

INTERNATIONAL PACIFIC



HALIBUT COMMISSION

Development of the 2026 stock assessment

Agenda item: 4.1.2
IPHC-2026-SRB029-06
(I. Stewart & A. Hicks)



Outline

- Stock assessment and review process
- SRB requests
 - State-space modelling
- Research priorities
- Finalizing the 2026 stock assessment



Stock assessment and review process

- Full stock assessments – every ~3 years
 - 2015, 2019, 2022, 2025
 - Includes re-evaluation of all data sources, model structure, etc.
- Updated stock assessments in intervening years: 2026
 - Only minor/necessary changes as data sets and methods evolve
- June SRB review
 - Research and development
 - Recommendations primarily to the Secretariat
- September SRB review
 - Finalizing the assessment and planning for next June
 - Recommendations to the Secretariat and Commission



SRB requests and recommendations

- SRB028-Req.04 (para. 21):

*““**NOTING** the progress presented in IPHC-2026-SRB028-07 on assembling a list of state space modelling platforms and their associated features, the SRB **REQUESTED** an update at SRB029 on progress to develop initial models, including approaches to mimic essential features of the Pacific halibut assessment (e.g. sex specific modelling) using other means (e.g. the spatial area features in multi-WHAM).”*



State-space model development

- Planned models in:
 - WHAM
 - not sex-specific (but has multiple 'stocks')
 - well tested and applied across many species
 - SPoRC
 - Includes explicit spatial dynamics
 - Used for sablefish
 - CEATTLE
 - Used for several North Pacific stock assessments (including Bering Sea pollock in 2026)
 - Ability to add environmental covariates via integrated Dynamic Structural Equation Modelling (DSEM), several [applications](#) in development in the North Pacific



State-space model development

- Initial model in CEATTLE
 - Simple setup
 - 2 fleets (survey, fishery)
 - 20 ages
 - 1992-present
 - Fixed female and male M (to match short coastwide model)
 - Free initial conditions (N-at-age + plus group)



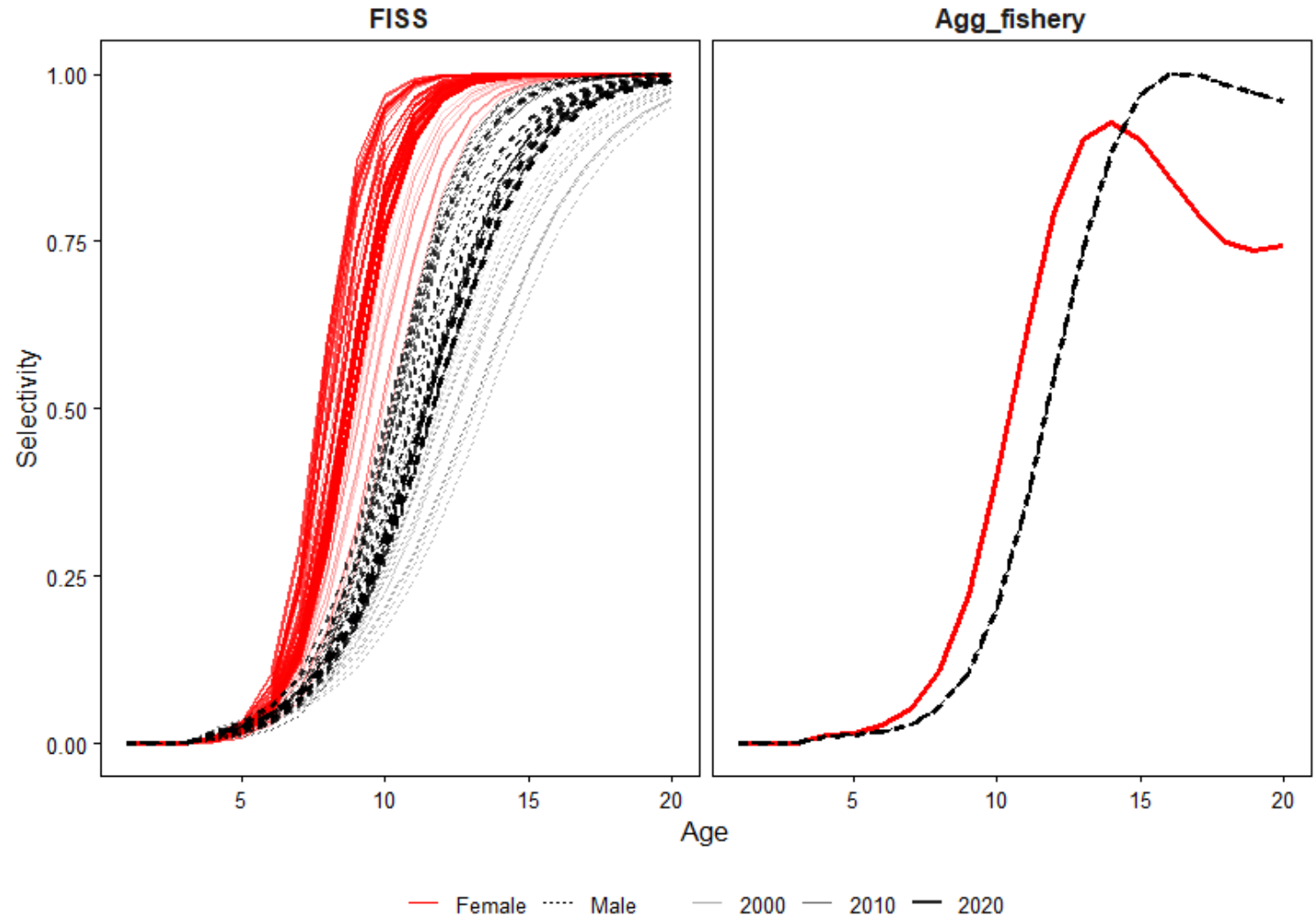
State-space model development

- Initial model in CEATTLE (some additional features since the document was produced)
 - Random effects for recruitment deviations
 - Random effects for fishery catchability
 - Random effects for time-varying parameters specifying logistic selectivity (survey)
 - Time-invariant fishery selectivity (logistic or nonparametric)
 - Fishery selectivity is challenging:
 - Needs temporal variation
 - Needs sex-specific differences
 - Sex specific age-composition data available only for 2017-2024 (2025 this fall)



State-space model development (CEATTLE)

- Selectivity

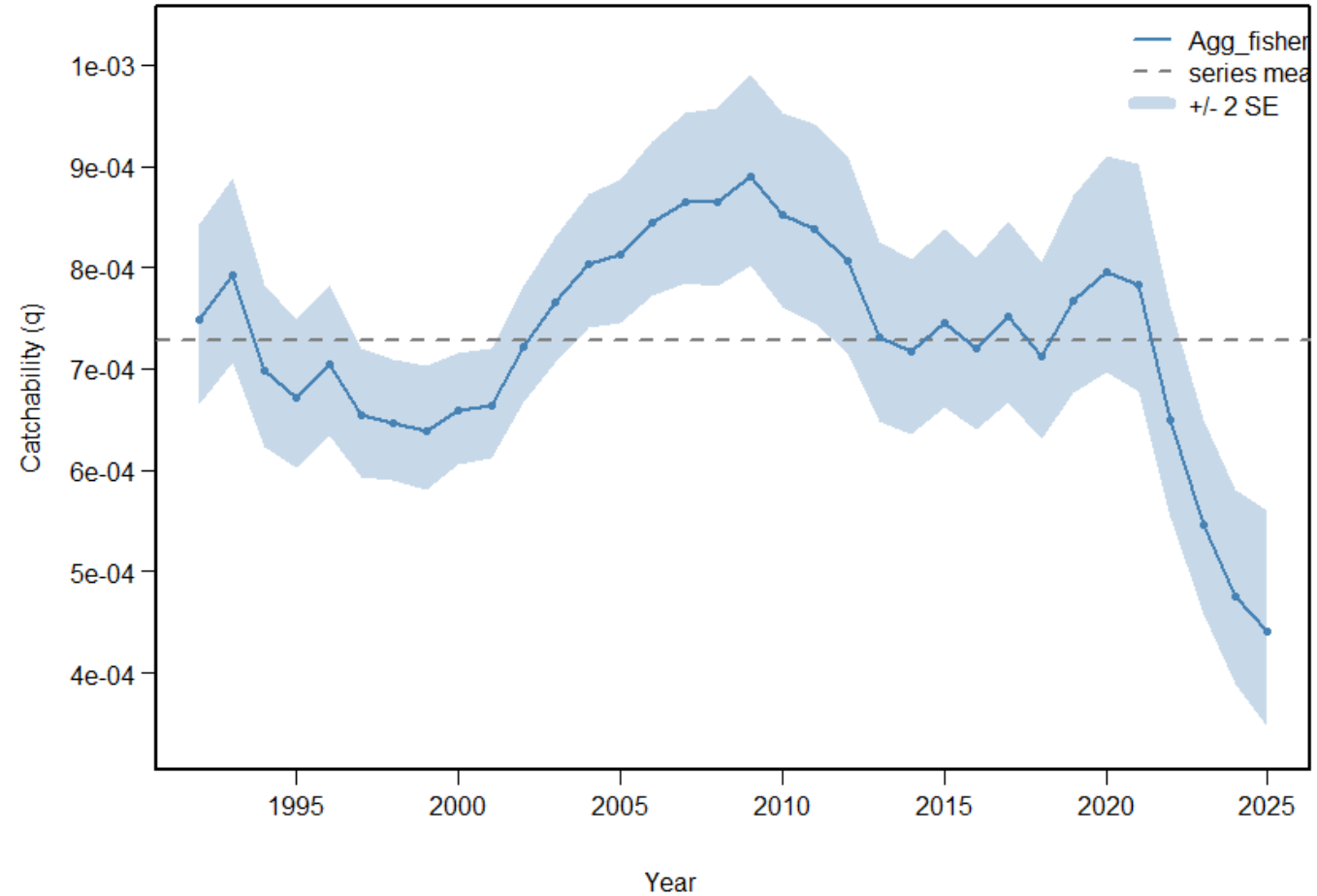


The results here are an example only – this model is NOT fully developed.



State-space model development (CEATTLE)

- Fishery catchability

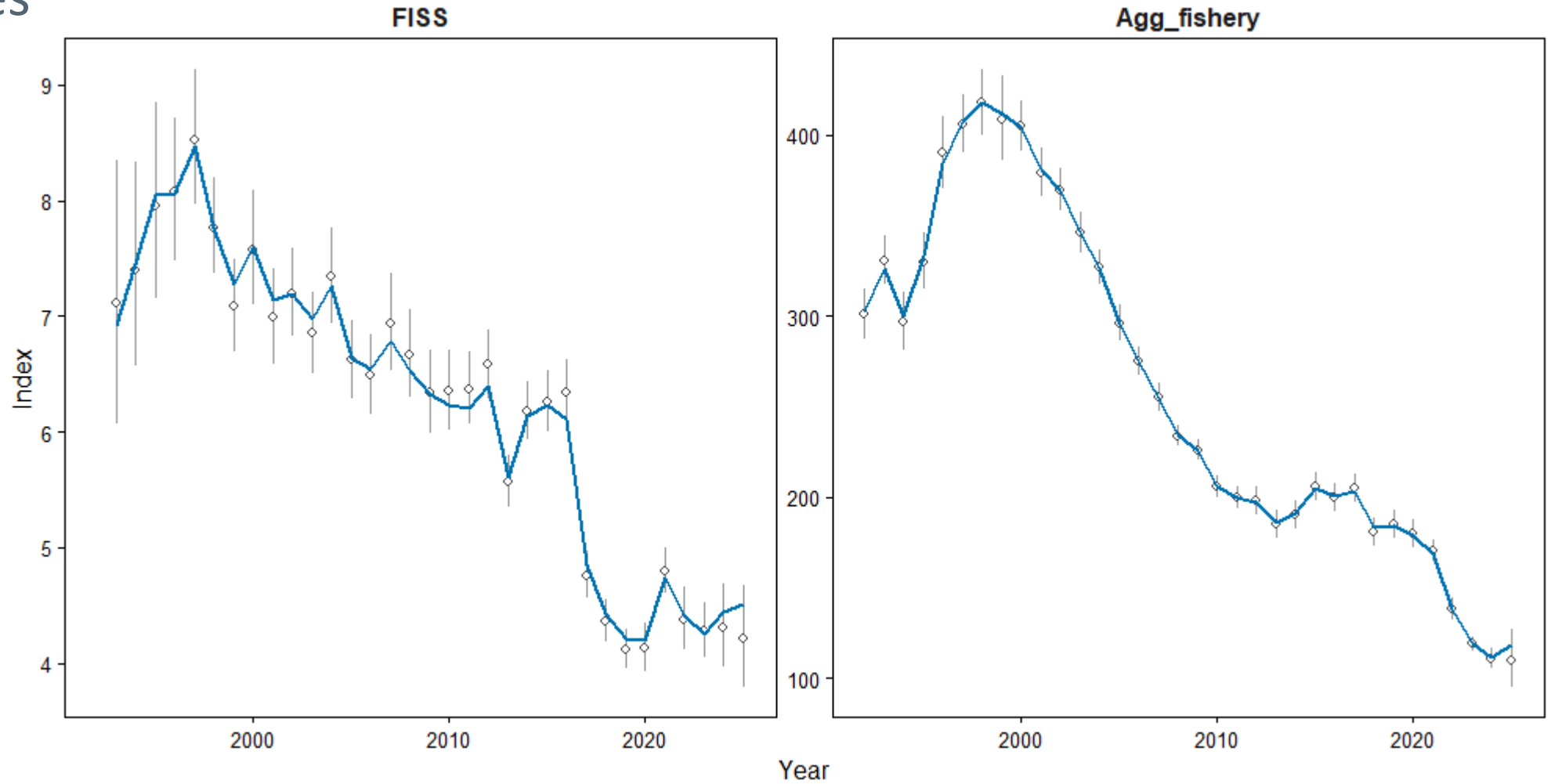


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State-space model development (CEATTLE)

- Indices

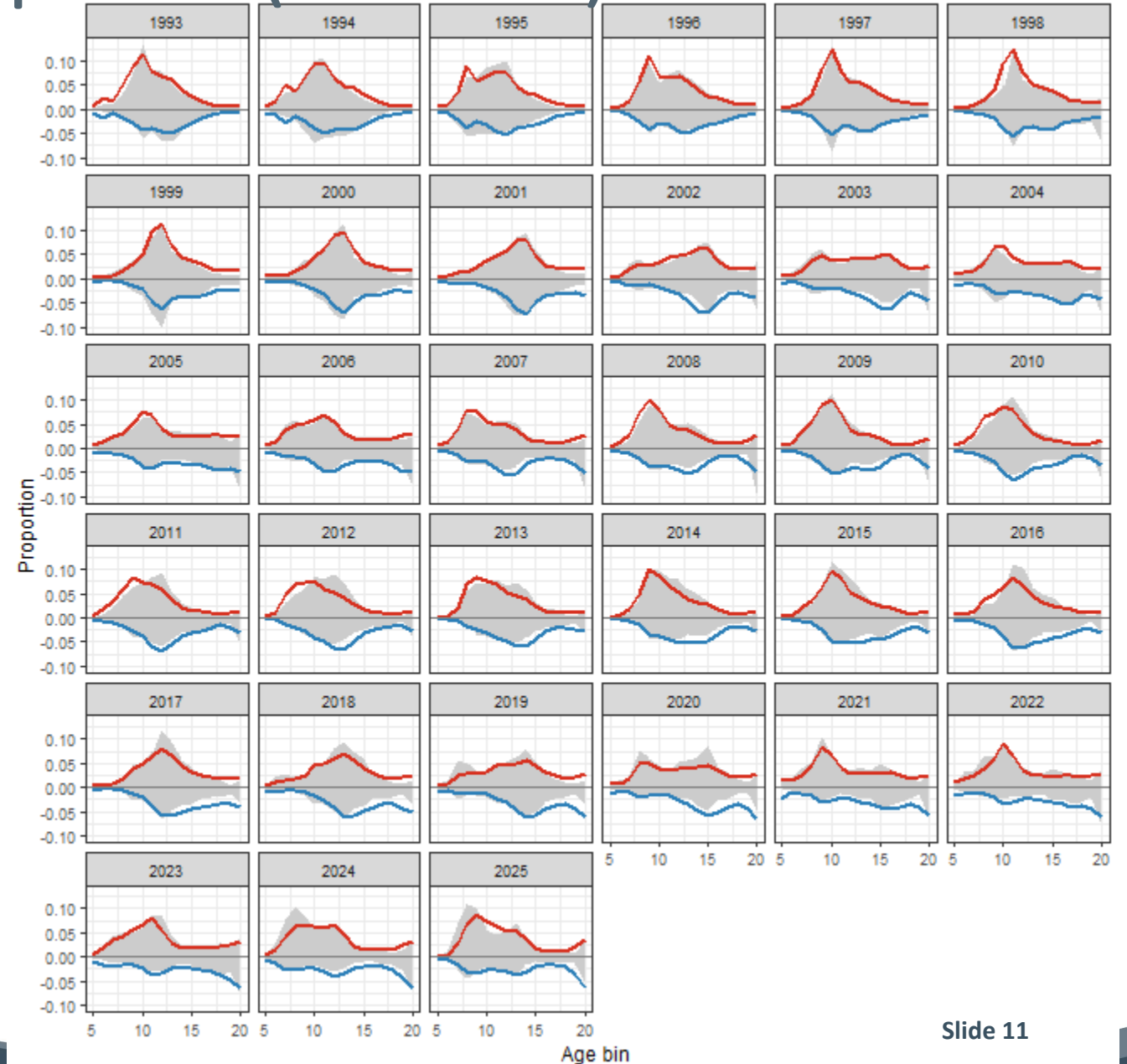


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State-space model development (CEATTLE)

- Survey composition data

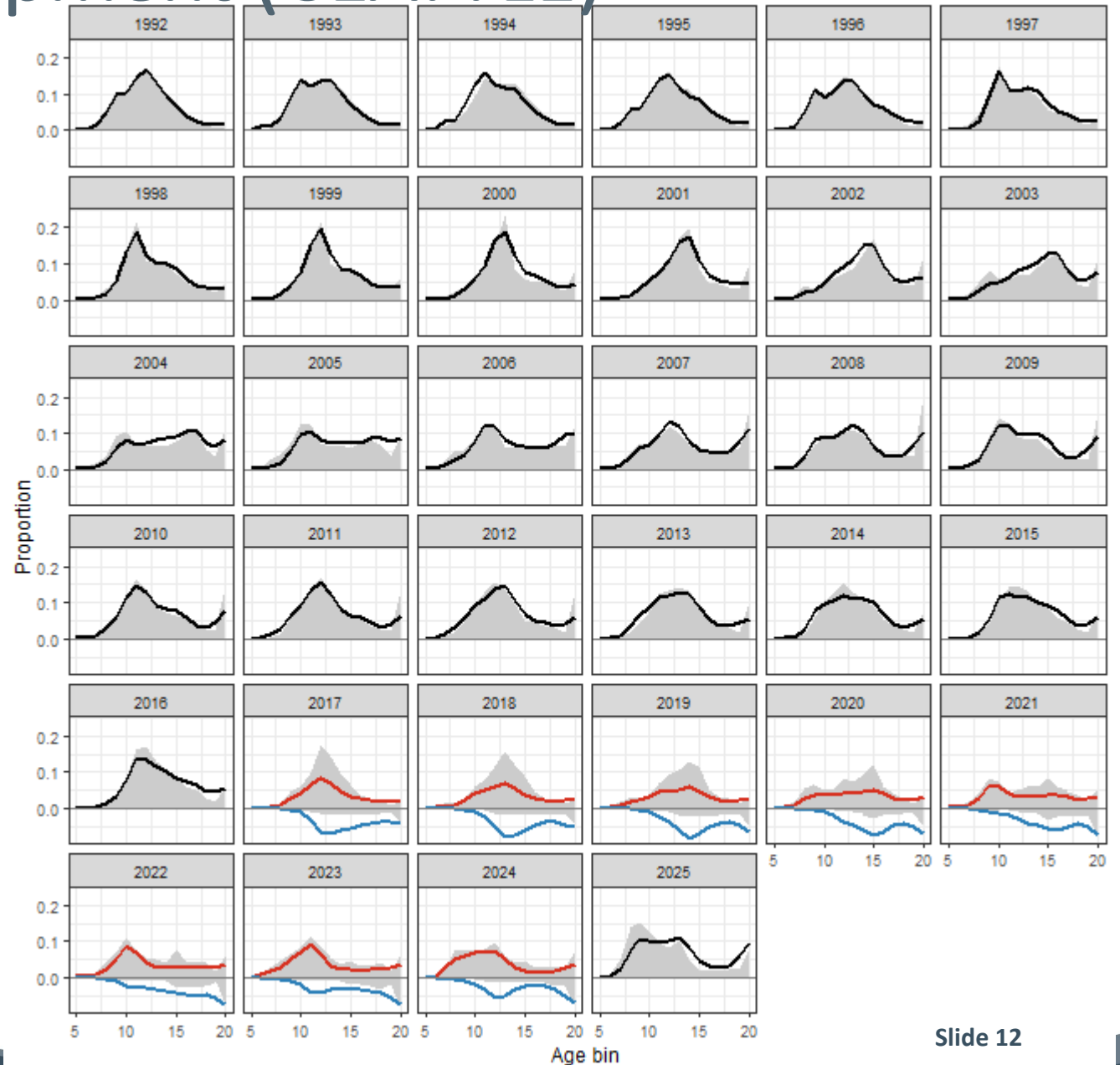


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State-space model development (CEATTLE)

- Fishery composition data
 - Very poor fit to sex-specific data

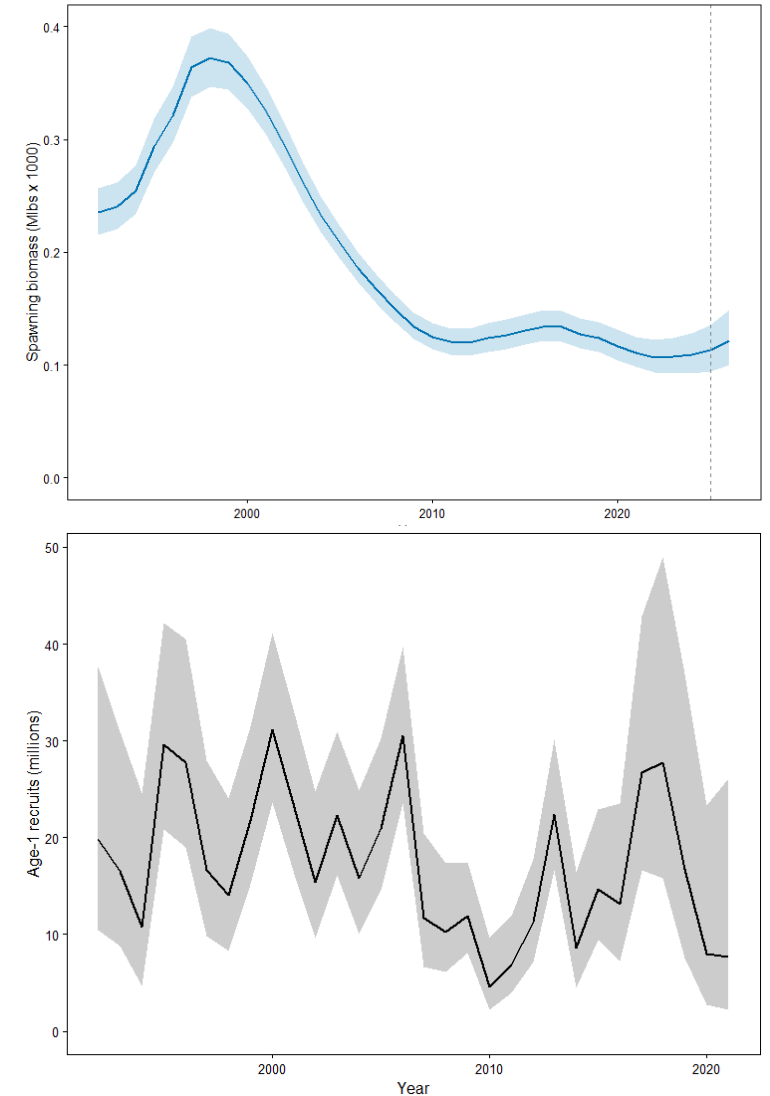


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State-space model development (CEATTLE)

- Scale and trend of SB and recruitment is similar to other models even with a very simple configuration
- Next steps:
 - Further work on fishery selectivity to allow for time-varying dynamics with limited sex-specific data
 - Allowing for offset male from female selectivity
 - Explore M estimability
 - Testing additional complexity
 - Including S-R covariates
 - Begin work on WHAM and SPoRC models



The results here are an example only – this model is NOT fully developed.



Prioritized future research and potential assessment change

Topic	Importance/likely effect on assessment
Fishery sex-ratio-at-age	Ongoing critical monitoring, especially at low stock sizes.
Whale depredation	Important for fishery efficiency, not a critically sensitive assessment concern at present. Reduction may be easier than precise estimation and could improve understanding of stock dynamics in the long term.
Coordination with the MSE	Development cycle is aligned - 3 years for assessment, 3 (+1) years for MSE. Feedback between analyses in both directions. Assessment development very sensitive to potential MP specifications (e.g. 1- or multi-year assessments).
Factors affecting size-at-age	Critical for estimation of reference points and sustainable harvest rates. Process changes slowly, therefore not important for annual decisions.



Prioritized future research and potential assessment change

Topic	Importance/likely effect on assessment
Fecundity and skip-spawning	Largest potential upcoming impact on assessment results. SRB recommended this information be collected, analyzed and included in the 2028 full stock assessment.
Development of state-space models (newer statistical approach to modelling variability)	SRB has prioritized this for the 2028 full stock assessment. Adding a new model to the ensemble could have large effects on stock assessment results.
Leading parameter estimation (natural mortality)	Remains important for the coastwide short model.



Remaining stock assessment development for 2026

No further structural changes to the models. Final updated data sets available 1 November:

- 1) Trend, age, length, individual weight, and average weight-at-age estimates from the 2026 FISS.
- 2) Directed commercial fishery logbook trend information from 2026 (and any earlier logs that were not available for the 2025 assessment) for all IPHC Regulatory Areas.
- 3) Directed commercial fishery biological sampling from 2026 (age, length, individual weight, and average weight-at-age) from all IPHC Regulatory Areas. Sex-ratio at age from the 2025 commercial fishery.
- 4) Biological information (lengths and/or ages) from non-directed discards (all IPHC Regulatory Areas) and the recreational fishery (IPHC Regulatory Area 3A only) from 2025. These data routinely lag one year.
- 5) Updated mortality estimates from all sources for 2025 (where preliminary values were used) and estimates for all sources in 2026.



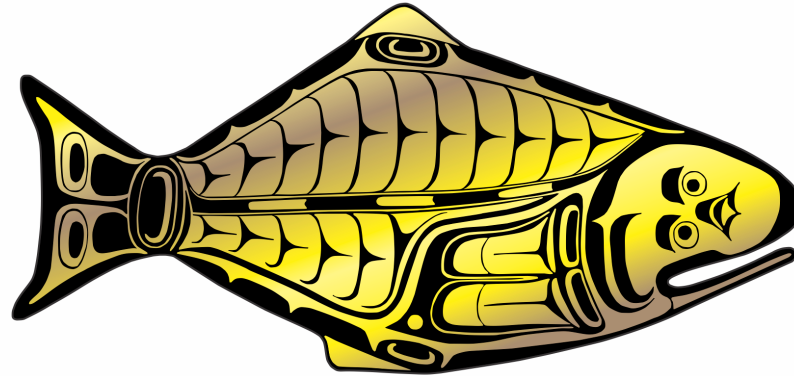
Recommendations

That the SRB:

- **NOTE** paper IPHC-2026-SRB029-06 which provides a response to requests from SRB028 and an update on stock assessment development for 2026.
- **REQUEST** any analyses to be provided at SRB030 as part of the development of the planned 2027 update stock assessment.



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