

Quick review of potential assessment models for Japanese sardine

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Stock assessment packages

Various software packages available for international assessments (statistical catch at age)

What are the desired and necessary features for the Japanese sardine assessment model?

At minimum, model needs sufficient:

- (1) biological complexity to describe species
- (2) support for relevant data inputs

Important to have:

- Good documentation
- Transparency of computer code to analyst, ease of access to communicate with developers

Stock Synthesis 3

Advantages

- Possibly the most flexible model for biological features and data inputs
- Widely used in scientific community
- Extensive user manual and responsive support by (large) developer team

Disadvantages

- SS3 is coded in ADMB (older & slower software, no longer actively developed)
- Not the best software for rapid simulation testing

WHAM (Wood Hole Assessment Model)

Advantages

- Newer model coded in TMB and distributed in R package
- More convenient for rapid simulation testing
- Better statistical treatment of random effects in population dynamics
- Increasingly used for operational stock assessments to provide advice
- Extensive user manual in R package and online articles demonstrating features:
<https://timjmiller.github.io/wham/articles/>
- Similar to other state-space models but has the most features and documentation

Disadvantages

- Smaller development team
- Supports fewer data inputs. Currently only supports age data. Some development for length data, not in current stable release

Final thoughts

- There's no need to select the 'final' software right now, we need flexibility and experimentation
- All models are simplification of the real world. Discussions about conceptual model guide us to evaluate limitations of the population model, and refine it
- Recommended to start with simple model with stepwise development to more complex
- We are not starting from the beginning, we can learn from the VPA assessment to guide us at NPFC