

# What is an MSE-based MP?

October 28, 2024



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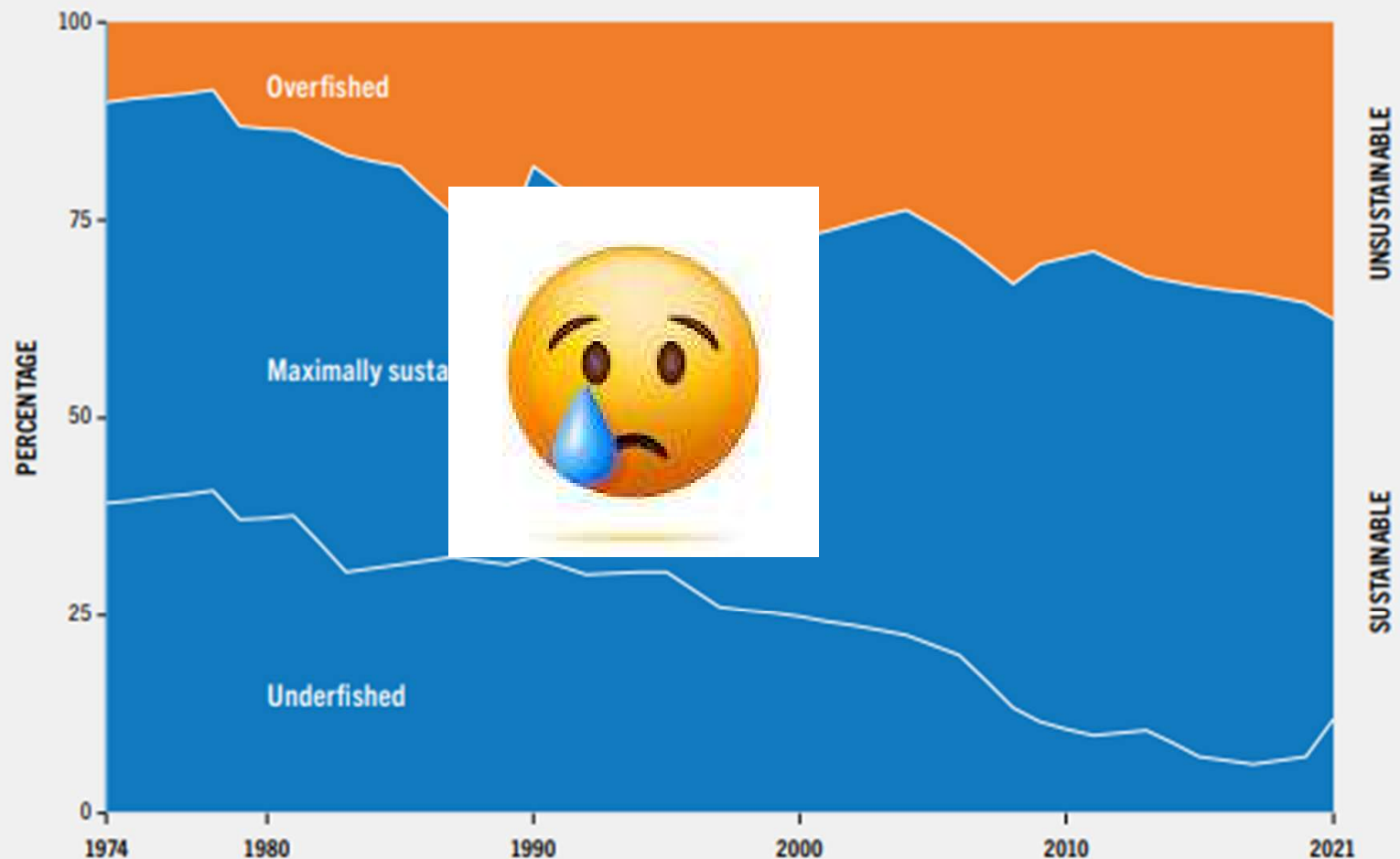
# WHAT IS A MANAGEMENT PROCEDURE?

- A pre-agreed framework for making management decisions
  - 1 – Objectives
  - 2 – Monitoring
  - 3 – Assessment
  - 4 – Harvest Control Rule (HCR)
- Evaluated and selected using management strategy evaluation (MSE)
- Also known as a harvest strategy



# STATUS OF MARINE FISHERIES

**FIGURE 18** GLOBAL TRENDS IN THE STATE OF THE WORLD'S MARINE FISHERY STOCKS, 1974–2021



SOURCE: FAO estimates.

# STATUS OF TUNA FISHERIES

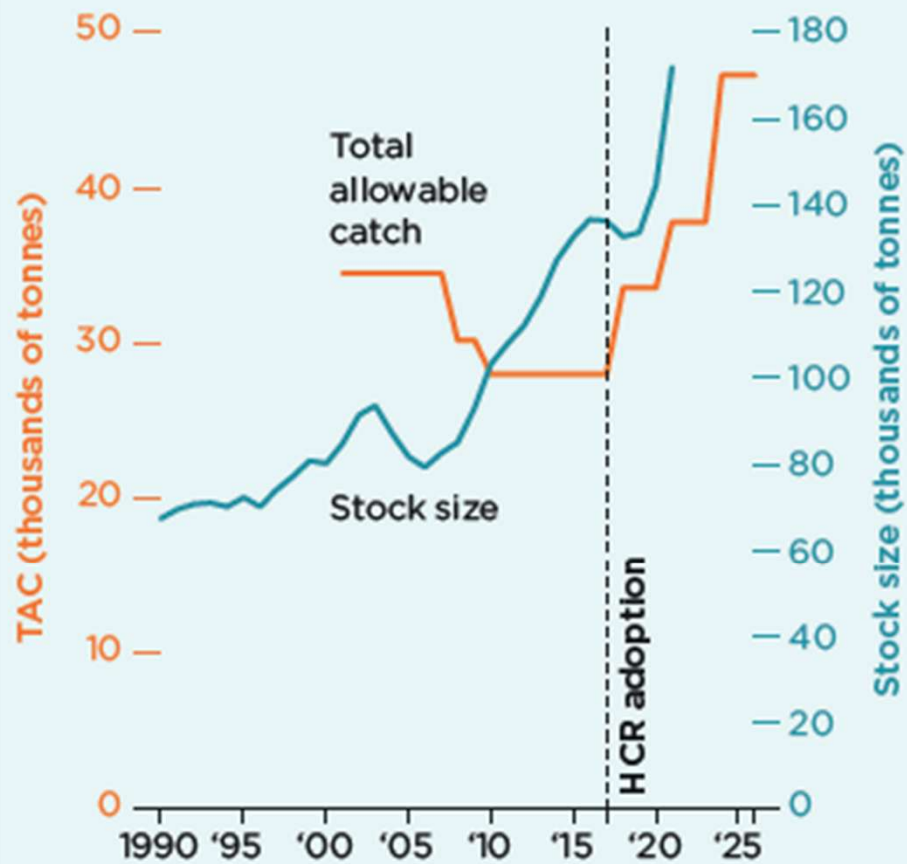
- 66% sustainably fished in 2019
- 87% sustainably fished in 2021



“Globally, the tuna RFMOs have been making a concerted effort to use **management strategy evaluations** to provide advice for rebuilding and keeping stocks at biomass levels above the maximum sustainable yield, with positive results.” FAO, 2024.

# MP SUCCESSES

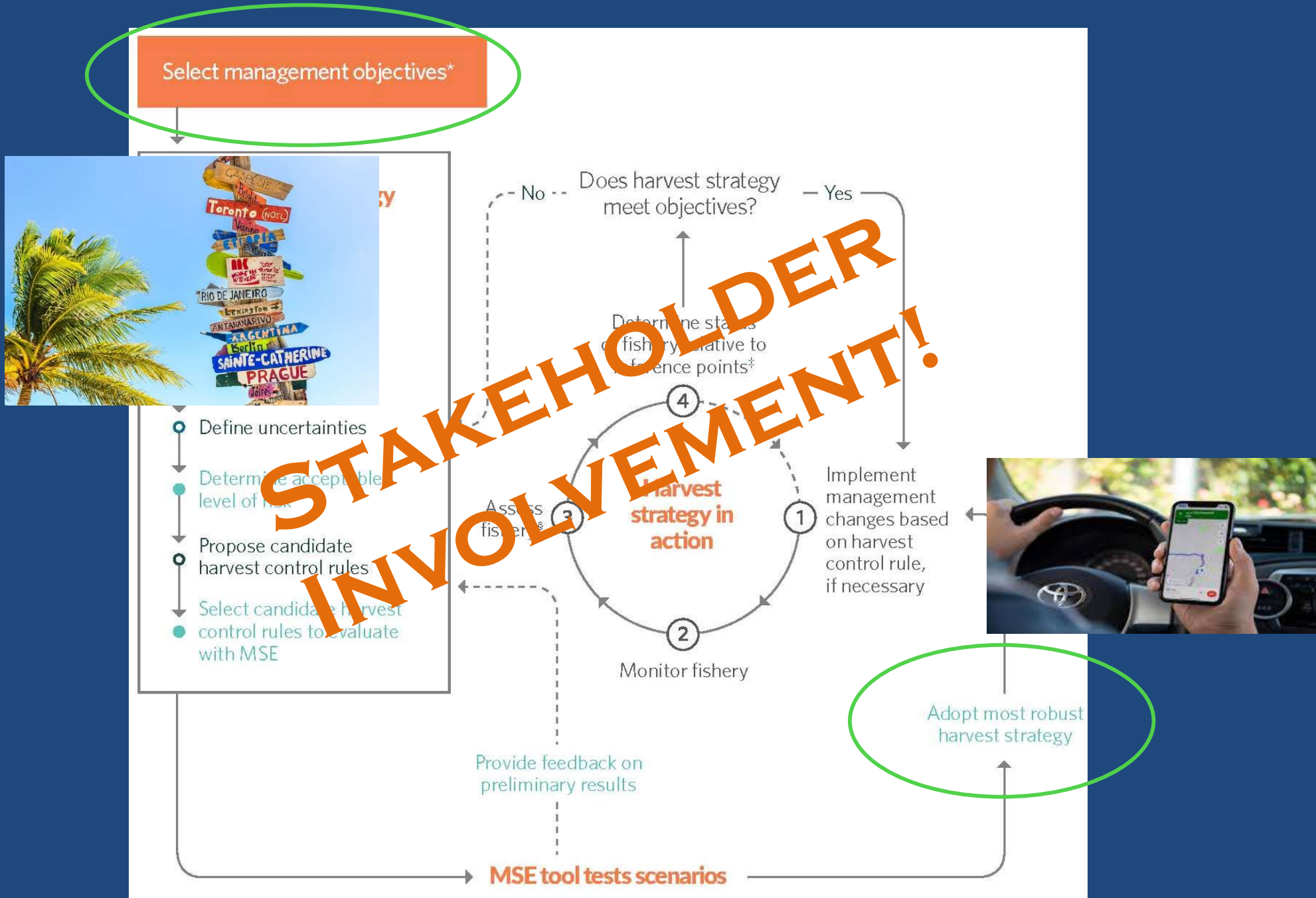
## Northern Albacore (ICCAT)



## Southern Bluefin tuna (CCSBT)

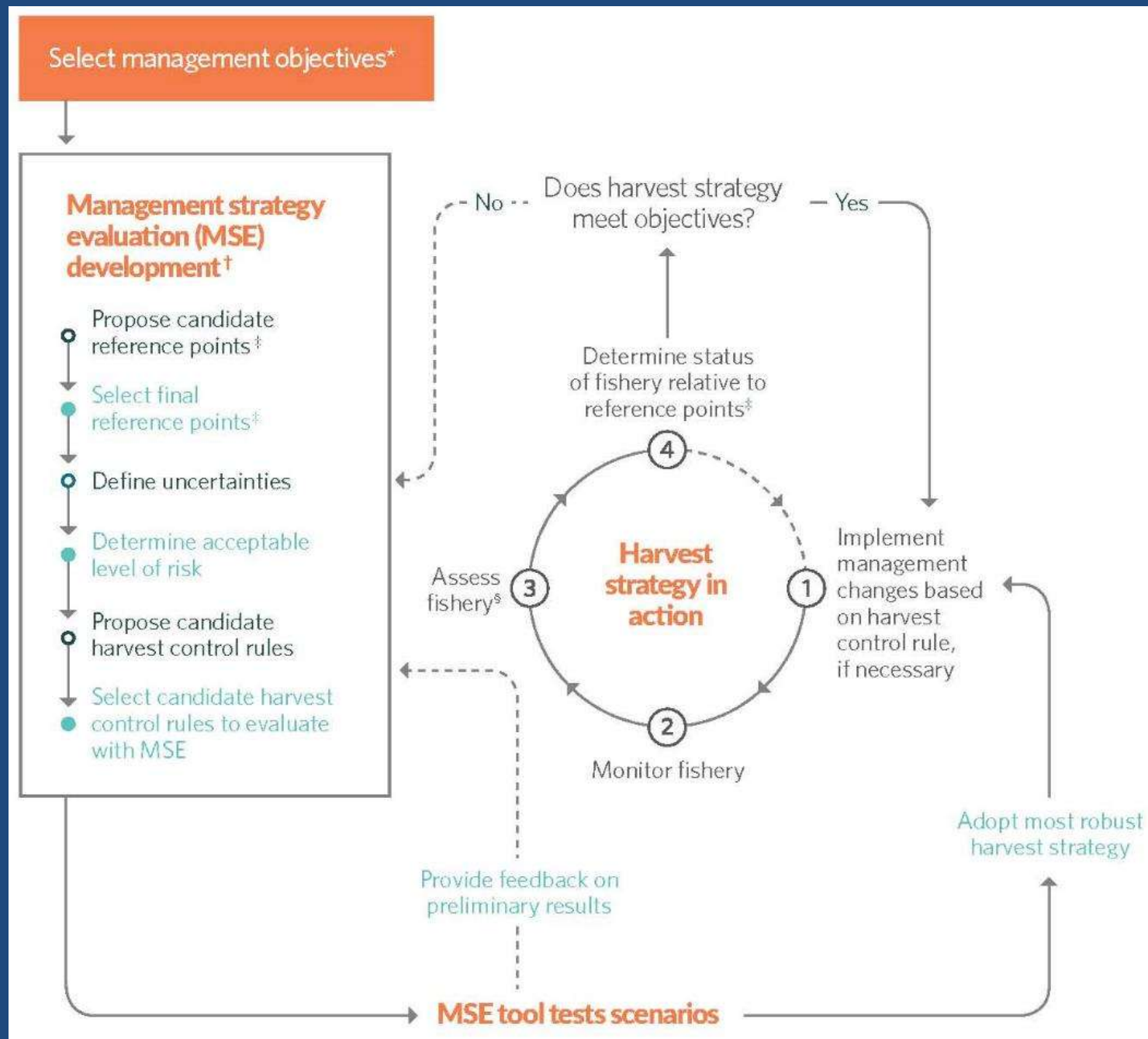


# INTEGRATING SCIENCE & MANAGEMENT

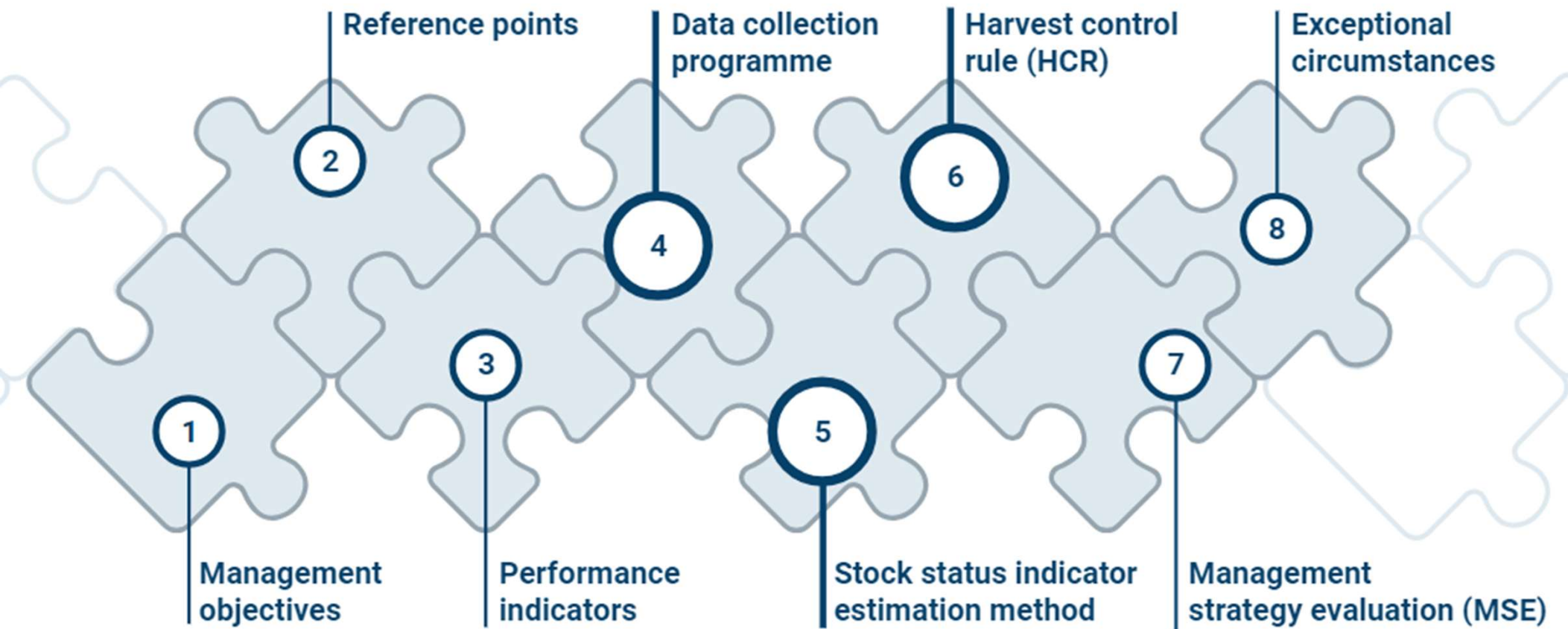




# MANAGEMENT PROCEDURE DEVELOPMENT

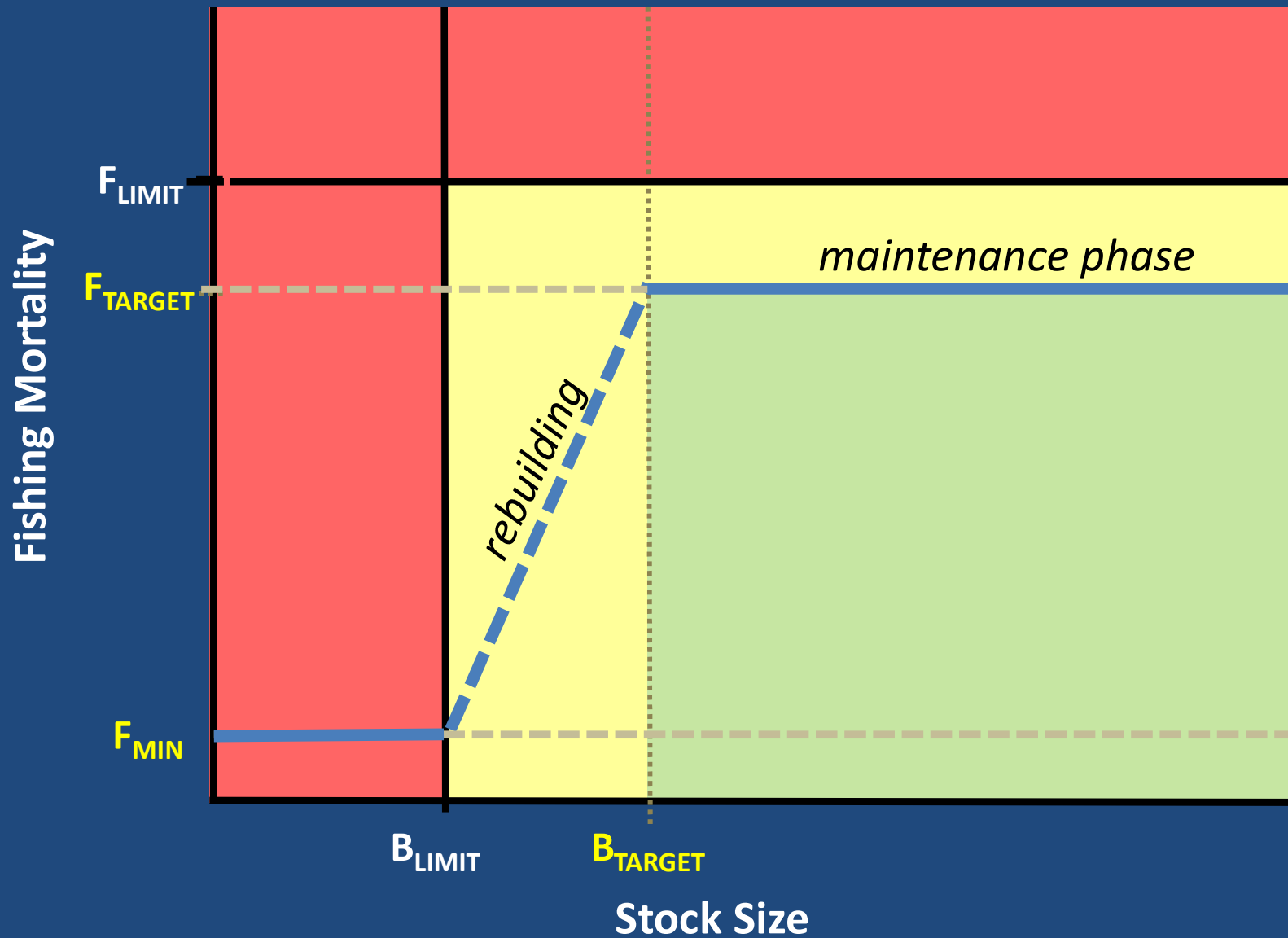


# MANAGEMENT PROCEDURE ELEMENTS





# HARVEST CONTROL RULE

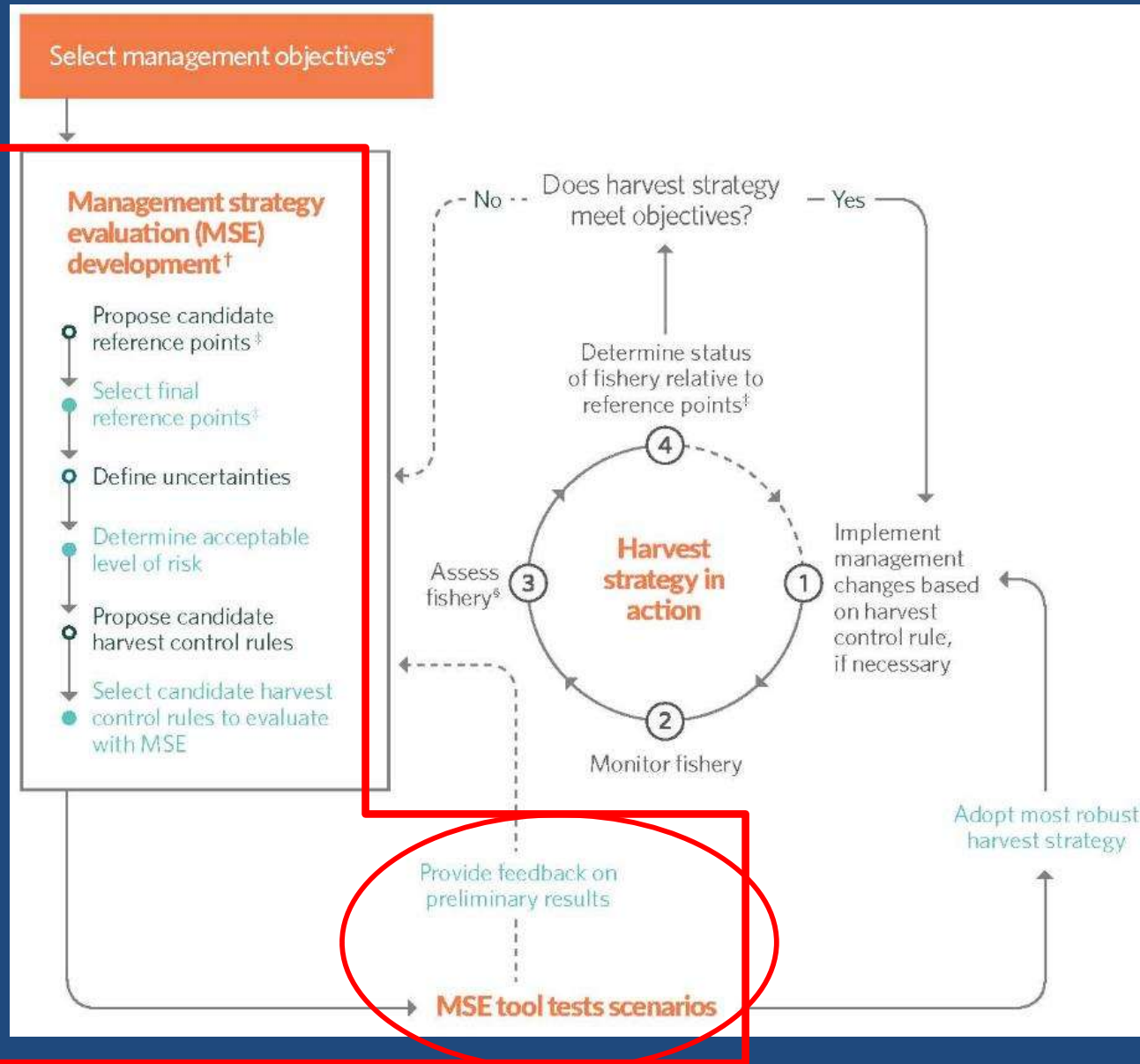


# MANAGEMENT STRATEGY EVALUATION

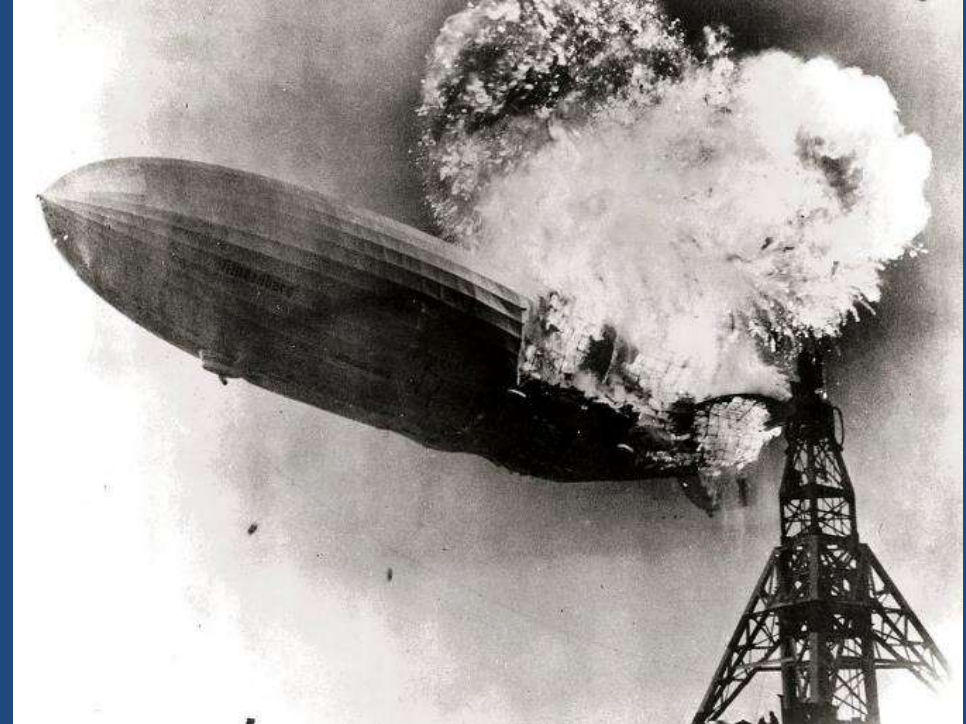
- Uses a simulation tool to measure the performance of MPs given uncertainties



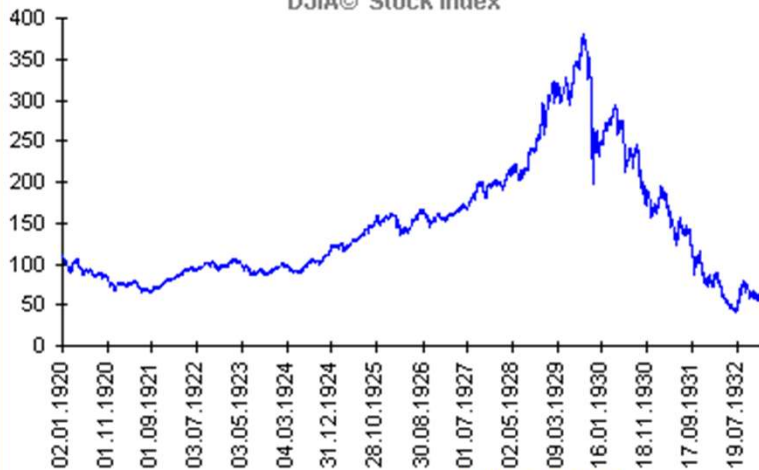
- The process for developing management procedures



# WHAT IS MSE?



Stock market crash of 1929:  
DJIA® Stock Index



SNIPER Market Timing - 2007 - <http://www.sniper.at>

If a management strategy does not perform adequately under simulation, we should not expect it to work in the real world!

-Andre Punt

# WHAT IS MSE?

- Tests MP options under different scenarios to find the one most likely to achieve objectives



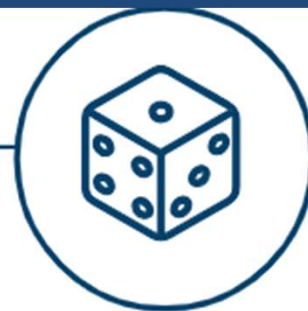
Enhanced transparency



Accounting for uncertainties



Collective understanding of expectations and trade-offs



Increased predictability



Enhanced likelihood of meeting objectives



Stakeholders and managers agree on desired outcomes for the fishery



Scientists create a virtual reality (simulation) of the system to test different MPs

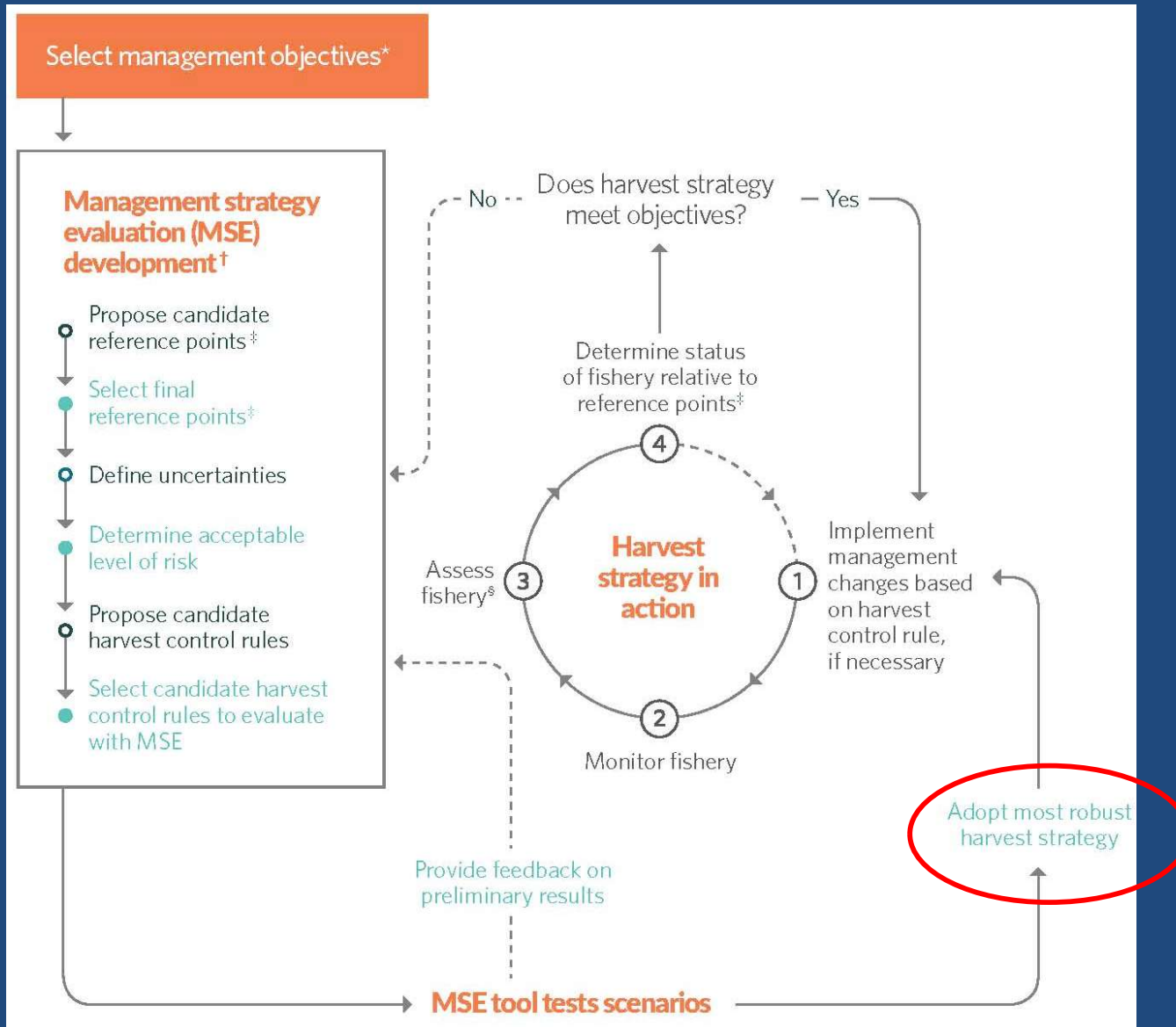


Stakeholders and managers review results



Managers adopt final MP and implement management actions

# ADOPTION!



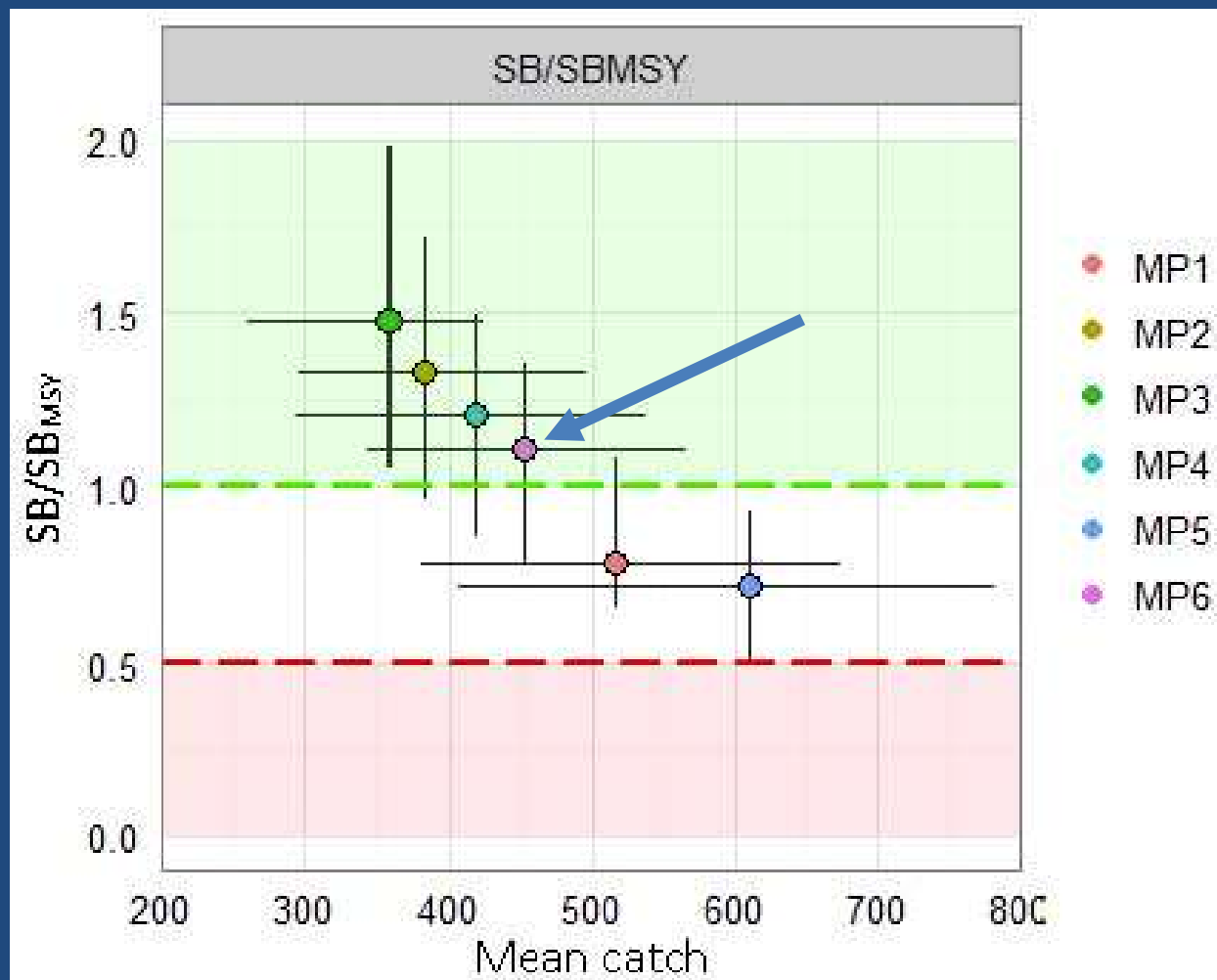
- Input from science-management dialogue group
- MSE results





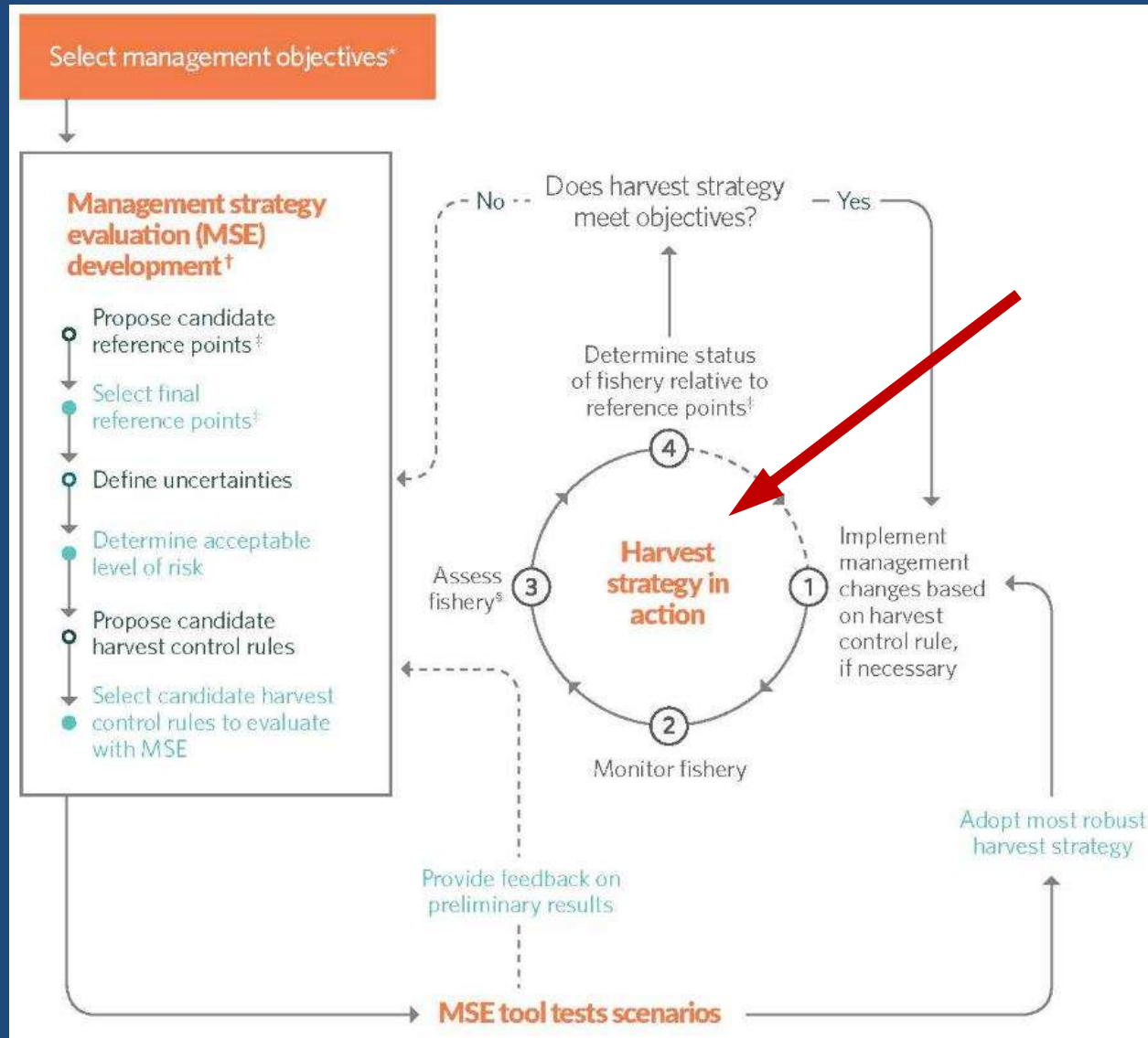
# SELECTING THE FINAL MP

- Balance tradeoffs
- Prioritize management objectives

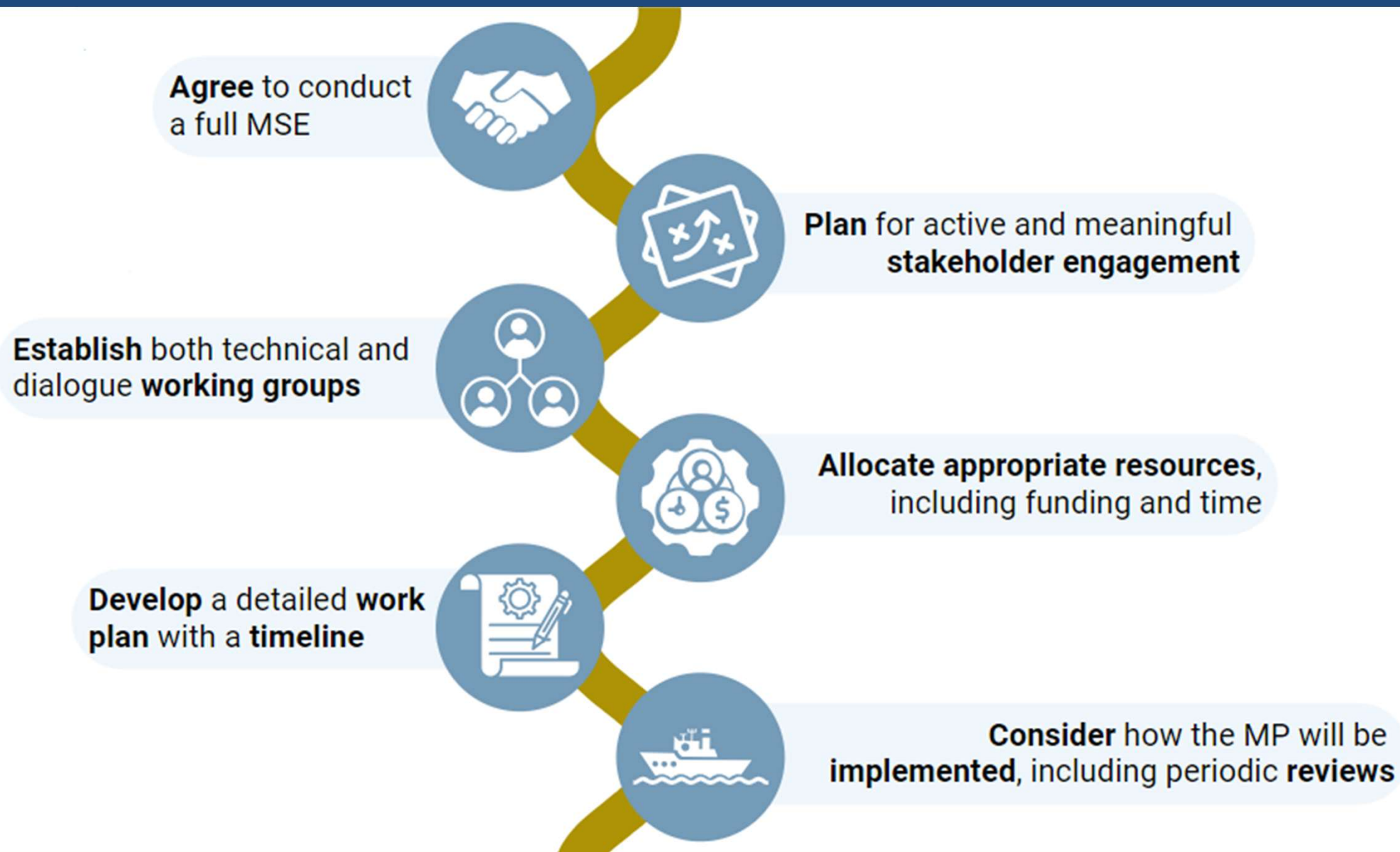




# MP IN ACTION!



# STRUCTURING THE PROCESS

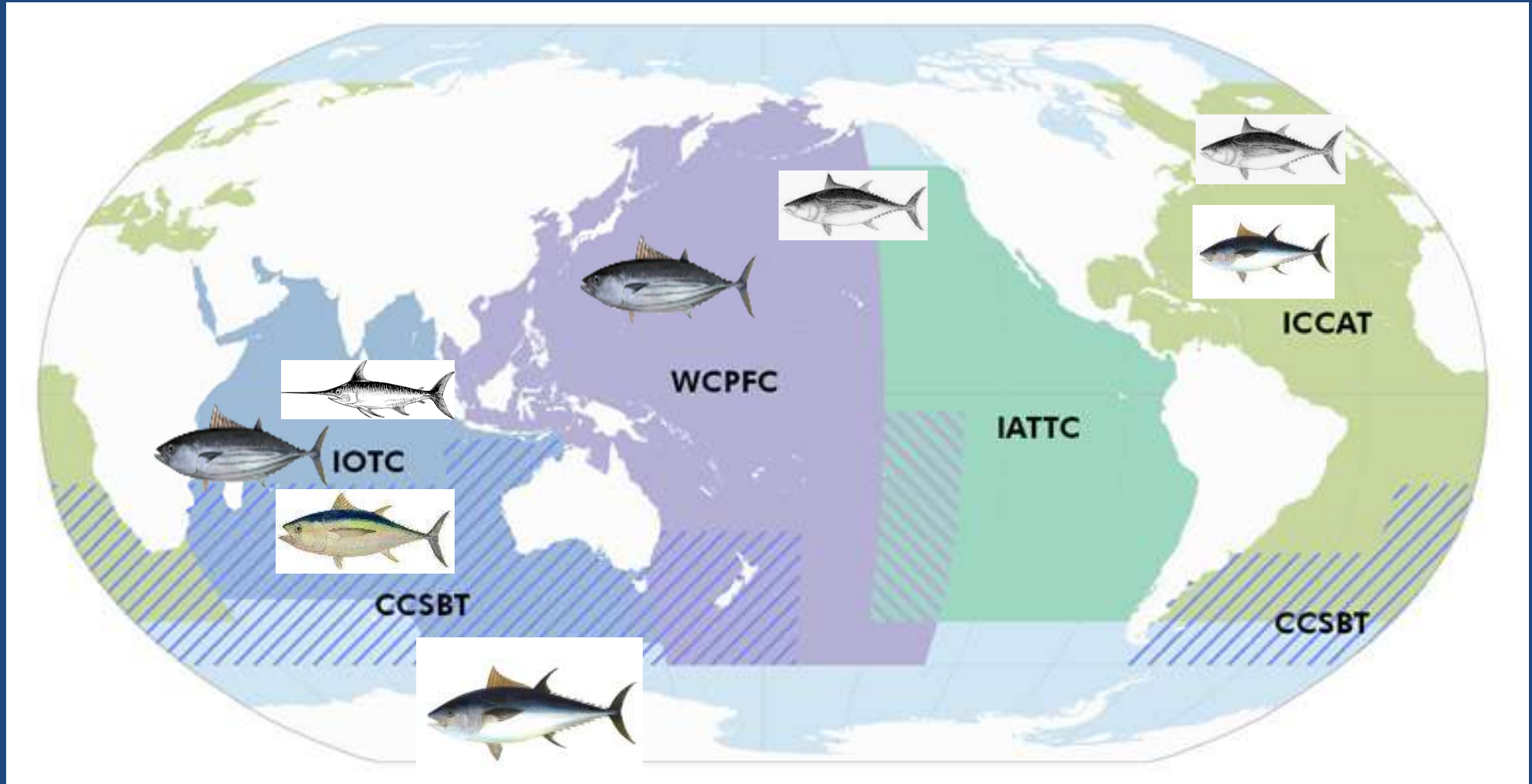


# COMMUNICATION IS KEY: DIALOGUE GROUPS & MP DEVELOPMENT

- Hallmarks of MP approach
  - Iterative exchange among managers and scientists
  - Stakeholder involvement throughout
- Dialogue group is forum for that interaction
- All tRFMOs have such groups, either formally or informally
- ICCAT uses the Panels

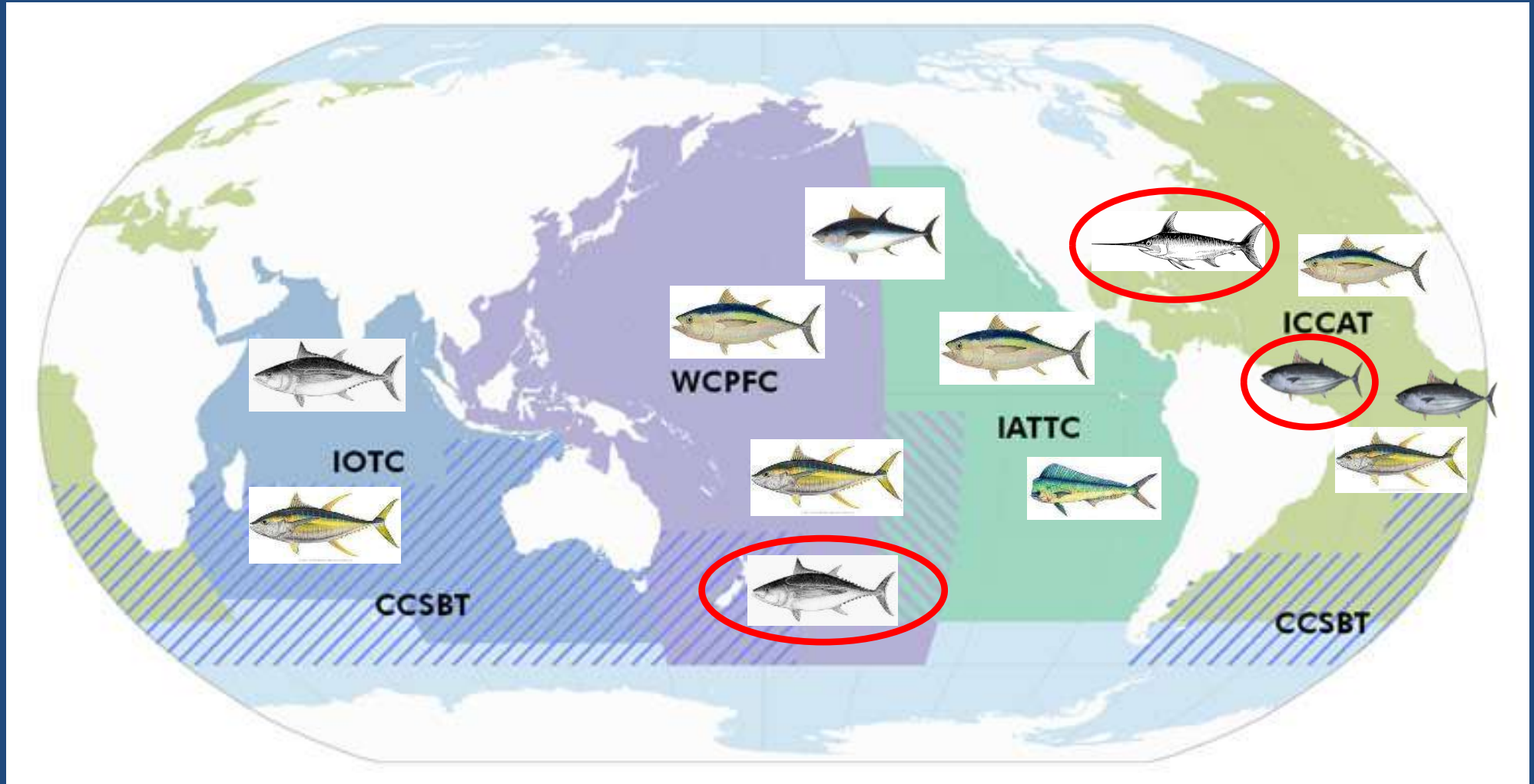


# MANAGEMENT PROCEDURES @ THE TRFMOS: IN PLACE





# MANAGEMENT PROCEDURES @ THE TRFMOS: IN DEVELOPMENT



# STREAMLINING THE PROCESS

- Default management objectives & performance indicators
- Default uncertainties
- MSE software packages with customizable MP options included
- Standardized presentation format
- 2 rounds of review



# STREAMLINING THE PROCESS

## Year 1

- Commission adopts conceptual management objectives
- SCRS initiates MSE

## Year 2

- Species Working Group provides feedback on MSE framework & preliminary results
- SCRS Plenary provides feedback on MSE framework & preliminary results
- Panel provides feedback on MSE at annual Commission meeting

## Year 3

- Species Working Group reviews revised MSE & provides feedback
- Species Working Group approves final MSE and results
- SCRS Plenary endorses final MSE and results
- Ambassador meeting to share final results
- Commission adopts MP, including operational management objectives

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WEBINARS

## WHAT IS MSE?



HS UPDATE

New information



# What problems can MSE be used for?

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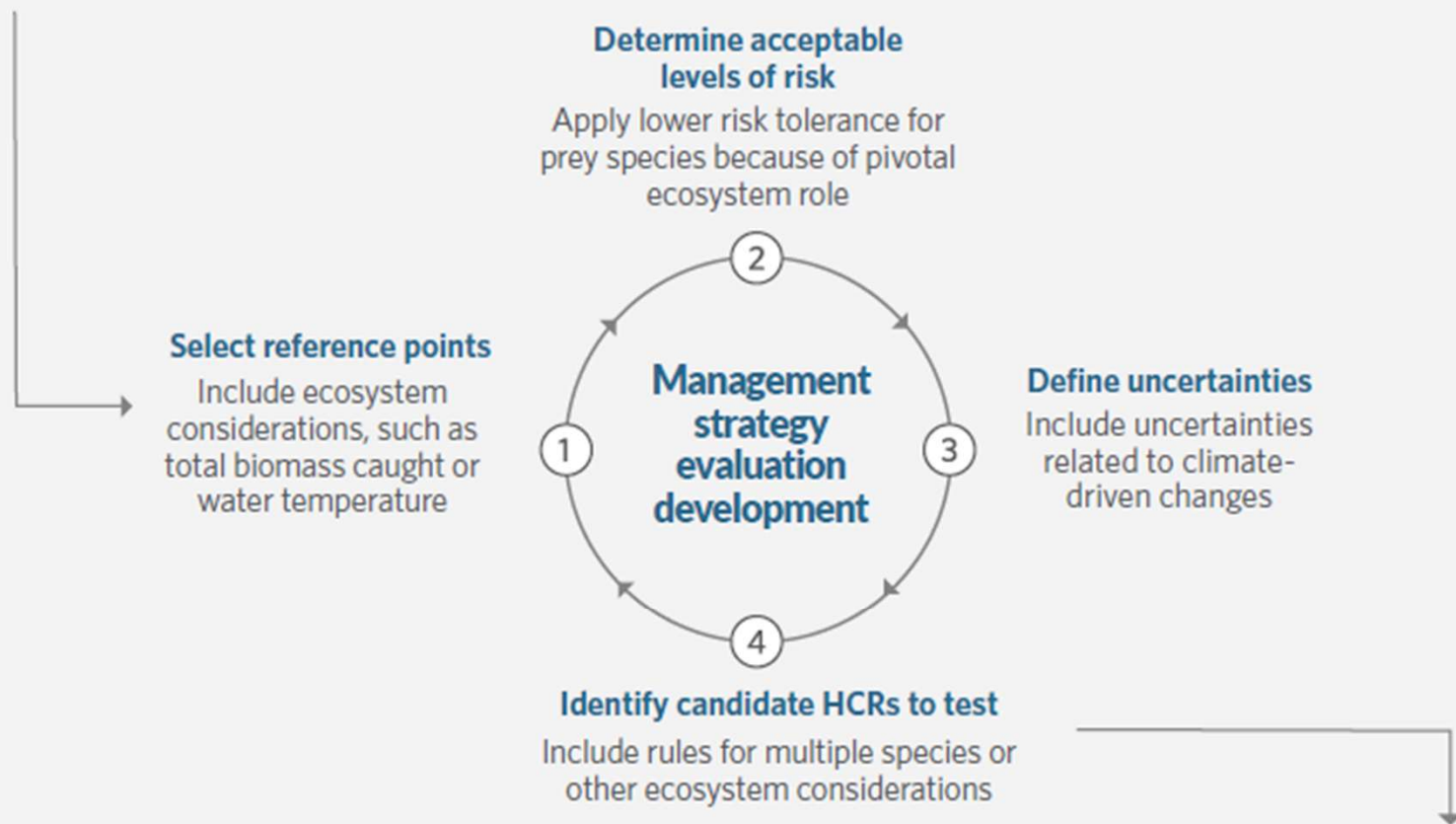
# WHY MANAGEMENT PROCEDURES?

- Offset natural variability and scientific uncertainty
- Account for risk and balance trade-offs
- Increase transparency, predictability and market stability; clarify scientific advice
- Facilitate swift, efficient management to ensure resource health and industry profitability
- Effectively implement the precautionary approach (UNFSA, MSC)

# EBFM & CLIMATE IN MSE

## Select management objectives

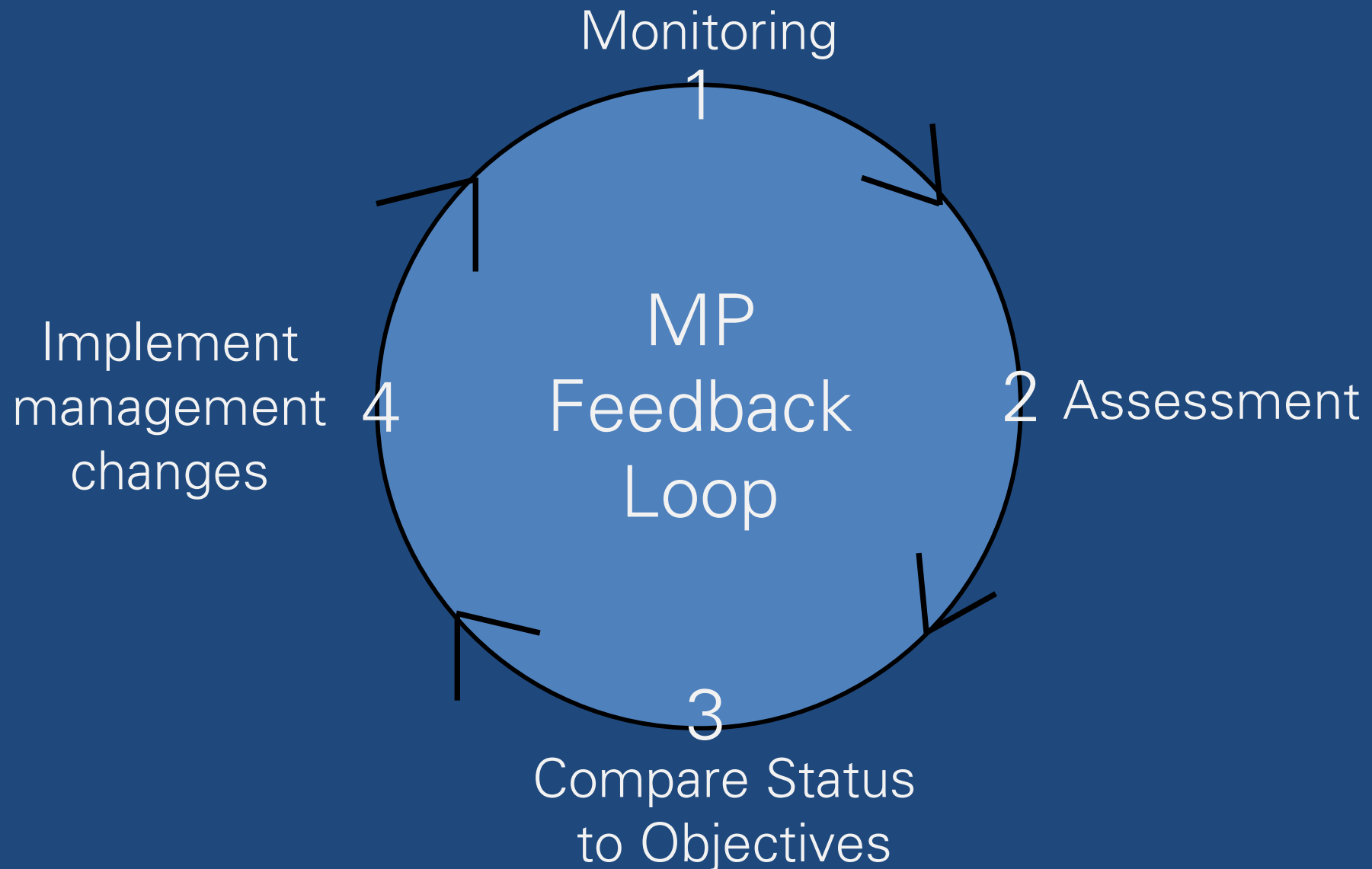
Include ecosystem objectives, such as a bycatch cap, forage/prey fish set aside for predators or habitat protection.



## Adopt most robust harvest strategy

Adopt multi-species harvest strategy to simultaneously manage target and bycatch species.

# MP AS ADAPTIVE MANAGEMENT

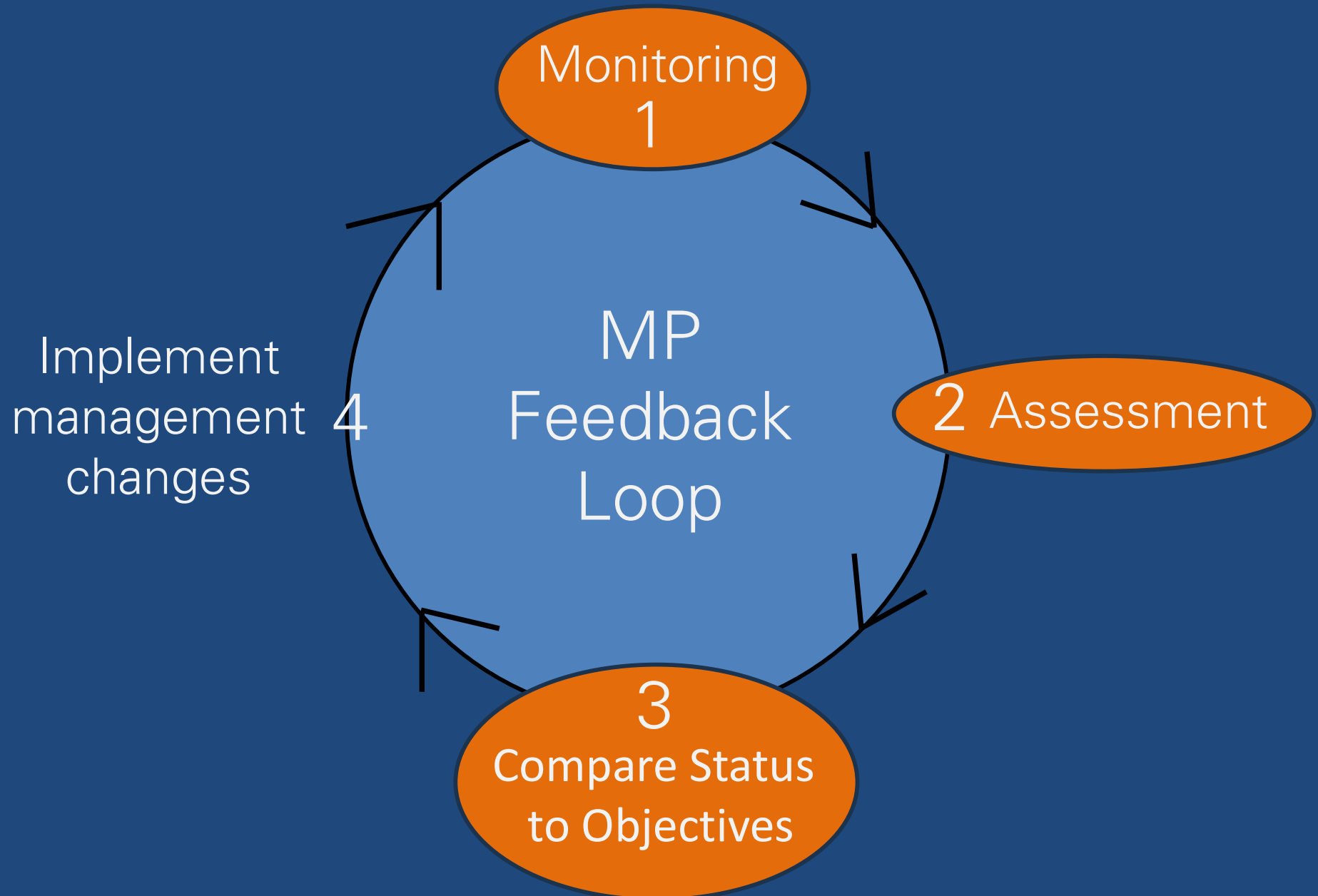




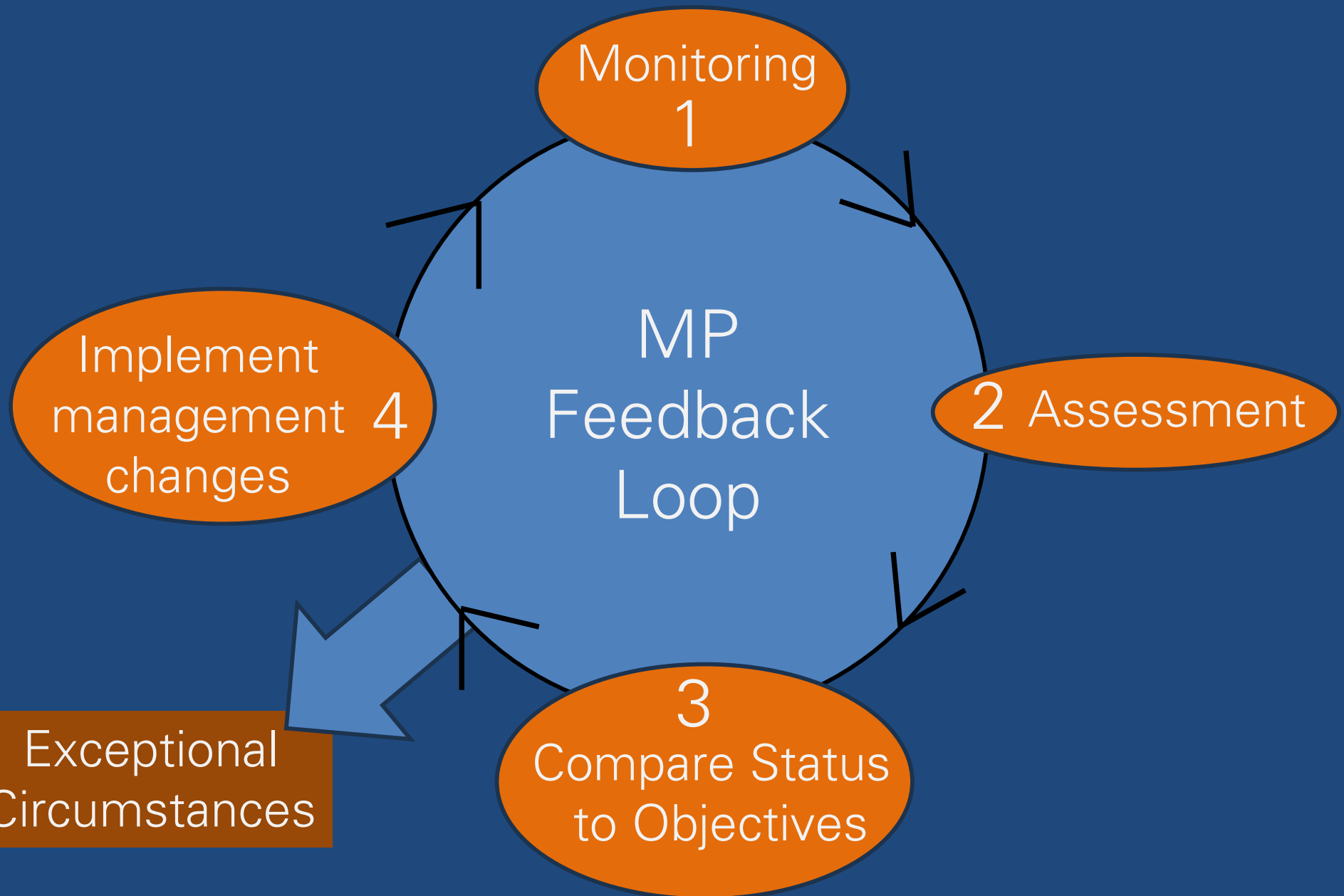
# EXCEPTIONAL CIRCUMSTANCES

- Triggered when must abandon the MP because
  - Stock trajectories get outside of the ranges tested by the MSE;
  - Extreme environmental regime shift occurs; or
  - Absence of data makes it impossible to estimate stock status and/or apply the agreed harvest strategy
- Managers must pre-agree what happens if exceptional circumstances are triggered, both for management and future of management procedure

# DETECTING CLIMATE IMPACTS

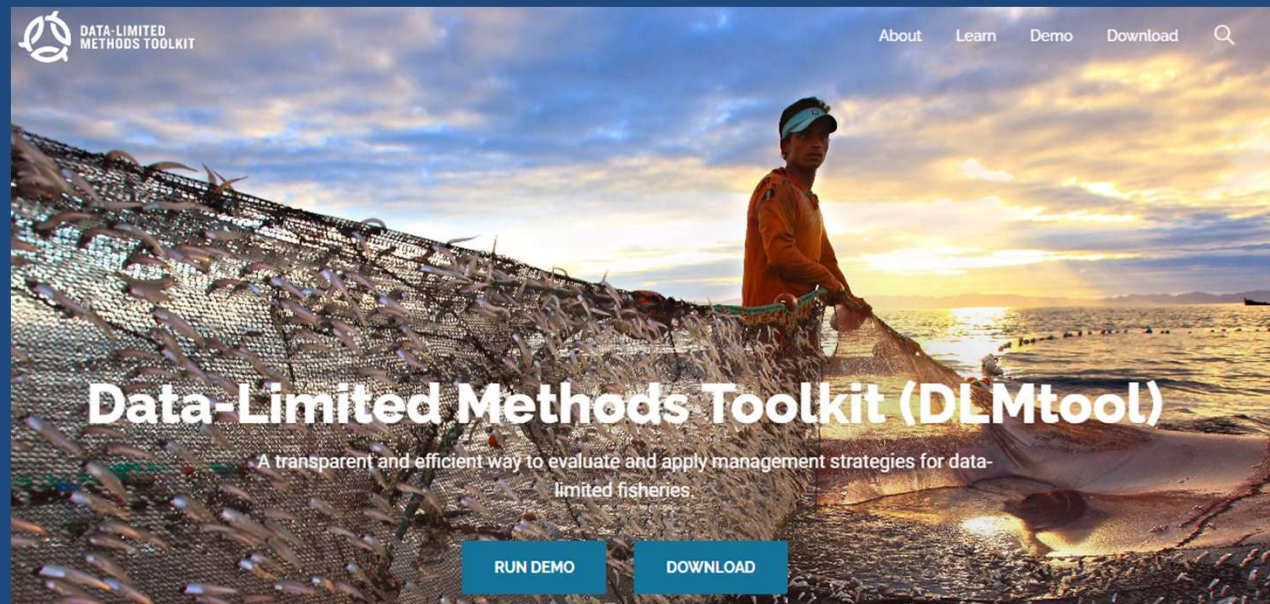


# RESPONDING TO CLIMATE IMPACTS



# MSE FOR DATA-LIMITED STOCKS

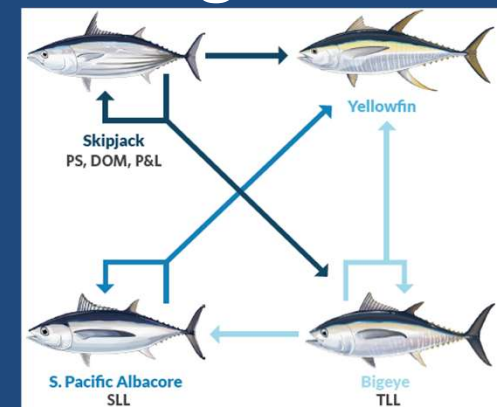
- Structure based on data availability & knowledge (catch, effort, size, life history)
- Account for uncertainty/range of observation error
- Added benefit: learn which data are most important





# FINAL CONSIDERATIONS

- Stakeholders: commercial (fishers & markets), recreational, and environmental
  - Manager control at front and back end
- Transparency of timeline, process, and purpose
- Flexibility: there are multiple paths forward
- Stock-based vs. Fishery-based MP/HCR
- Tools exist to make process more efficient
- Pragmatic application of PA & EAFM, including climate change considerations
- COMMUNICATION!





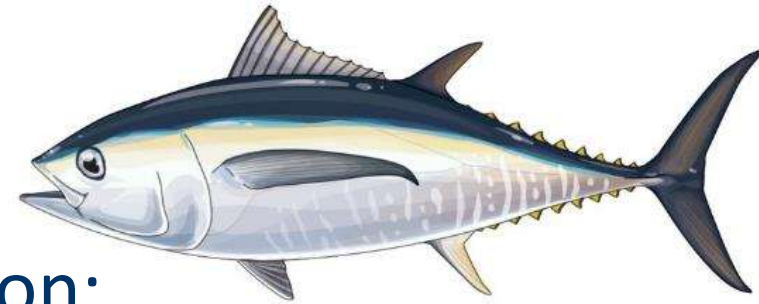
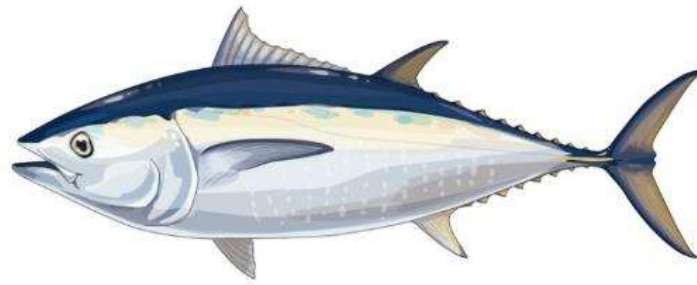
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