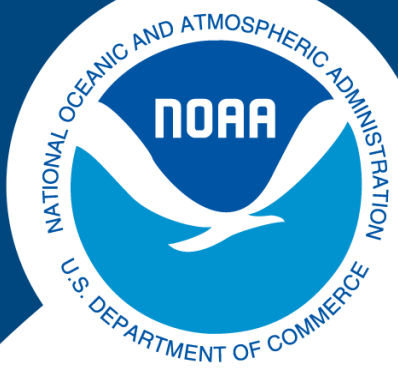




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The Stock Assessment Continuum

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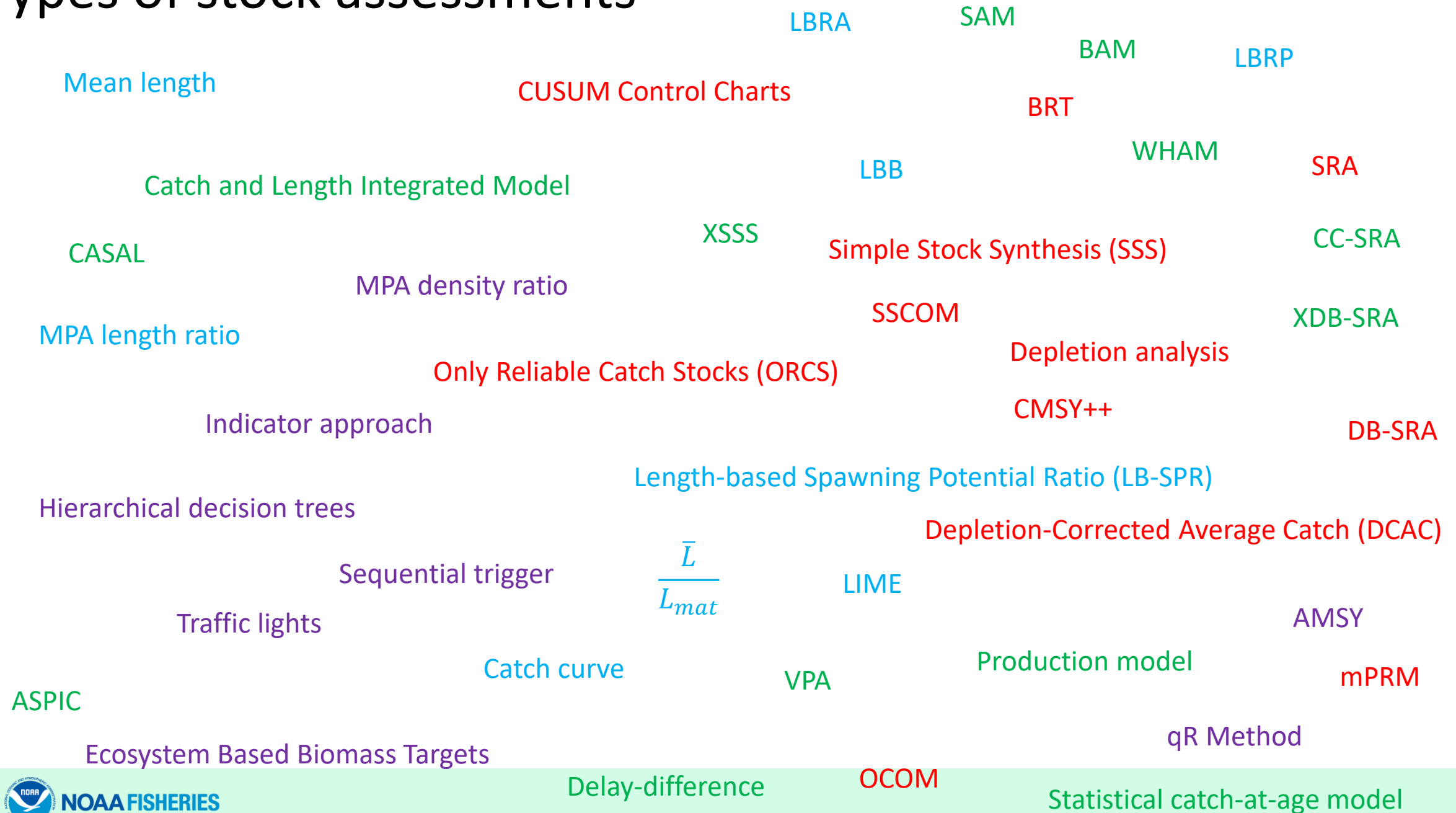
NOAA Fisheries

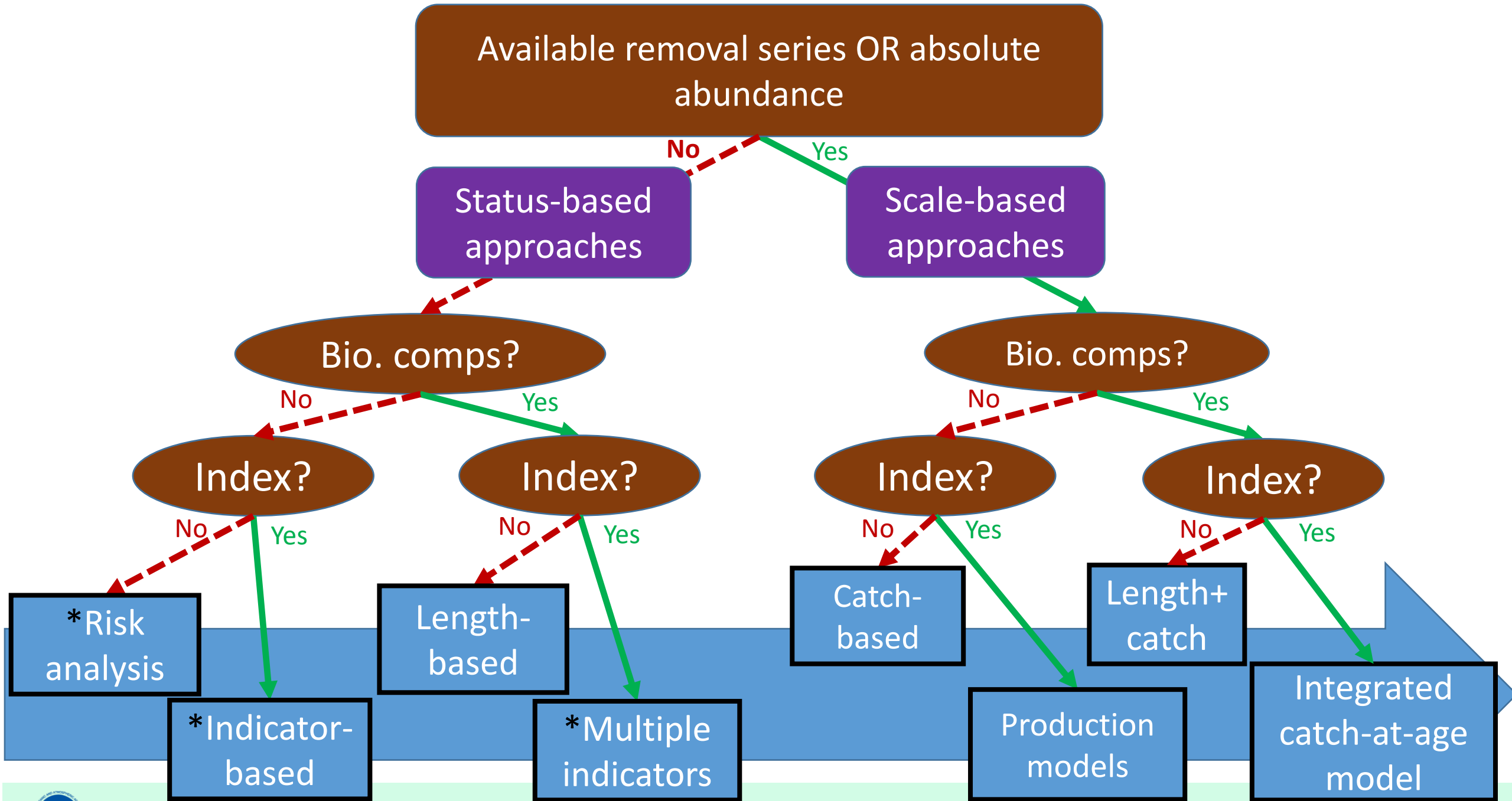
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Types of stock assessments





Stock Assessment Continuum (SAC) Tool

Welcome to the Stock Assessment Continuum Tool, powered by Stock Synthesis (version 3.30.24)

(Formerly known as the Stock Synthesis Data-Limited (SS-DL) tool), this tool uses the **Stock Synthesis** framework to implement a **variety of types** of models.

Any suggested changes or requests? Please submit an issue with the recommendation [here](#)

Access the latest version of the Stock Synthesis manual [here](#)

Watch a talk on how to use the SAC tool and the concept of the stock assessment continuum [here](#)

Upload bookmarked inputs

Upload a saved input rds file:

Browse...

File names should only include letters and numbers, otherwise an upload error may occur.
If you see 'Error: Invalid state id', rename the file and try again.

Choose data file

Catch time series

Browse...

Length composition

Browse...

Age composition

Browse...

Abundance index

Browse...

Data and Parameters

Model output

Model efficiency

Jitter outputs

Likelihood profile

Retrospectives

Sensitivity Plots

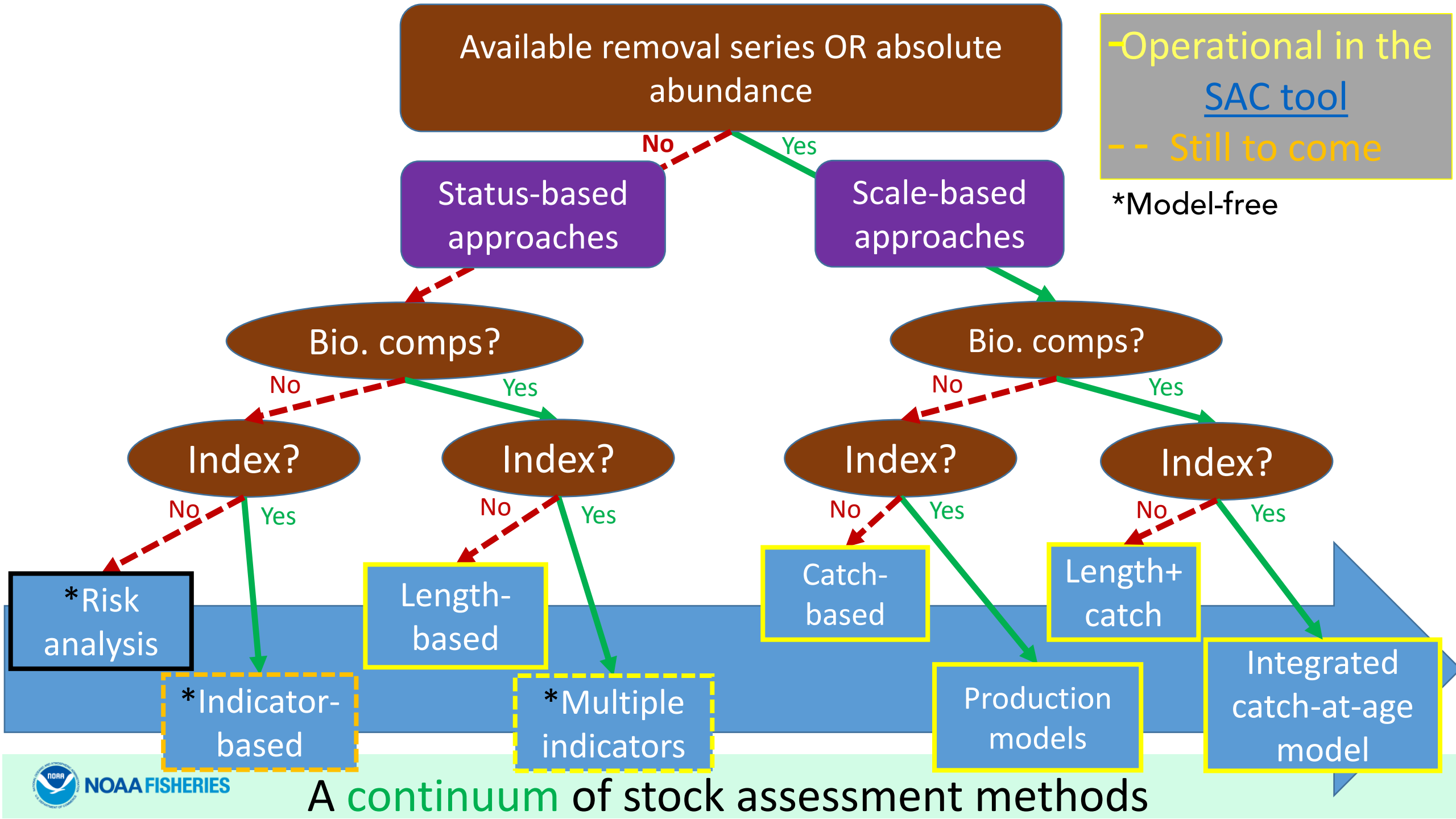
Ensemble models

Life history

Selectivity



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SAC Tool Demo

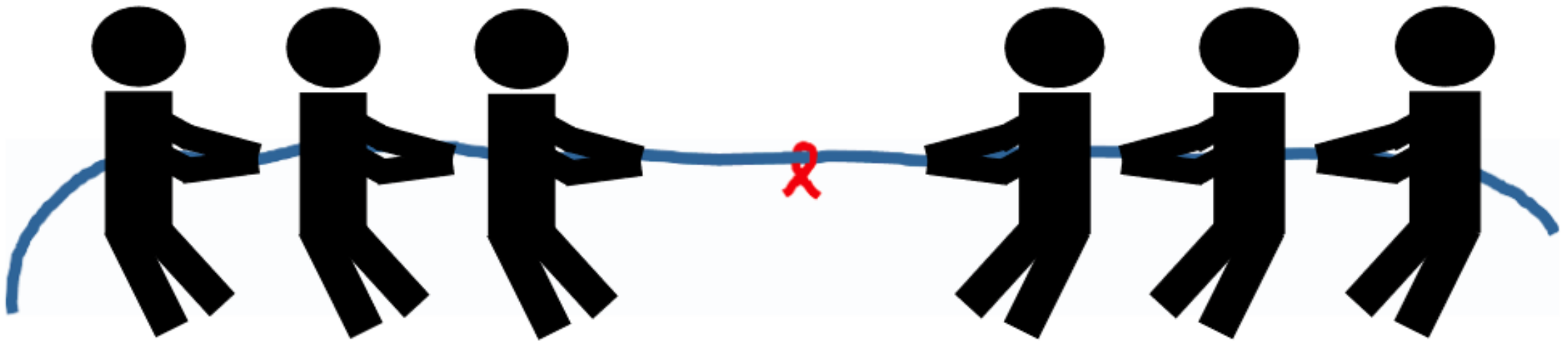


Stock assessment trade-off

Data

vs.

Assumptions



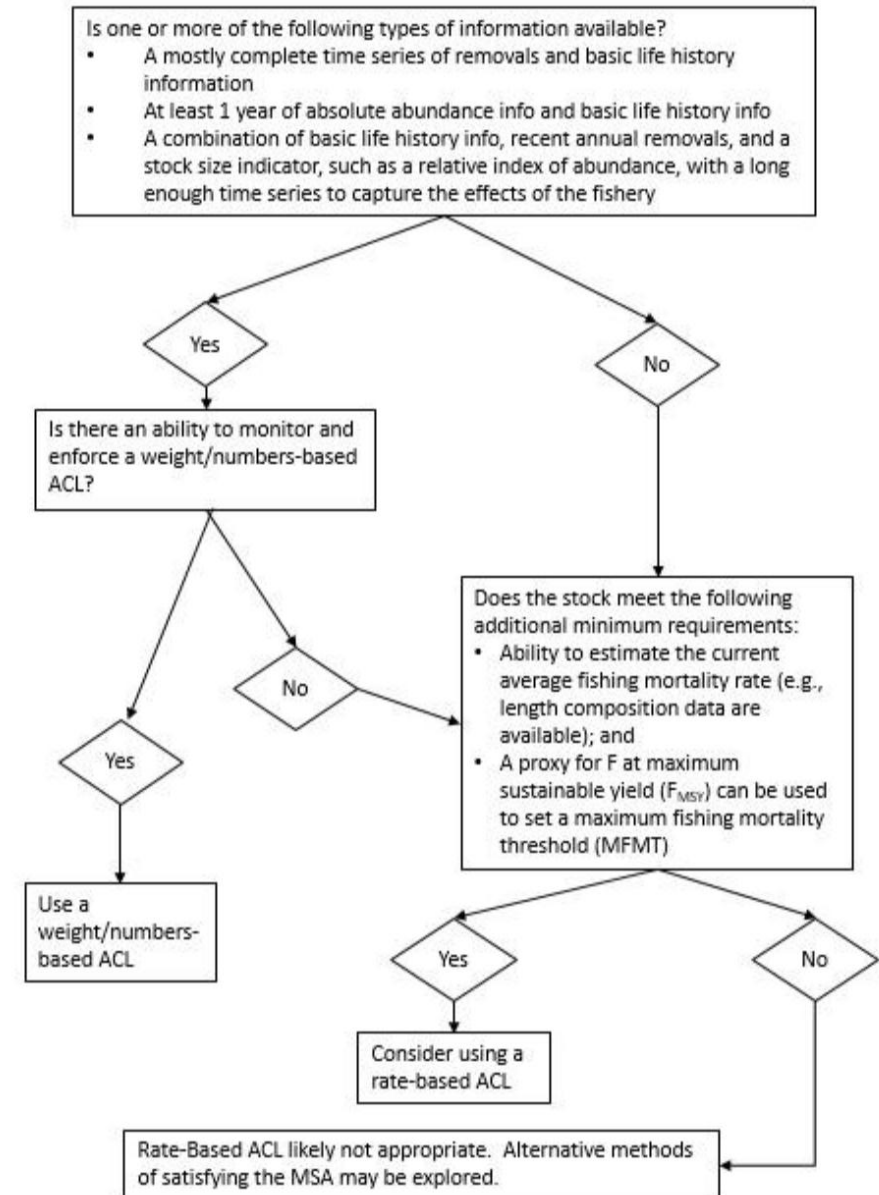
“Gold standard” stock assessments

“Alchemical” DRL methods

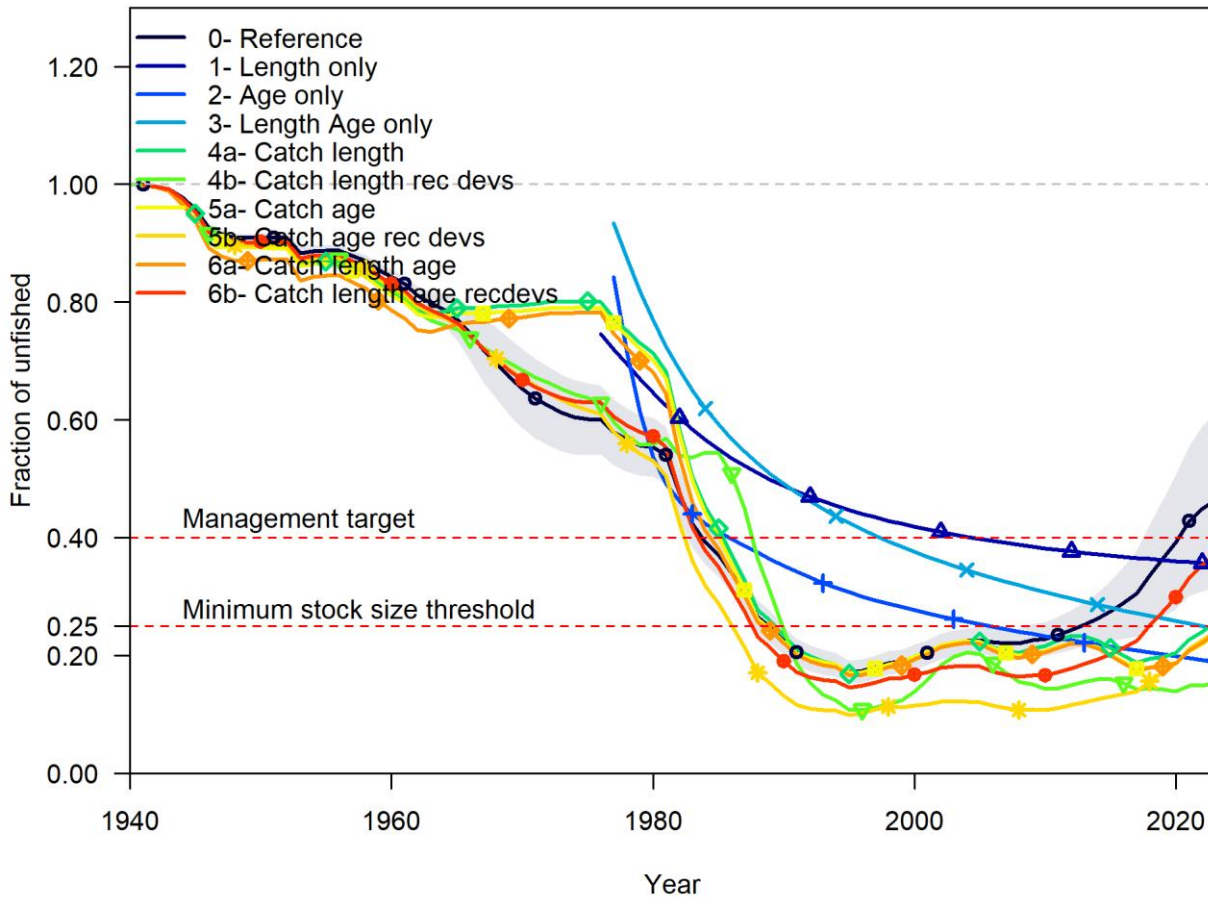
NS1 Technical Guidance for data-limited stocks

- Recognition that catch-based ACLs not reasonable for some stocks
- Need for alternative solutions, which is allowed in 2016 NS1 update
 - (h)(2) flexibilities
 - Use of “rate-based ACLs”
- Tools available to identify the appropriate DRL methods (e.g., FishPath)
- Recognition of guidance around what qualifies for this application

(h)(2) decision tree



Using the SAC to peel the onion: Where does the information in a stock assessment come from?



- Building models up from each data set
- Find the signal from each data set
- Improve understanding of data interactions within an integrated framework

FISHPATH categorization

Assessment category

- Abundance indicators
- Catch only
- Multiple indicators
- Population dynamics
- Size/age based

Assessment output

- Catch limit
- Fishing rate
- Stock status
- Stock Scale
- Other metrics

Management measures

- Catch limits
- Effort limits
- Gear
- Temporal
- Spatial
- Size limits
- Sex-specific
- Other

Assessment tiers



The Stock Assessment Continuum System

- Finding right-sized model within a common framework
 - Gap analysis
- Leverage greater model development (Dowling et al. 2026)
- Hypothesis testing and uncertainty evaluation (within and among models)
- Flexibility = creativity

The future of the SAC Tool

- Transition from SS3 to Fisheries Integrated Modelling System (FIMS)
- Link to the Automated Stock Assessment Reporting (asar) package for easier, standardized reporting
- Simulation testing module
- Ongoing and open development

Communication and learning

- Communicating why DRL methods are being used is important and should be emphasized
 - Getting away from the idea of a “bad” assessment or you can only do an assessment if you have certain data
 - Demonstrating how methods can be useful supporting management objectives
- Clear statement of what can and cannot be informed is critical
 - Not a way to avoid setting an OFL
- Assumption transparency and exploration
- Involving the community to overcome data and resource challenges
 - <https://connect.fisheries.noaa.gov/SALT/>

Stock Assessment Continuum Tool

Method description

- Flexible. Uses SS3, but any integrated stock assessment system can be used. Intend to apply to FIMS.
- Simplifies ability to use different combinations of data, making adding data easier
- A consistent and transparent system under a variety of data inputs. Allows one to use what they have and build from there.

Data inputs

- Life history (mortality, growth, reproductive biology, sex-specific flexibility)
- Removals (catch + discards)
- Biological compositions (e.g., lengths and/or ages)
- Indices of Abundance
- Data weighting options

Outputs

- Input dependent
- Relative stock status, absolute stock size, fishing mortality, SPR, standard stock assessment outputs
- Model diagnostics
- Sensitivity analyses, likelihood profiles, retrospective analysis, ensemble modeling

Stock Assessment Continuum Tool

Informing Management

- Input dependent
- Catch and effort based management advice
- Overfishing and overfished status
- Forecasting and catch buffering options
 - Buffer options (e.g., P^* integration)
 - Future selectivity and recruitment can be specified

Caveats

- Life history information is needed
- Catch history typically assumed known without error
- Different data combinations create different caveats
- Makes assumptions transparent, as model specification forces decisions
- Caveats are candidates for sensitivity exploration

Previous application

- Numerous around the world
- Tagliolo et al. 2021; Weyl et al. 2023; Min et al. 2023; Dichmont et al. 2025; Soares et al. 2025; Braccini et al. 2026