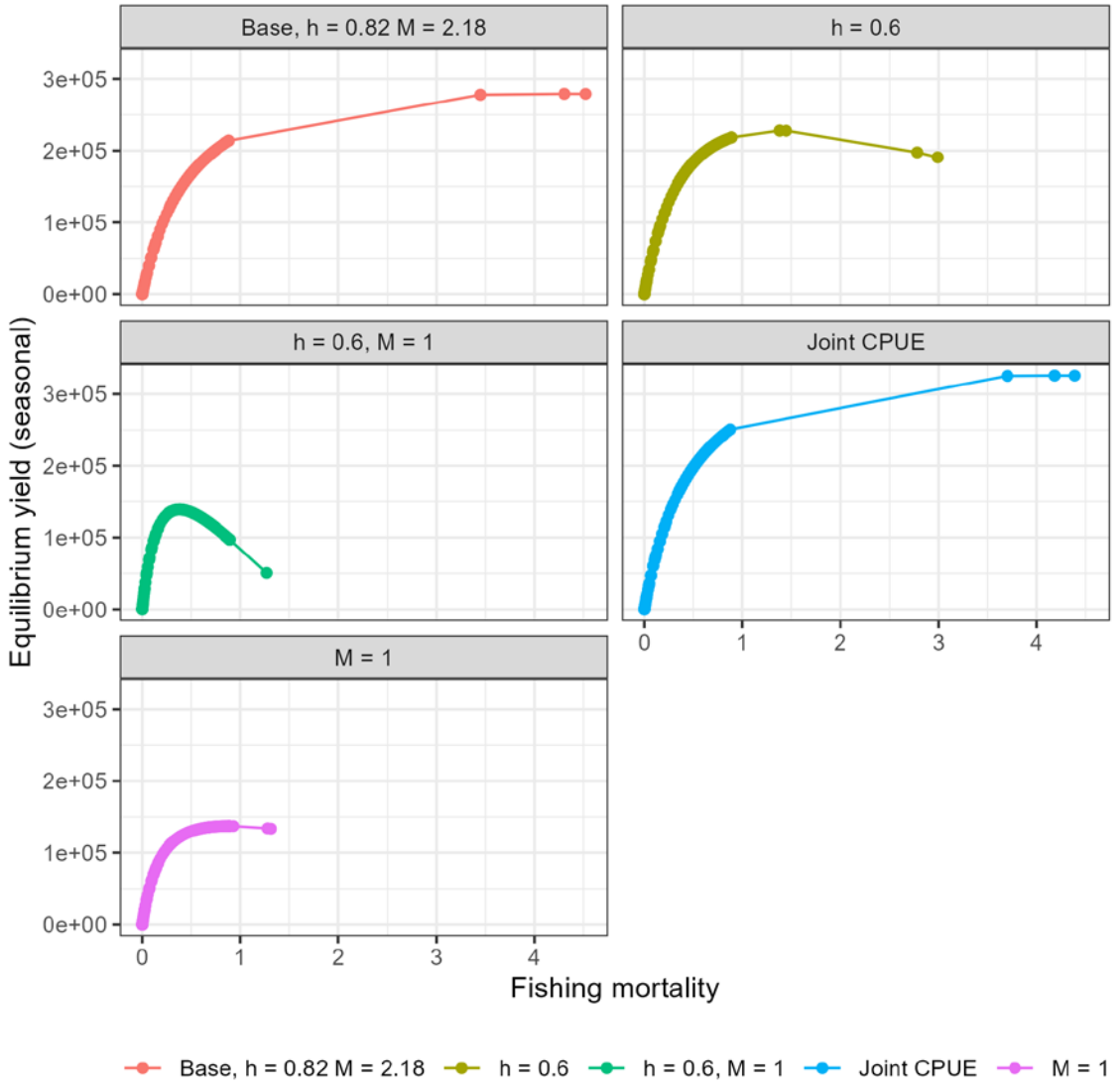


Challenges and next steps

- Review and update biological parameters (including maturity and fecundity parameters from Japanese colleagues)

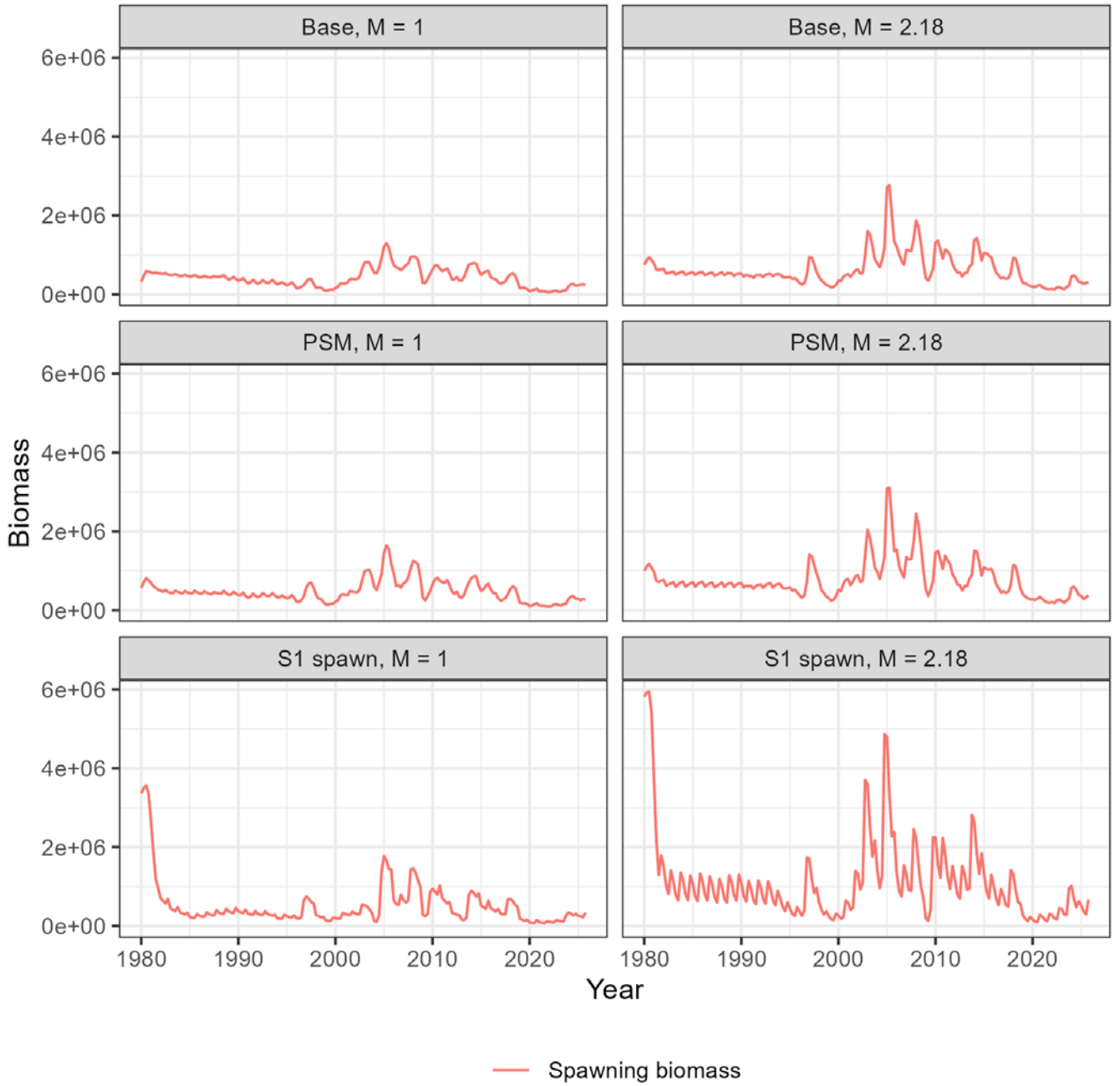
- Re-visit choice of natural mortality (M)
- Model with base value does not provide practical management advice
  - Low impact of fishery on historical stock dynamics
  - Yield-curve not well-defined, no reliable MSY estimates

- If MSY is not well-estimated, consider proxy units for reference points (B0 instead of BMSY, spawning potential ratio instead of FMSY)
- Proxy reference points are independent of steepness, another parameter with high uncertainty



Additional model runs at SSC PS 16

- Incorporate post-spawning mortality (PSM) at end of life span
- Compare natural mortality M = 1 vs. 2.18
- Model with single spawning frequency per year



Comments for SWG MSE PS 07

- High uncertainty in assessment outputs compromise reliability and predictability of annual advice
- Age-structured models have higher biological realism but may not increase reliability:
  - Retrospective patterns remain
  - Short lifespan reduces prediction skill because new, unobserved cohort strongly impact next year's abundance

- Nonetheless, age-structured models can serve as operating models to evaluate robustness of management procedures
- The philosophy of MSE is to develop complex operating models to test robustness of simpler procedures (BSSPM, empirical types)

- Given discussion, MSE should evaluate the "value" of decreasing data lag (two to one year lag between data and catch advice, also consider in-season adjustment)

- Identify lessons learned from previous work to inform improvements on communication of MSE results (for example, projections are not predictions or forecasts)