Data Limited Fisheries

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Session Outline

- **Simplified Stock Assessment**
  - Types of Data
  - Biological Reference Points
  - Yield-per-recruit Analysis

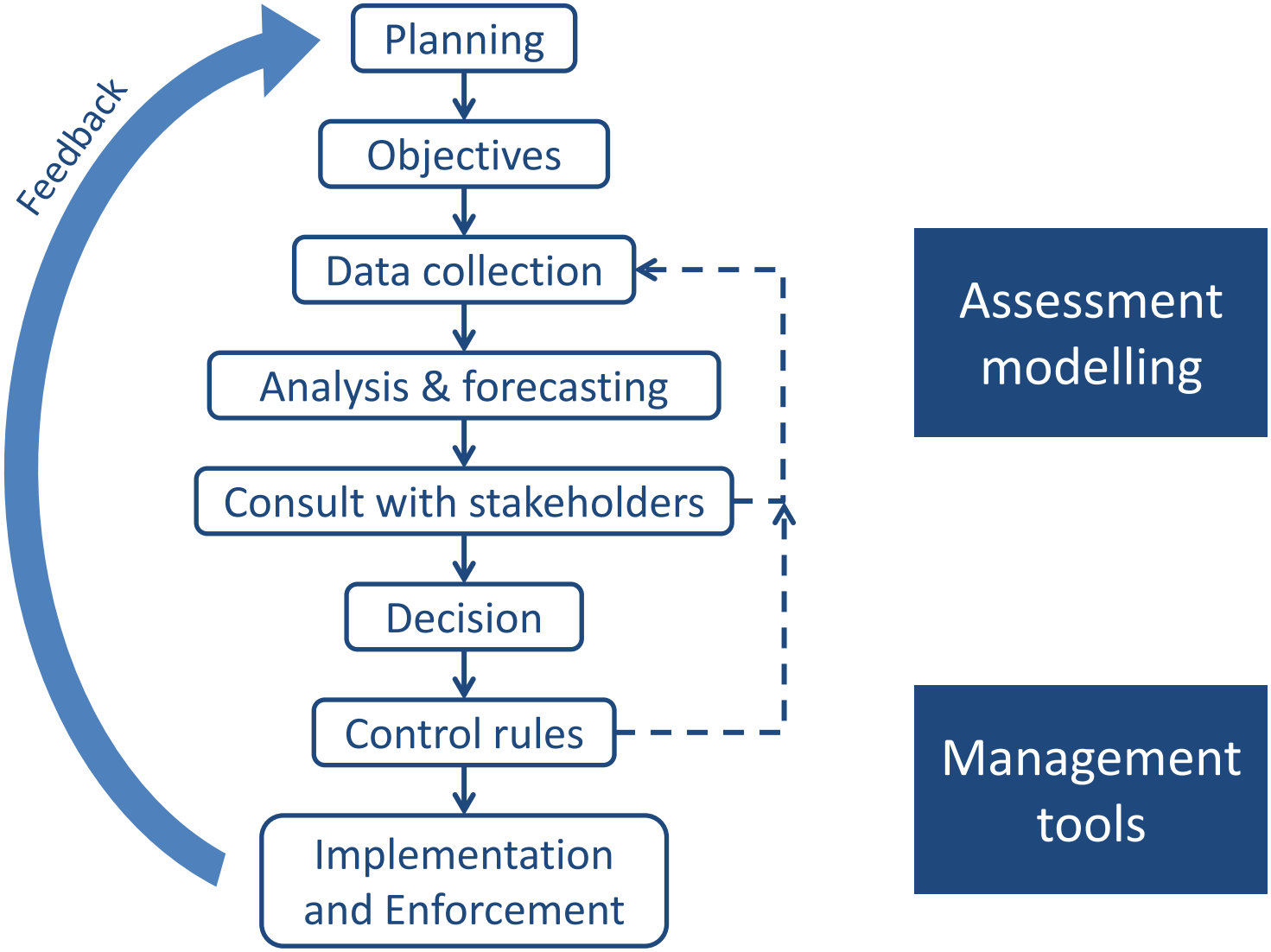
- **Data-Limited Tool Suite**
  - Fish Path & Approaching Data Limited Fisheries
  - Yield-per-recruit Example Exercise

Introduction to Stock Assessment

- The aim for fishery managers is to maintain a healthy fish population **and** a healthy fishing industry, while preserving vital recreational communities.

- A **stock assessment** provides decision makers with the information necessary to make **reasoned** choices.

The management process

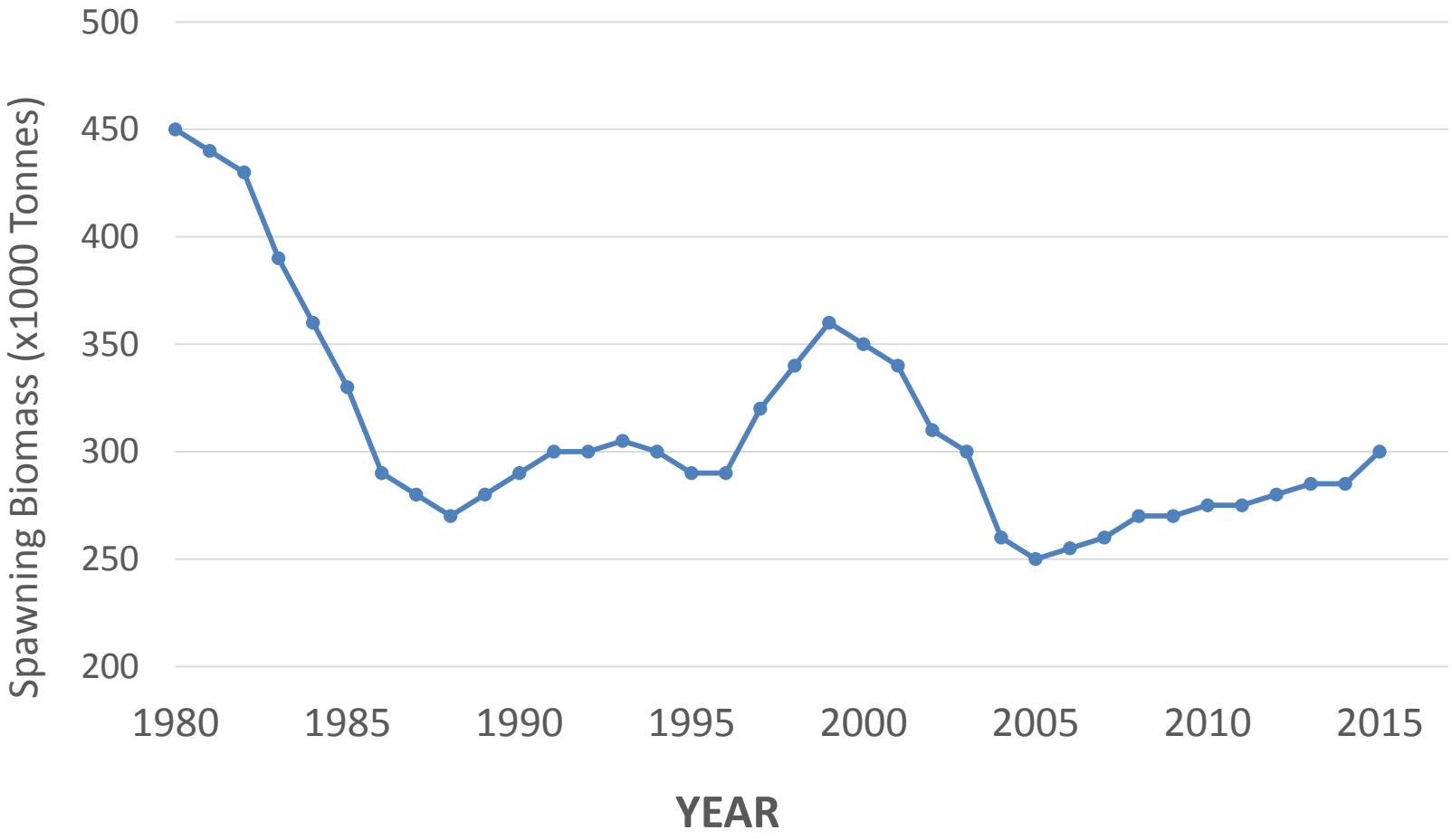


Simplified Stock Assessment

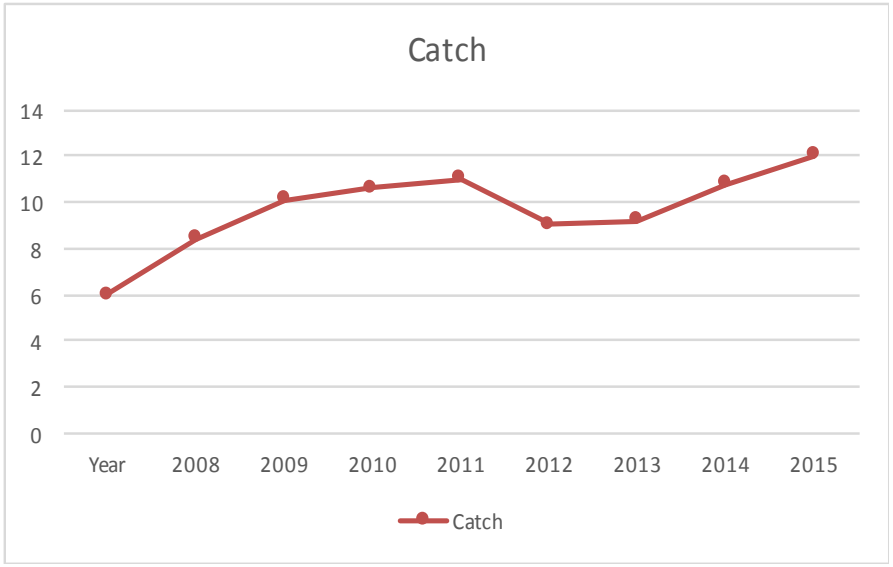
- A fishery stock assessment describes the **past** and **current status** of the stock
  - Major questions include:
  - How big is the stock?
  - Is it growing or reducing in size?

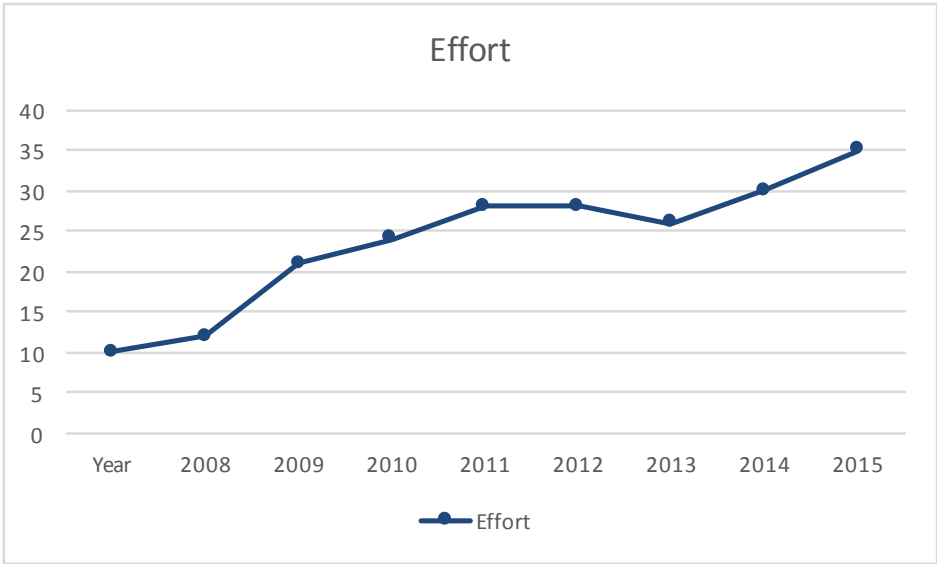
- An assessment may also attempt to make **predictions** about how the stock will respond to current and future management options.

Monitoring & Managing Biomass



Monitoring & Managing Catch & Effort





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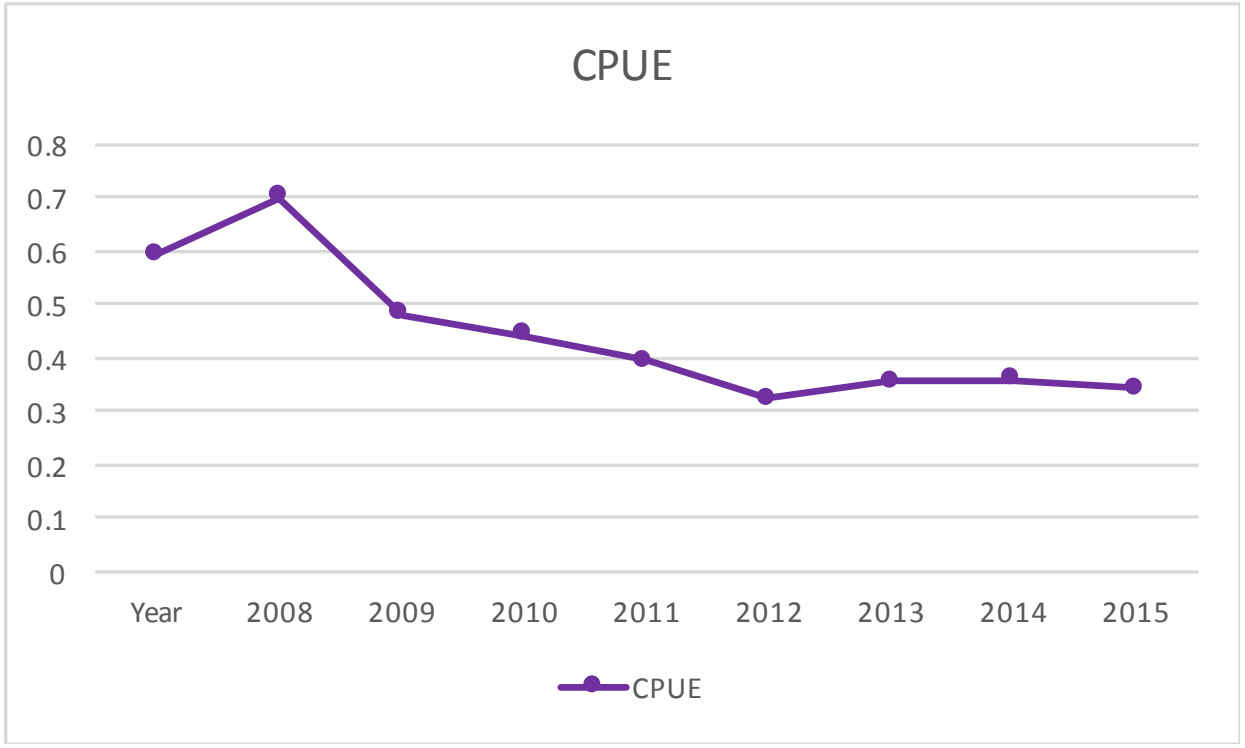


Types of Data for Assessment

- Fishery-Dependent Data
  - Landing Records (often total weight)
  - Effort Monitoring
  - Anecdotal Evidence (reports of change)

- Fishery-Independent Data
  - Research Surveys (creel survey, other interviews)

Biological Reference Points

- A biological reference point is a **concrete number**, a value for example, of stock size or fishing mortality.

- Biological reference points give decision makers guidance in determining whether populations are too small or fishing pressure is too great.

- They help provide **targets** for how large the population or how intense the fishing pressure should be.

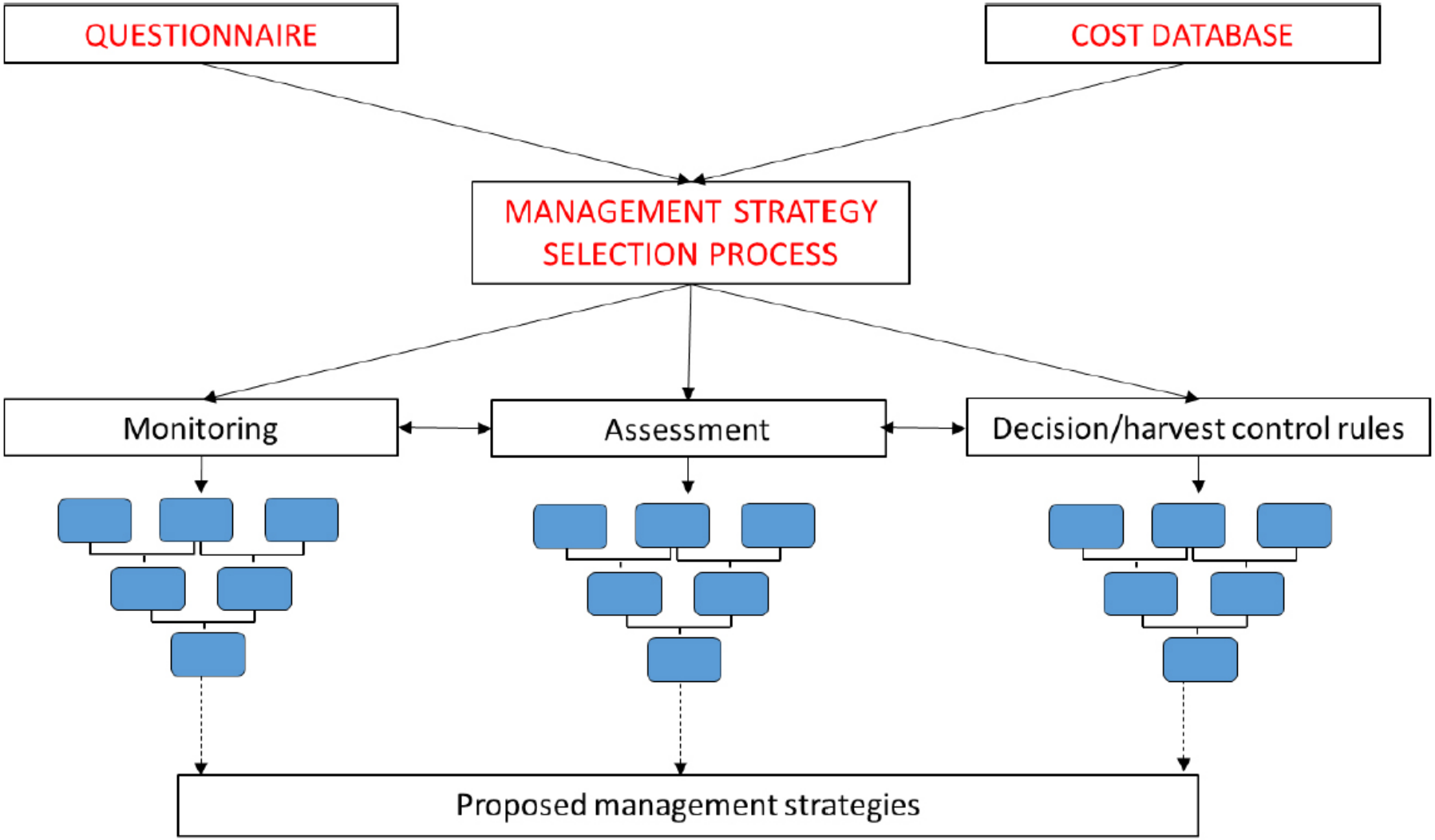
Yield-per-recruit Analyses

- Fishing mortality limits can be based on **yield-per-recruit** analyses, where yield is the weight of fish caught by the fishery and recruits are fish at the youngest age entering the fishery.

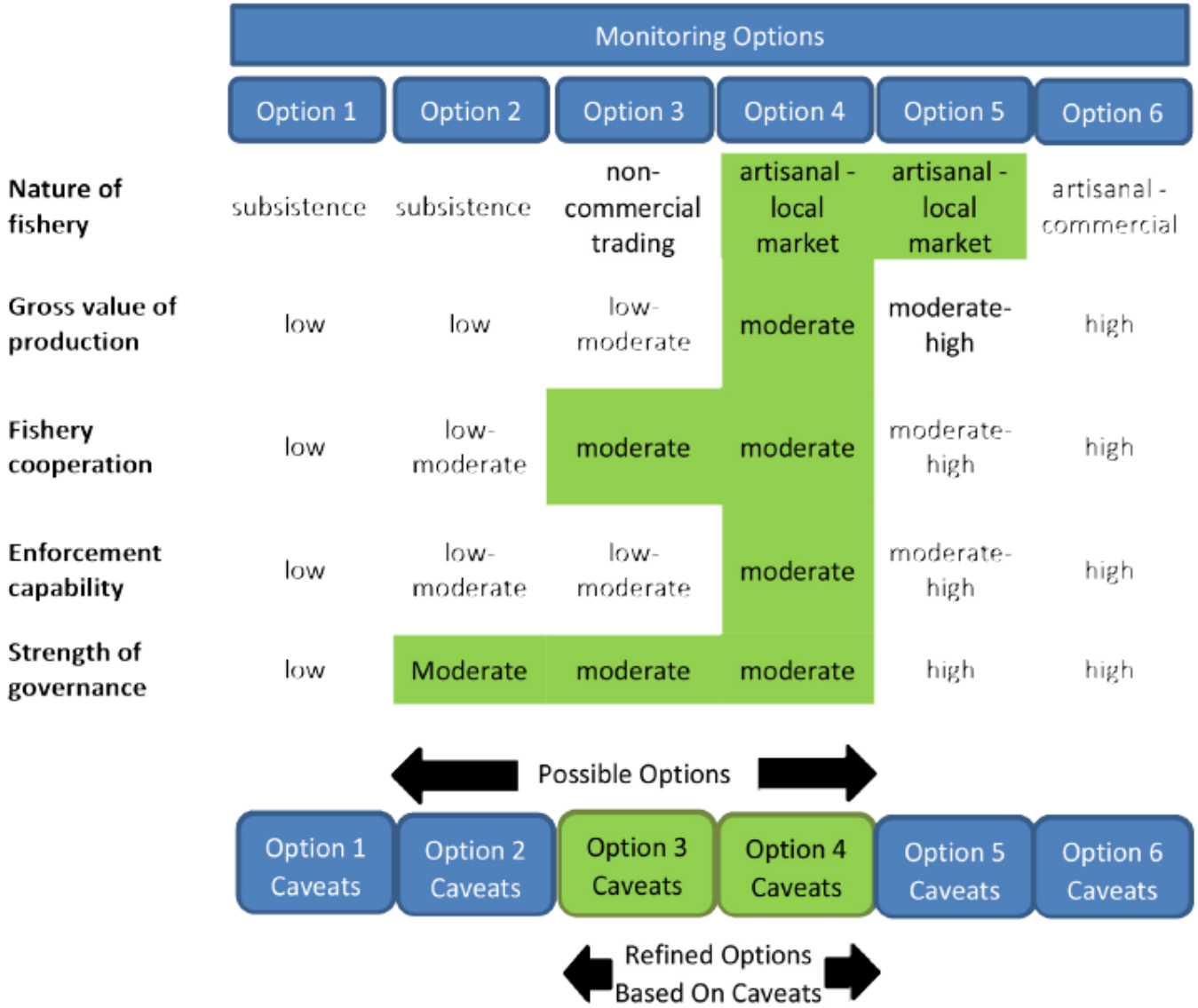
FishPath decision support tool

- Software process to determine which management techniques are suitable for a fishery based on five categories of information:
  - Available fishery dependent and independent data (quantitative or qualitative)
  - Biological/life history attributes of relevant species
  - Fishery operational characteristics
  - Socioeconomic indicators and characteristics
  - Governance context
- Makes recommendations from 39 possible management techniques

FishPath Process



FishPath Process



FishPath Case Study

- Peruvian Lorna Drum (*Sciaena deliciosa*)

FishPath Case Study

- Peruvian Lorna Drum (*Sciaena deliciosa*)
- Low-value demersal species
- Landed at 23 sites around the country, many different gear types used
- Not targeted by any fishery
- 10 years of good data on size/length composition
- Managed with size limit and gear restrictions (mesh size)
- Weak local governance

FishPath Case Study

- Management is “capacity-limited” rather than “data-limited” – the fishery is open access, and has a high level of illegal and unregulated fishing
- Many techniques were eliminated because they assume active targeting (Lorna Drum are caught as by-catch), and selectivity for Lorna Drum is unknown
- Options for decision rules were limited by:
  - Open access, opportunistic, multi-fleet and multispecies characteristics of the fishery
  - Lack of enforcement capability, and the suspected illegal/ unregulated/unreported catch.

FishPath Case Study

- Catch or effort limits were not possible
- Spatial and temporal restrictions were unlikely to be successful
- Gear restrictions to manage selectivity, and levies/taxes were the possible options
- Size limits would be difficult to enforce on the boats, but could be effectively applied on the market point by providing incentives to buyers for purchasing fish above the minimum length

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