Progress Summary of SWG NSAM 2025-03

Libin Dai

16th SSC PS meeting

11-14 December 2026

SWG NSAM meetings in 2025

➢ SWG NSAM01 (May 28, 2025)

Kick-off meeting

- Introduced the background of the WG and reviewed progress made in 2024.
- Reviewed the Step16 SS model developed by Dr. Larry Jacobson.
- Dr. Quang Huynh provided feedback on an earlier model (Step7) and offered suggestions.
- Established a timeline and work plan for meetings and deliverables in 2025.

➢ SWG NSAM02 (July 11-13, 2025)

Technical meeting

- Examined the structure of the Step16 model and its variant (Step17).
- Introduced and reviewed the seasonal model (Step18).
- Developed and discussed additional case scenarios (Step19–21).
- Introduced the Japanese survey.
- Summarized candidate case scenarios for potential use as base case(s) in future work.

SWG NSAM meetings in 2025

- SWG NSAM03 (Nov. 06, 2025)

  Technical meeting

  - Modeling update after SSC PS15
  - Include the latest catch, CPUE (to 2024) and survey index (to 2025)
  - Specify the time-varying growth
  - Set up a catchability prior for survey
  - Update model diagnostic
  - Evaluate the impact of M and h
  - Introduce seasonal variation in maturity ogive

Model specification	Current	Suggested changes	Comments and Decisions
Data and Fleets	RUS comps not included		RUS length comps will not be used.
Data	Length comps only	Investigate conditional age at length or include ALKs/aging error directly to .dat	
Spatial considerations	None	Possibly use fleets as areas, but very data intense	divide CT or JPN fleets by season (easiest) see NPFC-2024-SSC PS14-WP13 (Future work)
Fleet structure	JPN-early and JPN-late separate	Combine and allow q-walk	Exclusion of CPUE using random-walk q (JPN-early and CT);
Selectivity	Estimate with asymptotic selectivity	Schooling/fishing behavior and spatial structure suggest dome-shaped selectivity could happen	Age-aggregated indices with size-based selectivity
Catchability	A catchability prior for survey index (linear biomass-index relationship); Hyperstability parameter estimated for CPUE		
Model timestep	Seasonal	explore finer (perhaps monthly) timesteps	Seasonal time step is sufficient for Pacific saury
Starting year	1980		
Variance weighting	CPUE downweighted	remove variance weighting (or upweight CPUE).	Commercial CPUE will be downweighted
Variance weighting	McAllister-Ianelli method	investigate more empirical-driven sample size for length comps, or tuning	Finished
Biology	Current	Suggested changes	Comments
Natural mortality/post-spawning mortality	Constant (2.18)	if using a monthly timestep, could input vector of monthly M and account for post-spawning mortality	Season M for specifying post-spawning mortality
Growth	Time-varying Linf		Need to confirm with biologists about seasonal pattern
Growth variability	Estimated		small CV for larger fish (Finished)
Maturity	Length logistic inflection ~ 26 cm	Consider seasonal pattern	
Fecundity (SSB units)	mature female biomass	some other measure of reproductive output (e.g. number of eggs, etc.)	Check biological plausibility
Recruitment timing	Season 1,2, and 4		
Steepness	Fixed (0.82)		
Environment	none	Add environmental index into recruitment	Low priority, future work

Summary

- Model diagnostics were improved in terms of fit to size composition data and retrospective pattern by using time-varying asymptotic length in growth.

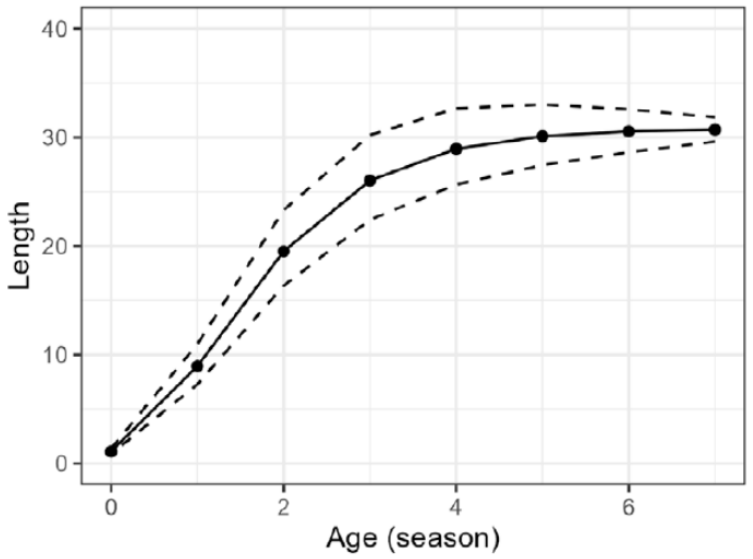
- The impact of steepness and natural mortality is large and lead to the fishing impact on the stock, which need further discussions for alternative values.

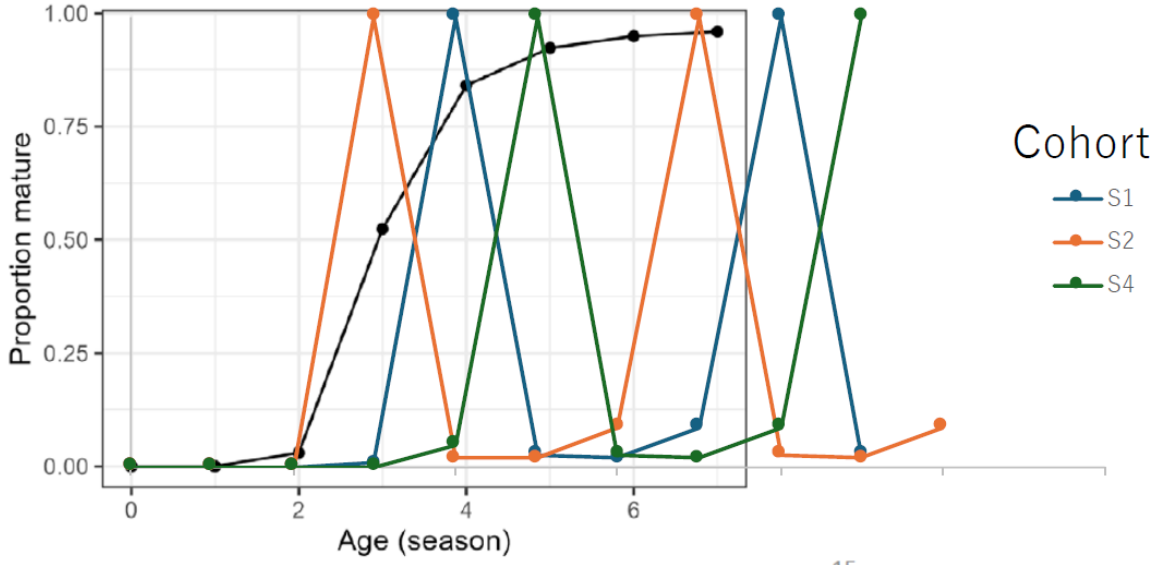
- Status determination may require use of MSY proxies since yield curve is not well defined

Seasonal maturity ogive

See IP02

	Year 1				Year 2				Year 3			
	Season 1	Season 2	Season 3	Season 4	Season 1	Season 2	Season 3	Season 4	Season 1	Season 2	Season 3	Season 4
Season 1 cohort	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 7 (plus group)	Age 7 (plus group)	Age 7 (plus group)	Age 7 (plus group)
Season 2 cohort		Age 0	Age 1	Age 2	...	...						
Season 3 cohort												
Season 4 cohort				Age 0	Age 1	Age 2	...	...				





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- In S2, S3, and S4, a non-negligible proportion of individuals remain immature regardless of body length. Therefore, the maturation schedule shows a pulse-like peak in S1.

Seasonal maturity ogive

Concern

- The effects of water temperature and body size on maturation differ among seasons. Thus, using a common maturation curve for all seasons would be problematic for SSB calculation.

Potential configurations

- Winter (S1) as the main spawning season and some contributions from other seasons.
- Only with one spawning season (S1).

Recommendations

- The SWG NSAM considers it necessary to continue holding meetings for the development of the Pacific saury SS model, as it was not finalized in 2025 and certain specifications regarding key parameters and processes require further discussion by Members.

- The SWG NSAM also recommends that the continued engagement of external expert Dr. Quang Huynh to lead the model's technical development be ensured, with sufficient financial support.

Acknowledgements

- External experts
- SWG NSAM
- Biologists
- Secretariat

Thank you!