

Management Strategy Evaluation for Mid-Atlantic Fisheries

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June 8, 2015

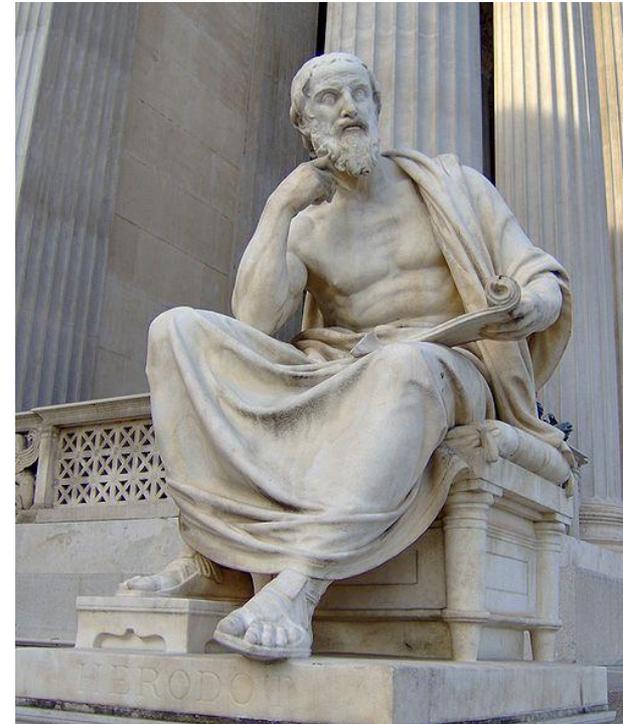
Management and Uncertainty

- Management decisions are always made with substantial uncertainty
 - Status of the resource
 - Population dynamics of the resource
 - Effects of the management decision
- Uncertainty & risk in management choices

What makes a plan good?

The man who has planned badly, if fortune is on his side, may have had a stroke of luck; but his plan was a bad one nonetheless.

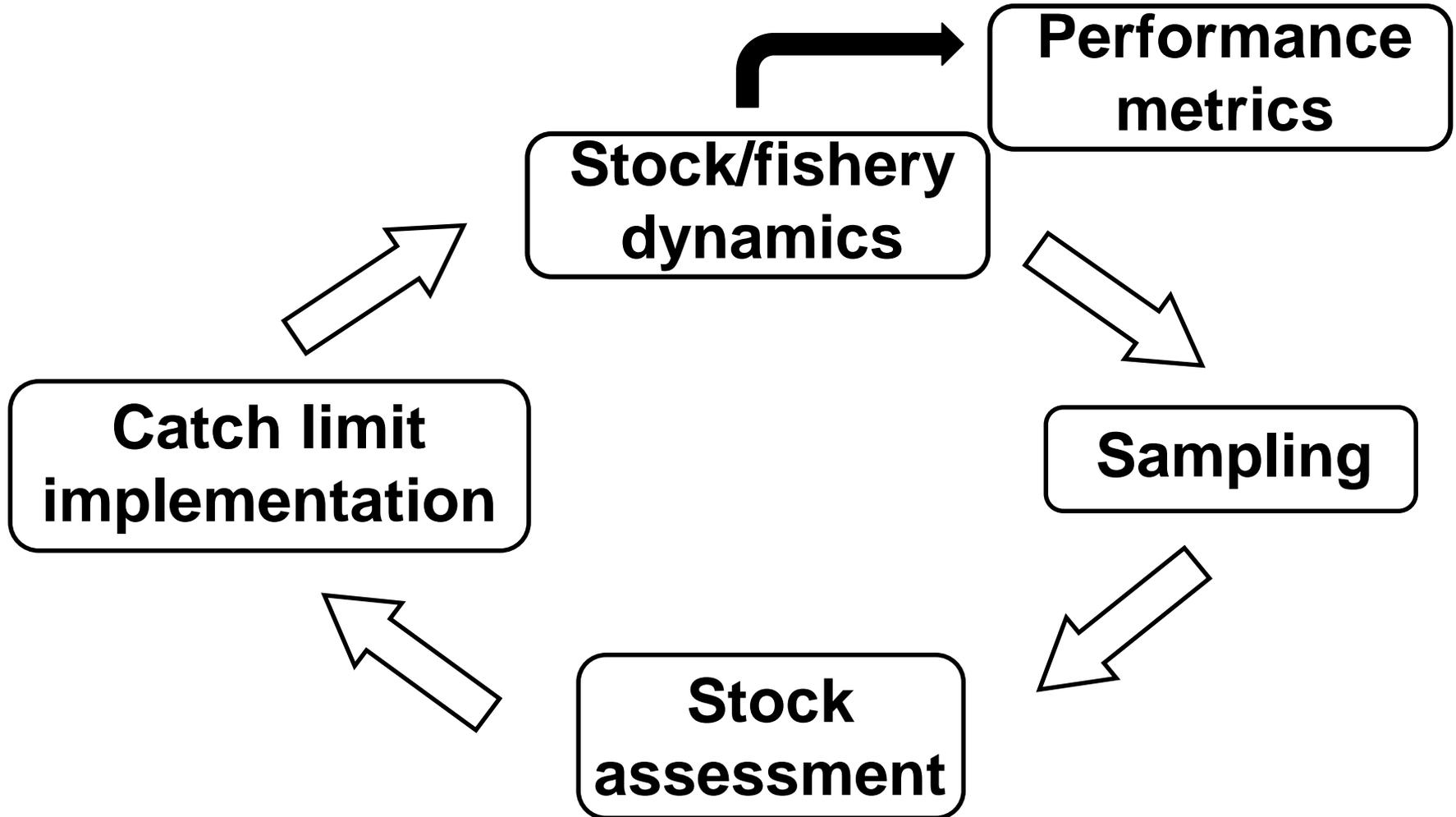
– Herotodus ~480 BC



Management Strategy Evaluation

- Approach to determine if a *method* for making decisions is likely to achieve the objectives
- Requires objectives, management strategies, scenarios, and uncertainties
- Uses a simulation model to test management strategies

MSE Description



MAFMC Examples

- Performance of alternative ABC control rules
- Performance of methods for implementing control rules
- Performance of other characteristics of the management system (assessment frequency and management lag)

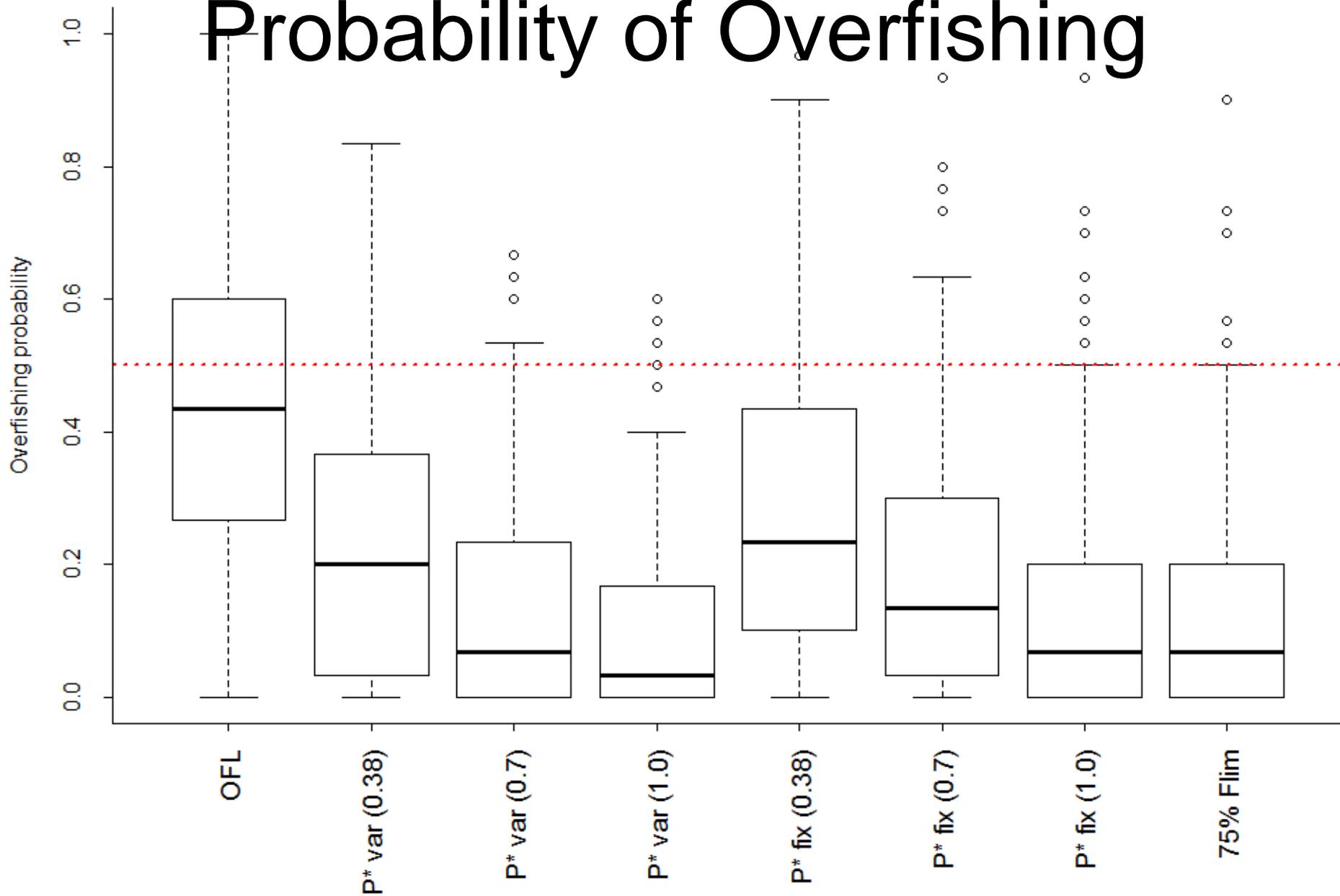
Uncertainty

- Population dynamics
 - Recruitment
 - Selectivity
 - Natural mortality
- Sampling
- Stock assessment

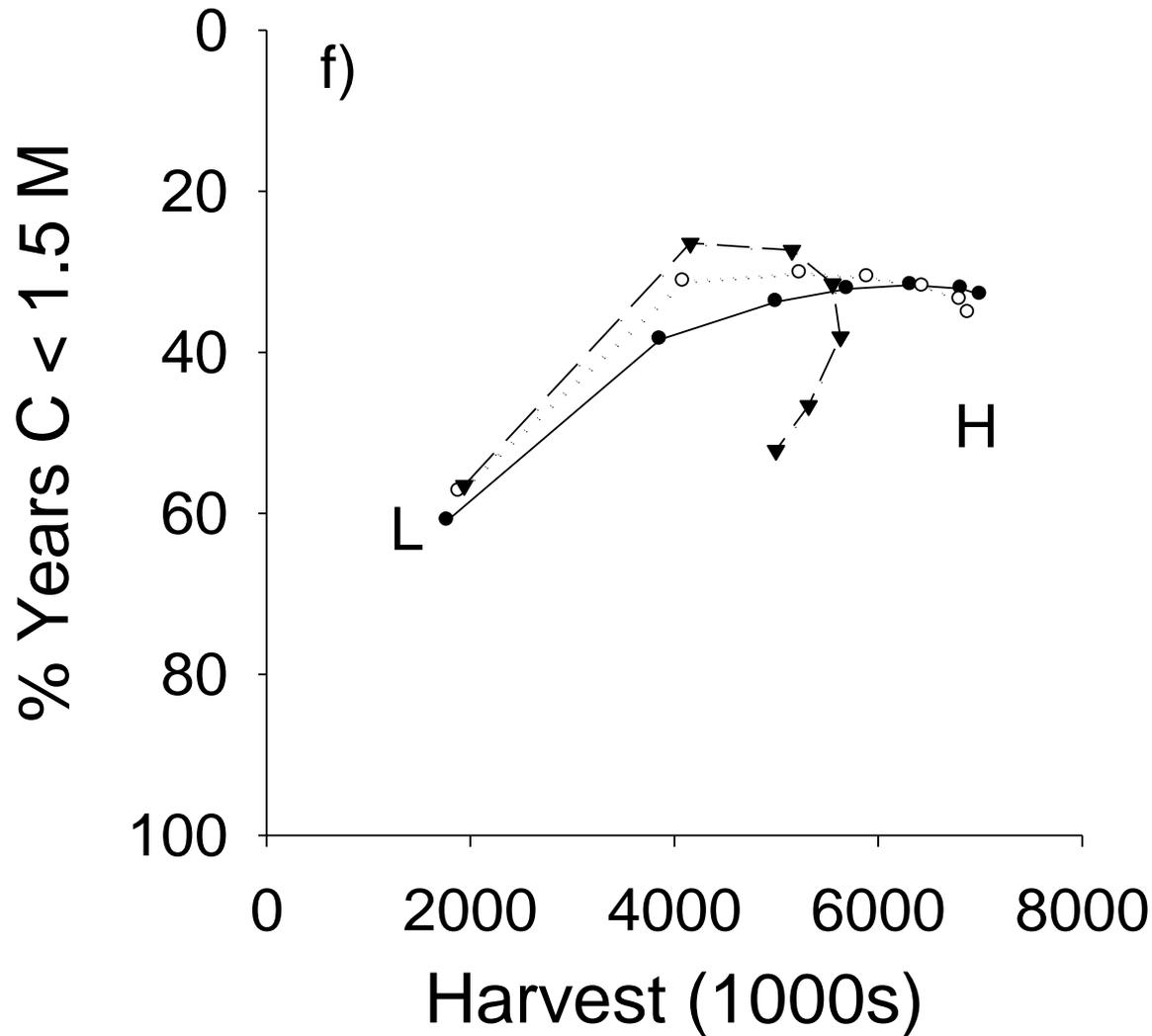
Performance metrics

- Average catch (short and long term)
- Average biomass (short and long term)
- Probability of overfishing
- Ability for populations to rebuild
- Average annual variability of the catch

Probability of Overfishing

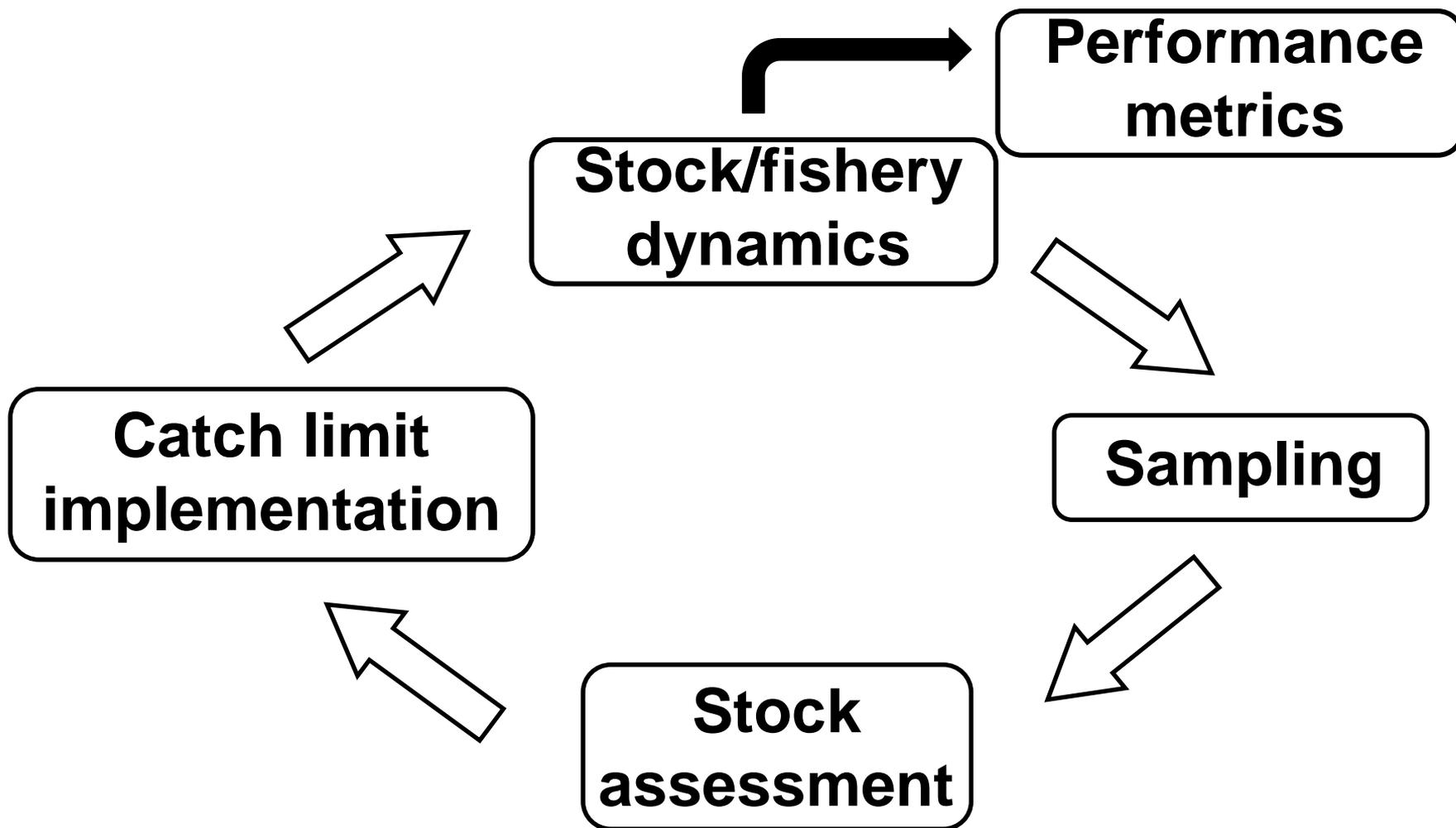


Tradeoff Plots



- ▼ Constant-F
- 0-40
- 0-70

Incorporating the Ecosystem



Final Thoughts

- Opportunity to test before implementation
 - MSEs can be good for identifying strategies that will not work
 - MSEs require control rules to test
 - Time requirement can be long
- Has to be an iterative process
- Not all important uncertainties and objectives can be explicitly included
- MSE results can be highly dependent on the assumed dynamics