

# MSE in a nutshell



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## What is MSE?

- A.K.A. Management Procedure Approach

*Assessing the consequences of a range of different management strategies to determine which one will be the most appropriate to meet the operational objectives of the fishery.*

- Robustness against uncertainty
- Compare rules
- Include all knowledge

## Some history

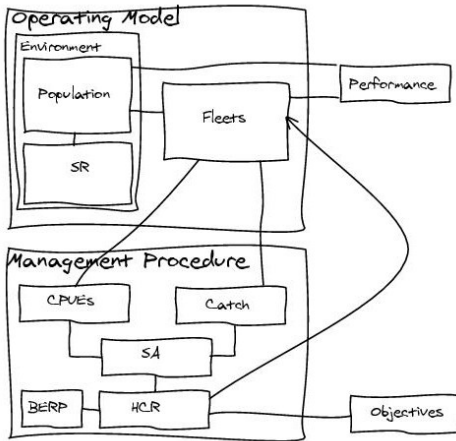


- IWC Revised Management Procedure



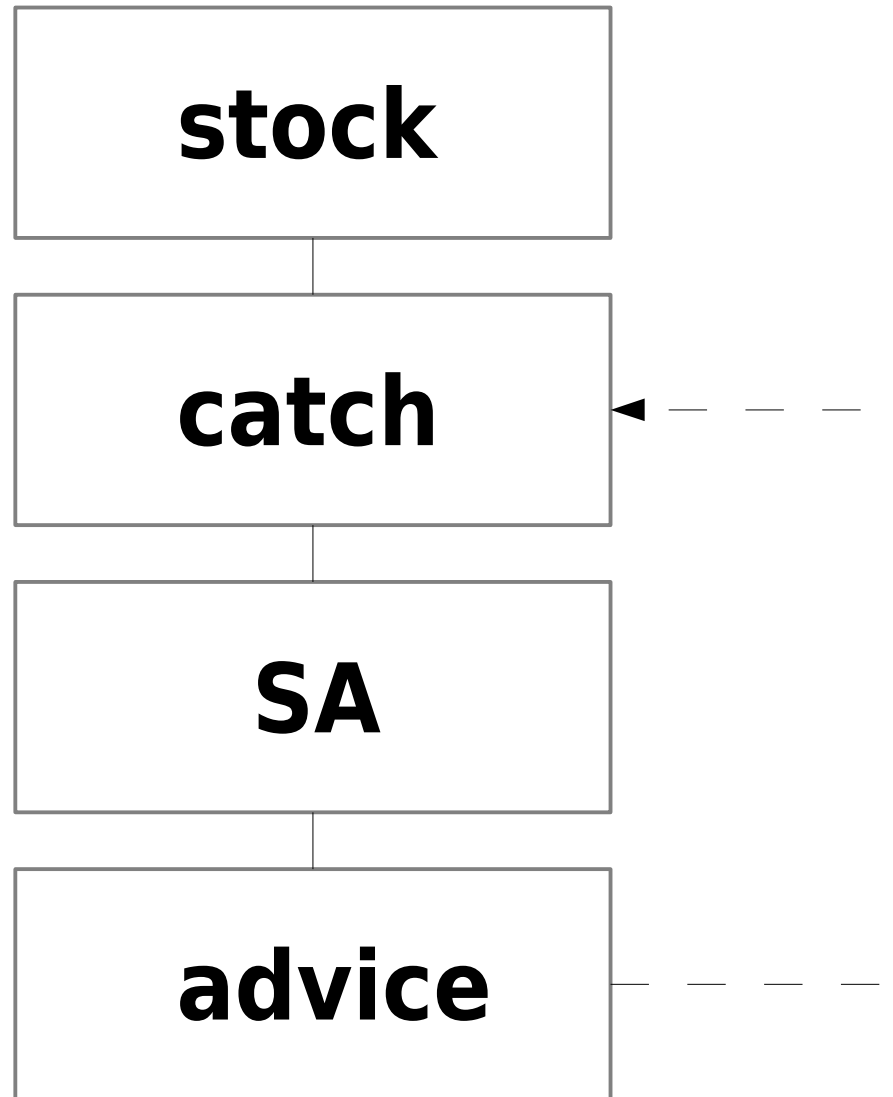
- SBT Management Procedure
- SA, NZ, AUS

## Fishery system model



## Steps to MSE

- Define and agree on **objectives & limits**
- Identify appropriate **Management Procedures**
- Define a set of **Operating Models**
- Conduct **simulations**
- **Summarize** performance
- Select **best MP**



**stock**

**fleet**

**data**

**SA**

**HCR**

**stock**

**fleet**

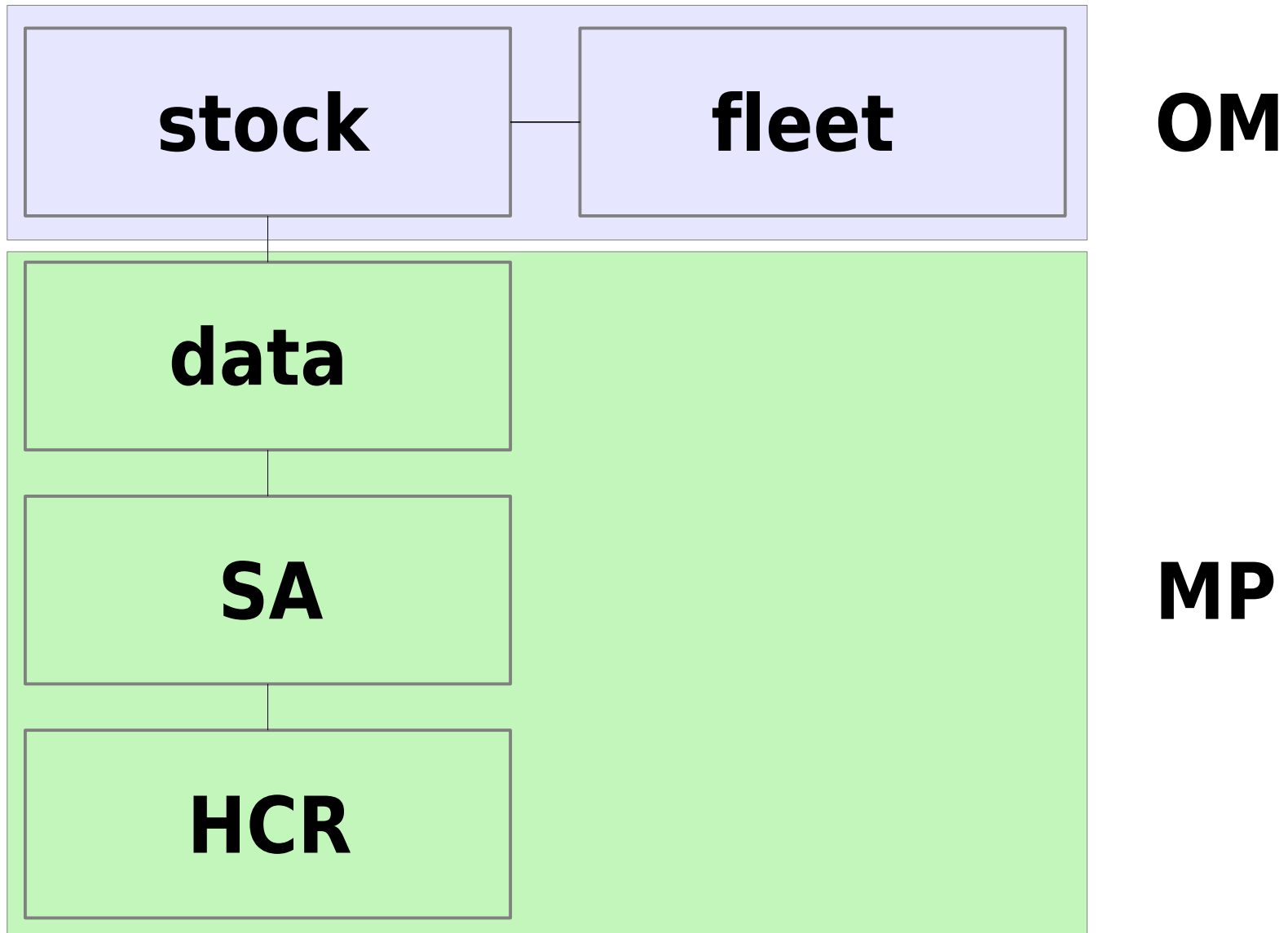
**OM**

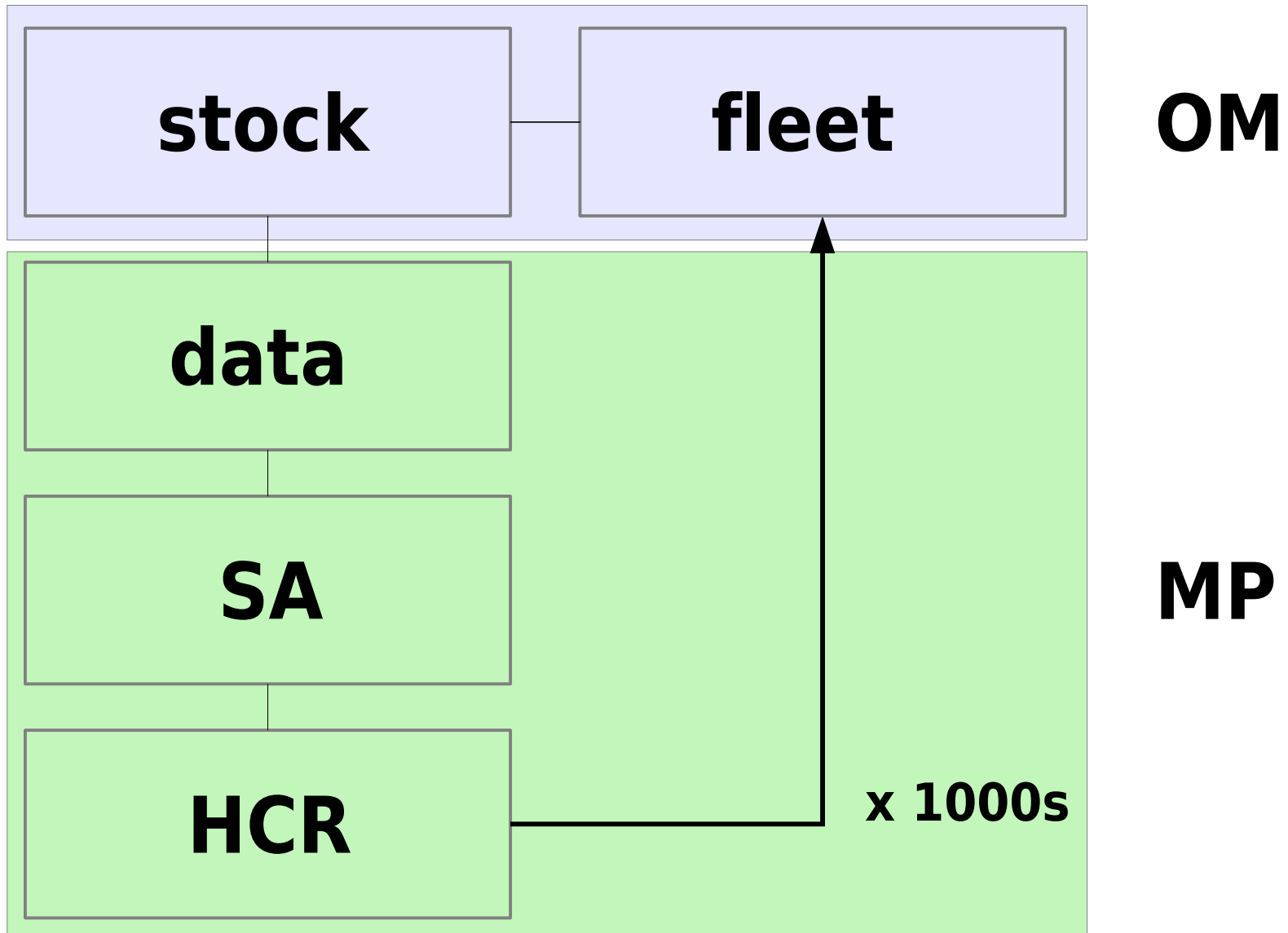
**data**

**SA**

**HCR**







# Specify & prioritize **objectives** ...



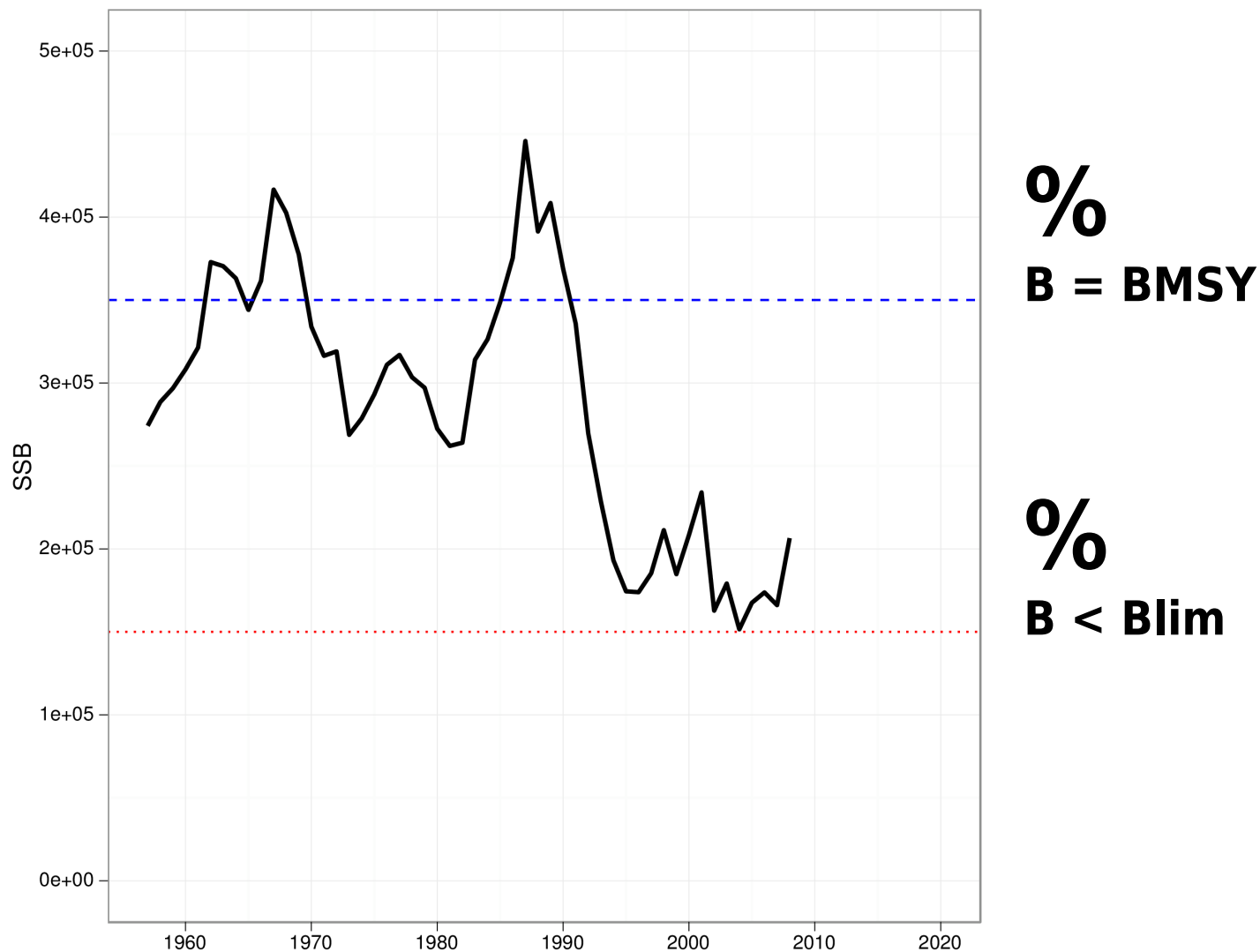
# Specify & prioritize **objectives & limits**



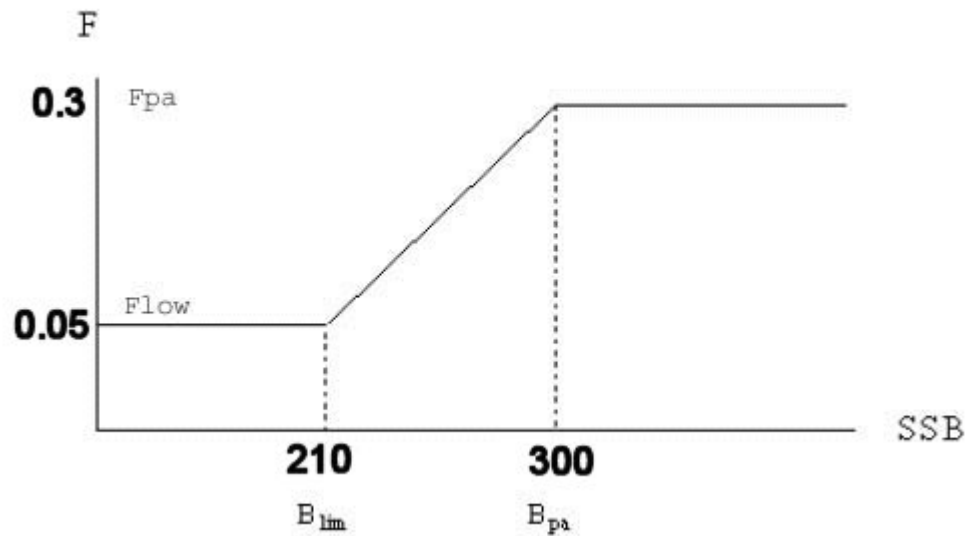
# Specify & prioritize **objectives & limits**

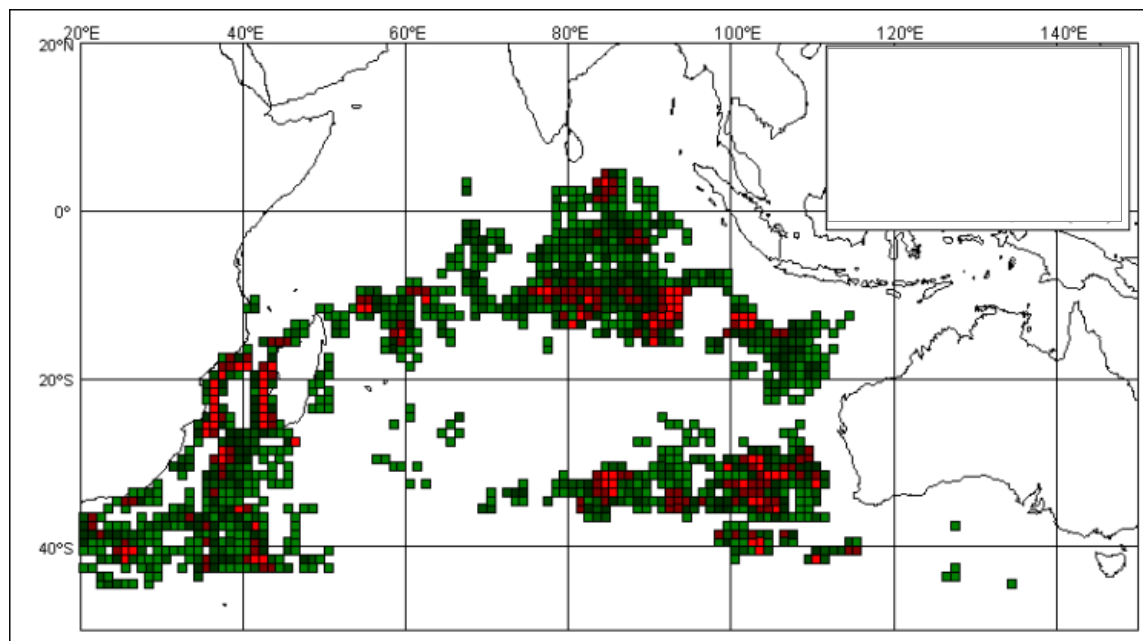
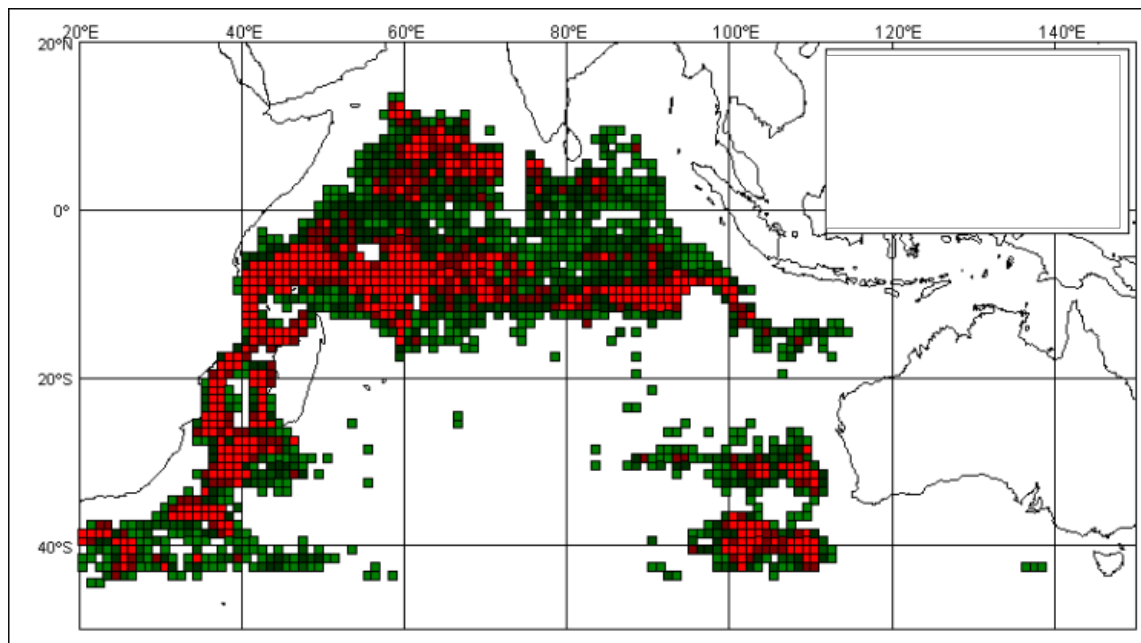


# Quantify performance measures

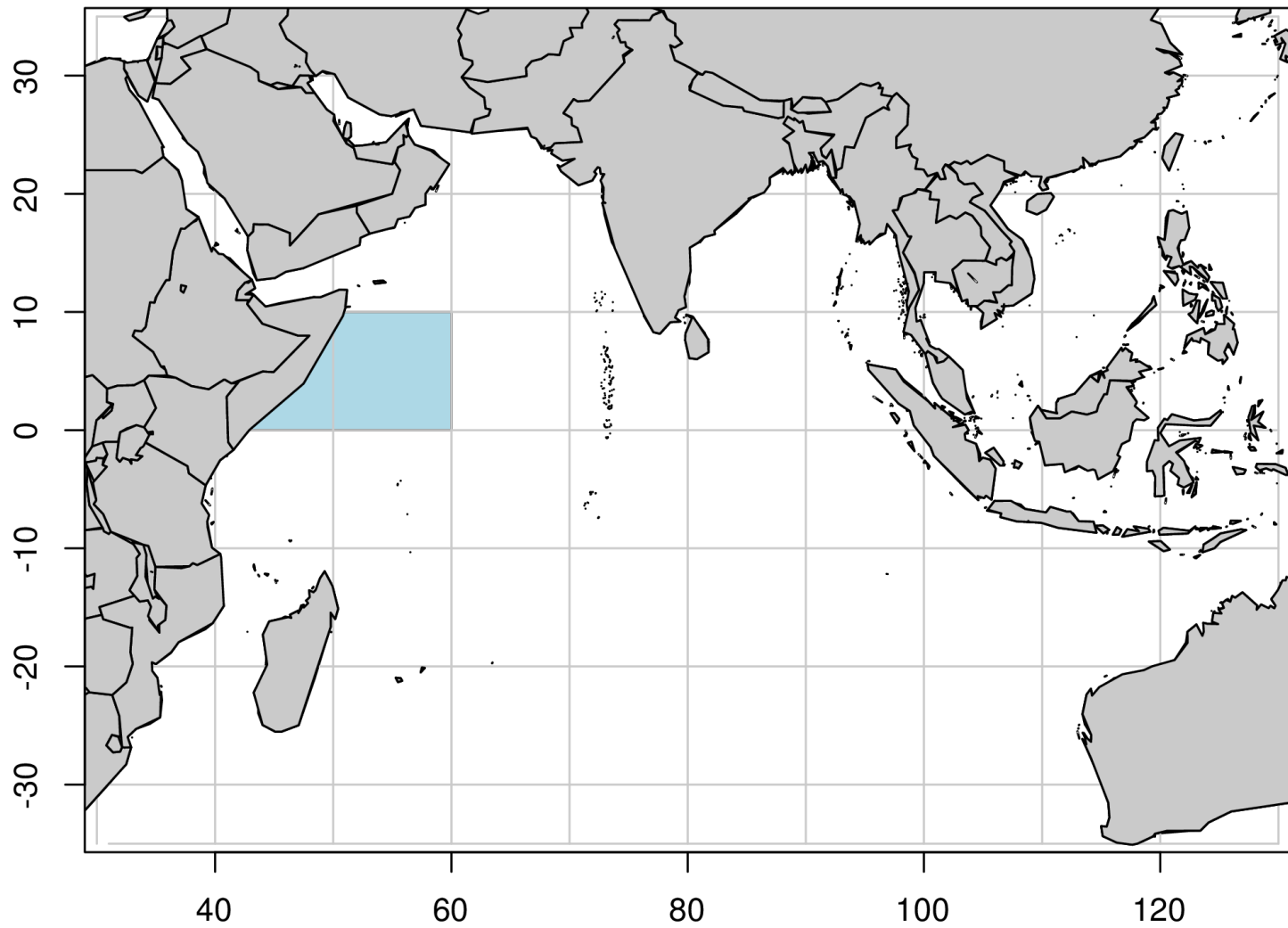


# Identify Management Procedures



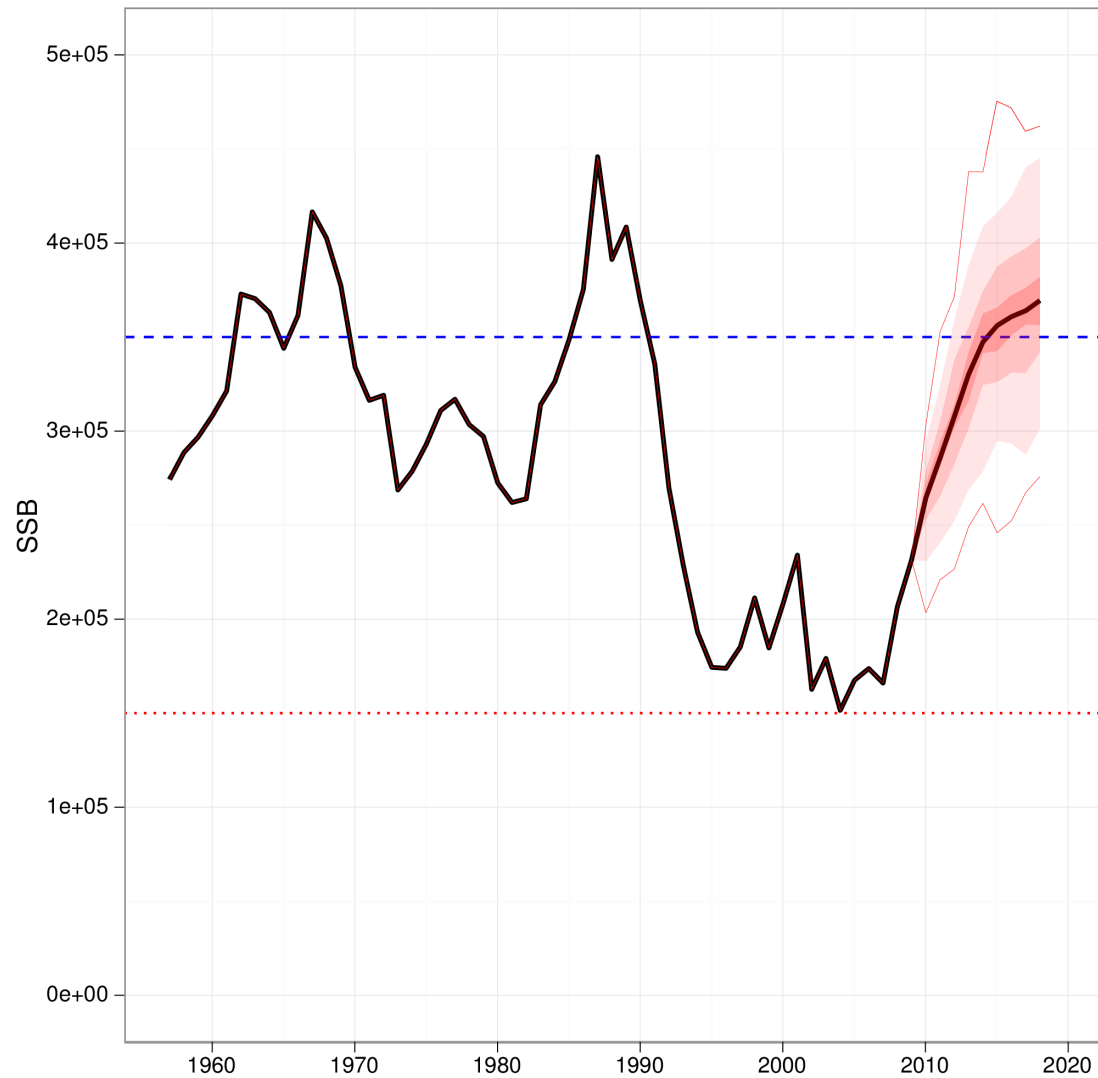




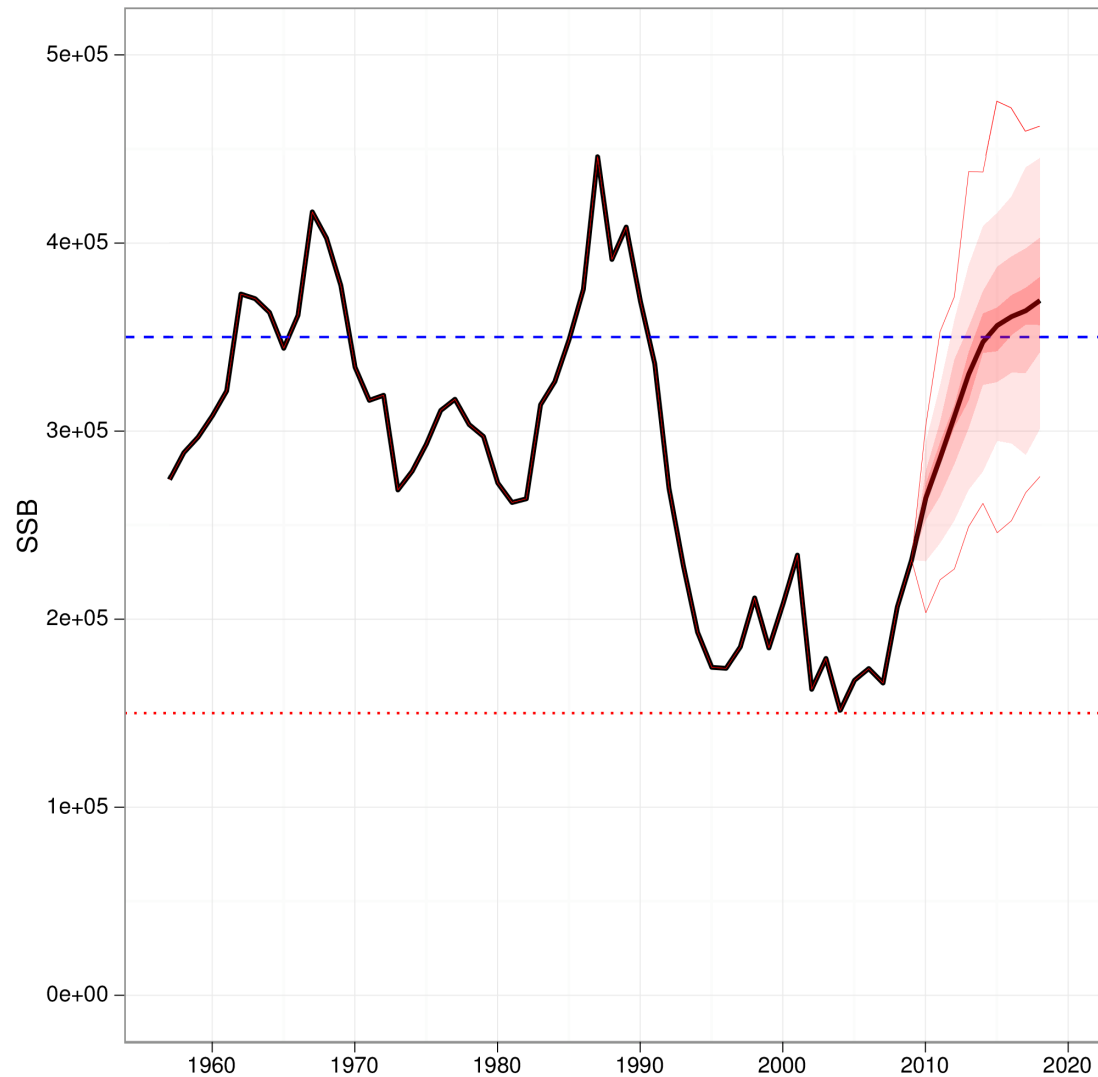


Closed areas/seasons

# Conduct simulations



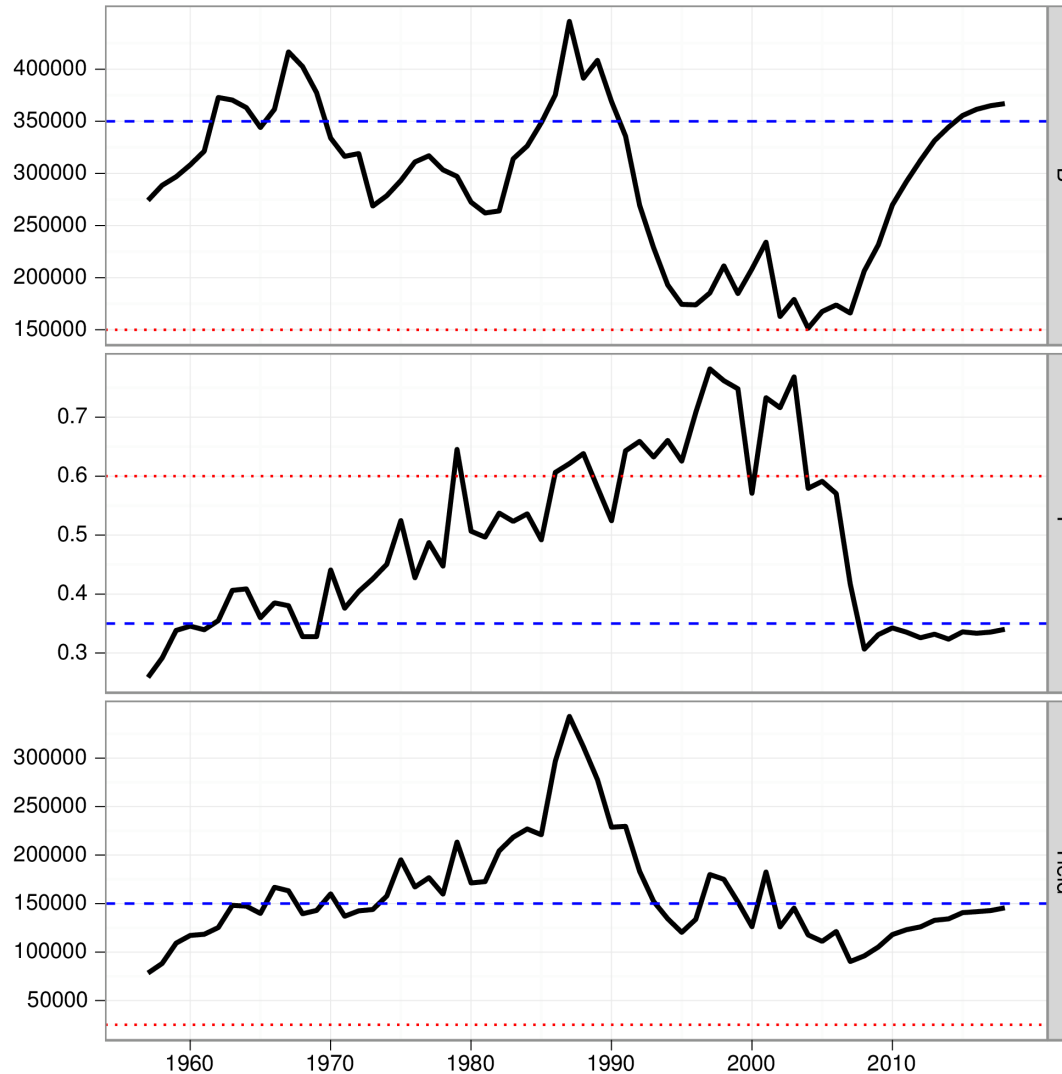
# Conduct simulations



**69%**  
 **$B > B_{MSY}$**

**0%**  
 **$B < B_{lim}$**

# Summarize performance of MPs

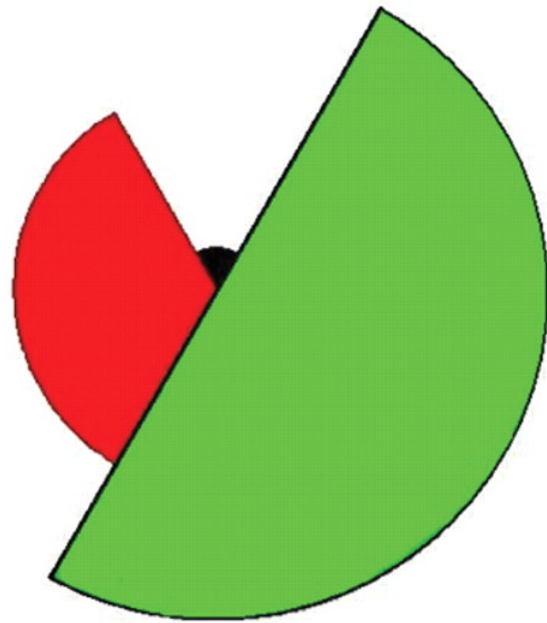


**69%**  
**B > BMSY**

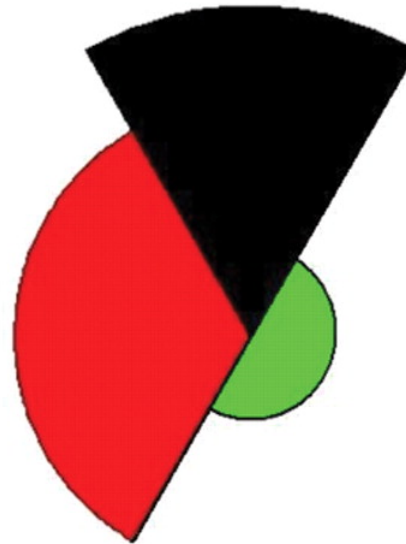
**32%**  
**F > FMSY**

**56%**  
**Y >= MSY**

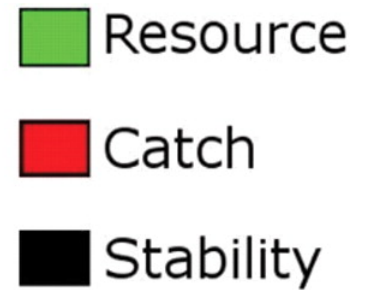
# Select best MP



*modFree*



*rbPlan*



## Advantages

- Avoid yearly variability in SA
- Long-term trade-offs
- Less haggling
- No 'wrong' best assessment
- Default decision
- Risk on board
- Consistent with PA
- Interaction across the table

## and disadvantages

- Results dependent on model
- Lengthy development
- Data still essential
- Overly rigid
- Autopilot

## Some references

- ICES JMS Vol. 64 Issue 4 MSE Symposium
- IWC Revised Management Procedure
- AUS 4-tier fisheries management system
- SBT Management Procedure