

Comisión Interamericana del Atún Tropical  
Inter-American Tropical Tuna Commission

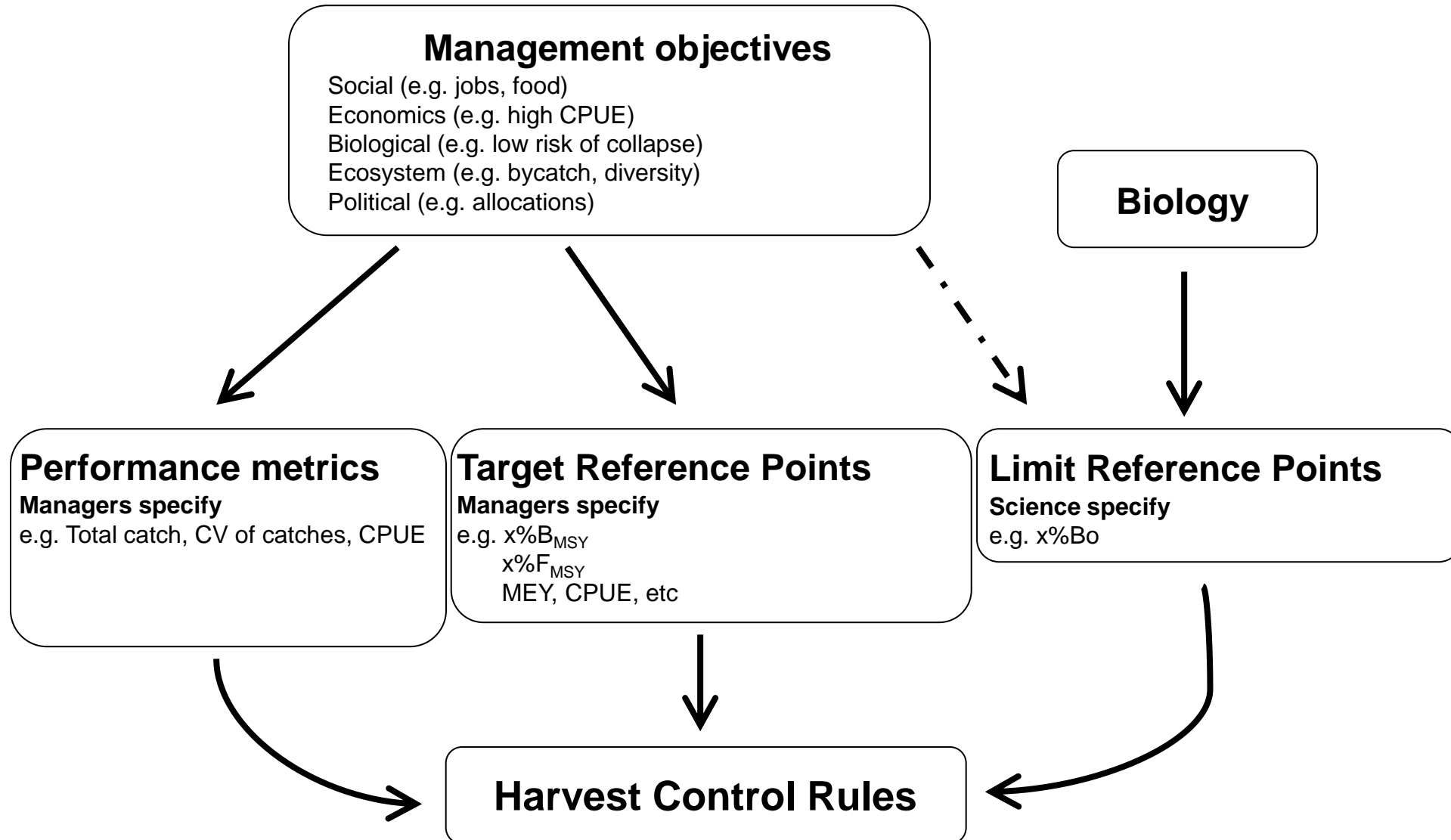


# Management Objectives

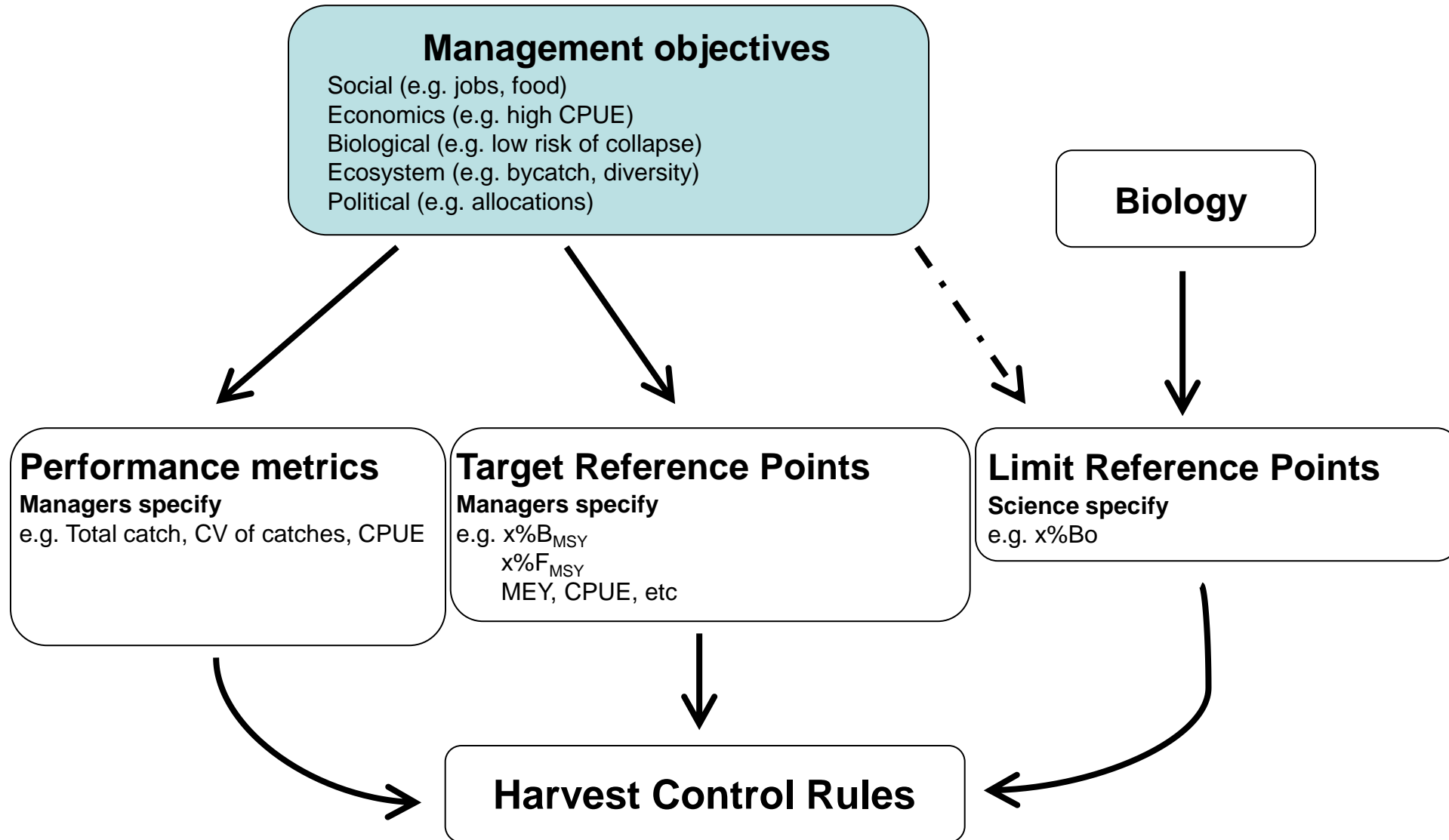
2<sup>nd</sup> IATTC Tropical Tuna MSE Workshop, *by videoconference*, May 03-04, 2021



# Management strategies



# Management objectives

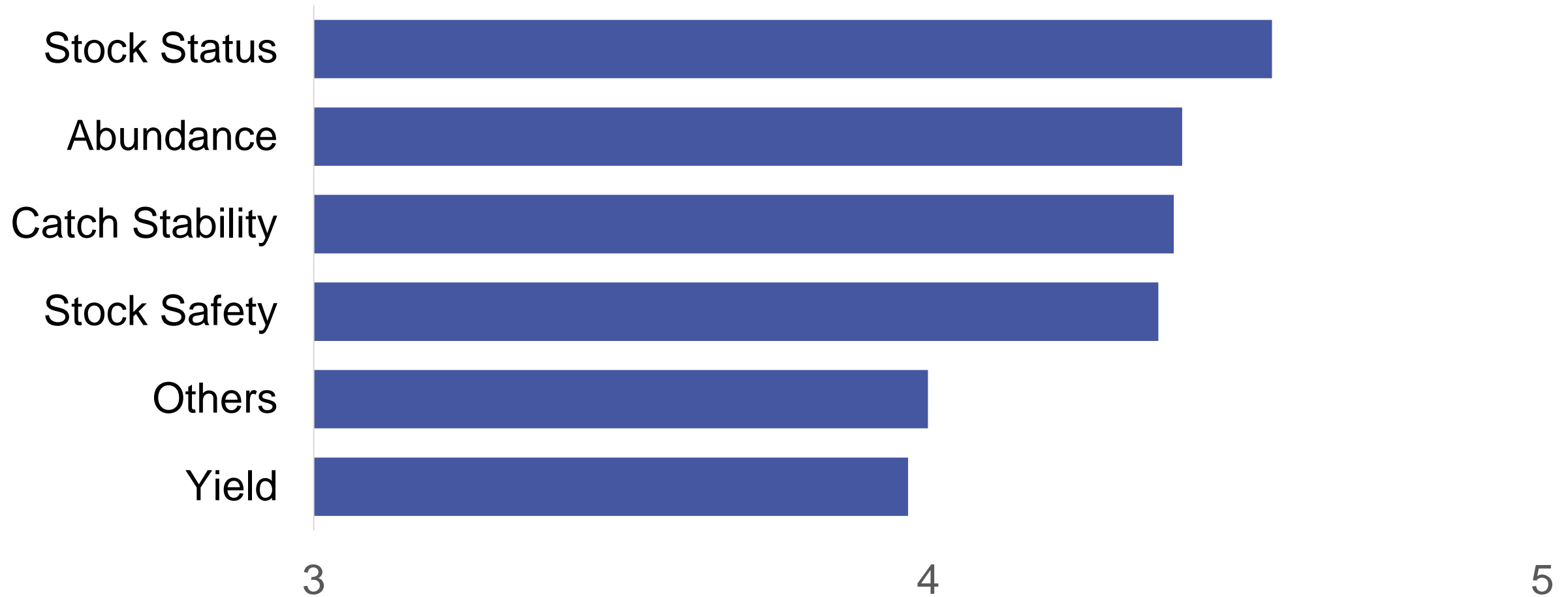


# Types of Management Objectives

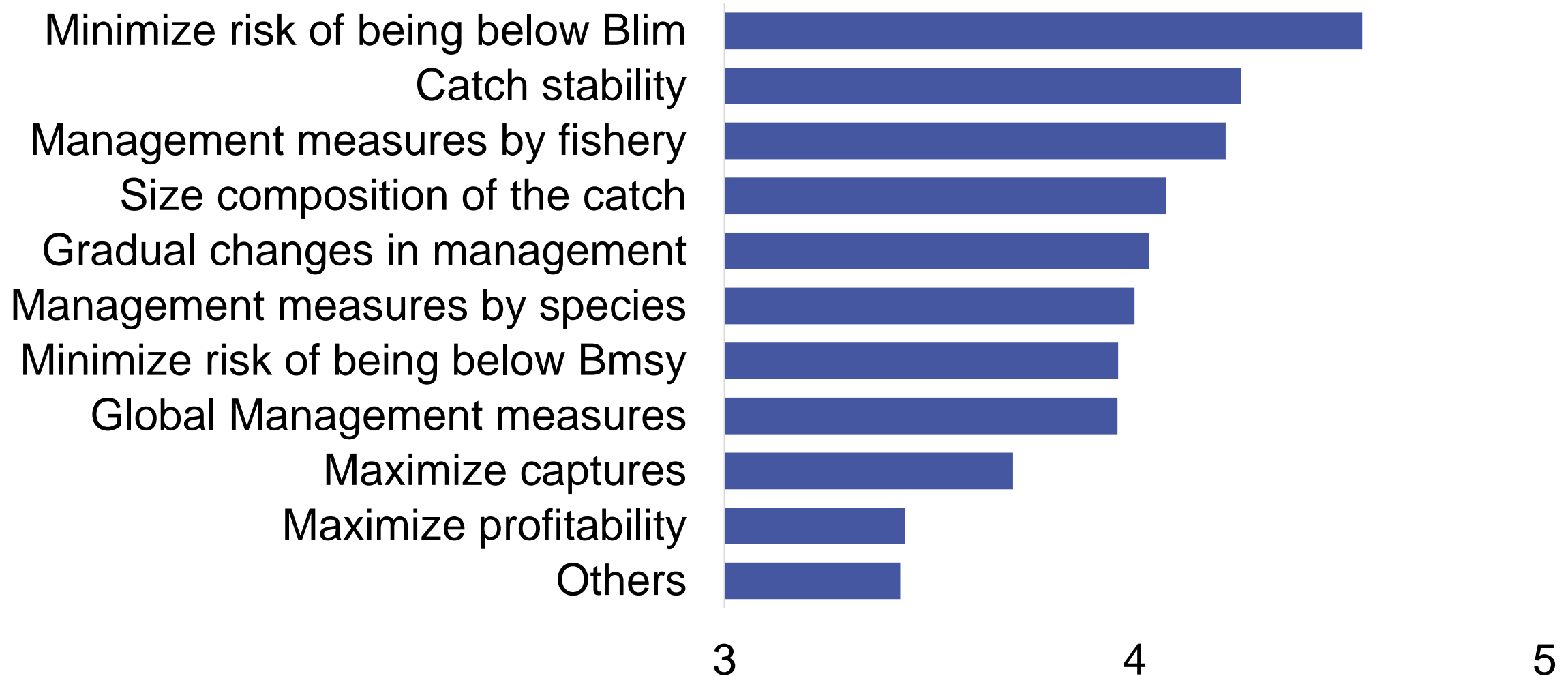
- **Status:** To maximize the probability of maintaining the stock in the green zone of a fishery's Kobe plot (e.g., not overfished\*, no overfishing\*).
- **Safety:** To minimize the probability that the stock will fall below the biomass limit reference point or  $B_{LIM}$ .
- **Yield:** To maximize catch (or effort) across regions and/or fishing gears.
- **Abundance:** To maximize catch rates to enhance fishery profitability.
- **Stability:** To maximize stability in catches to reduce commercial uncertainty by minimizing variability in catch from year to year.

\* "overfished", "overfishing" not used in IATTC stock status determination, because the Commission has not defined their threshold probabilities

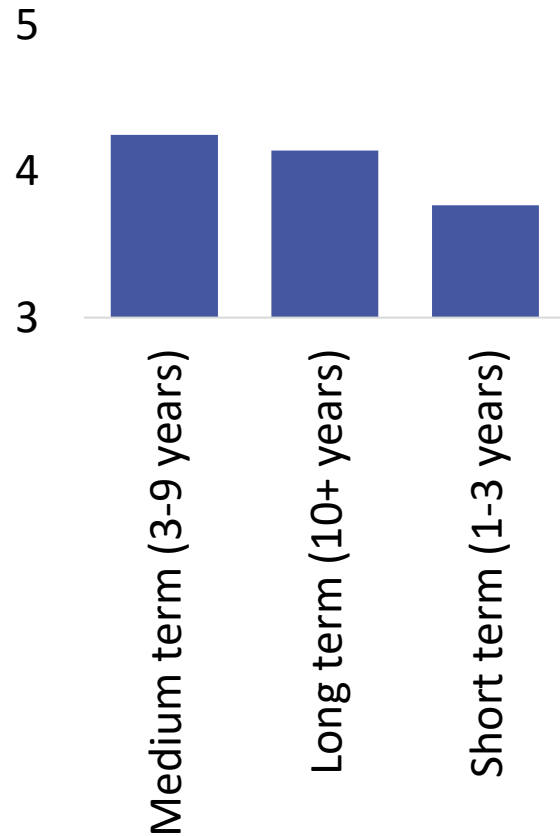
## What types of objectives are important to you?



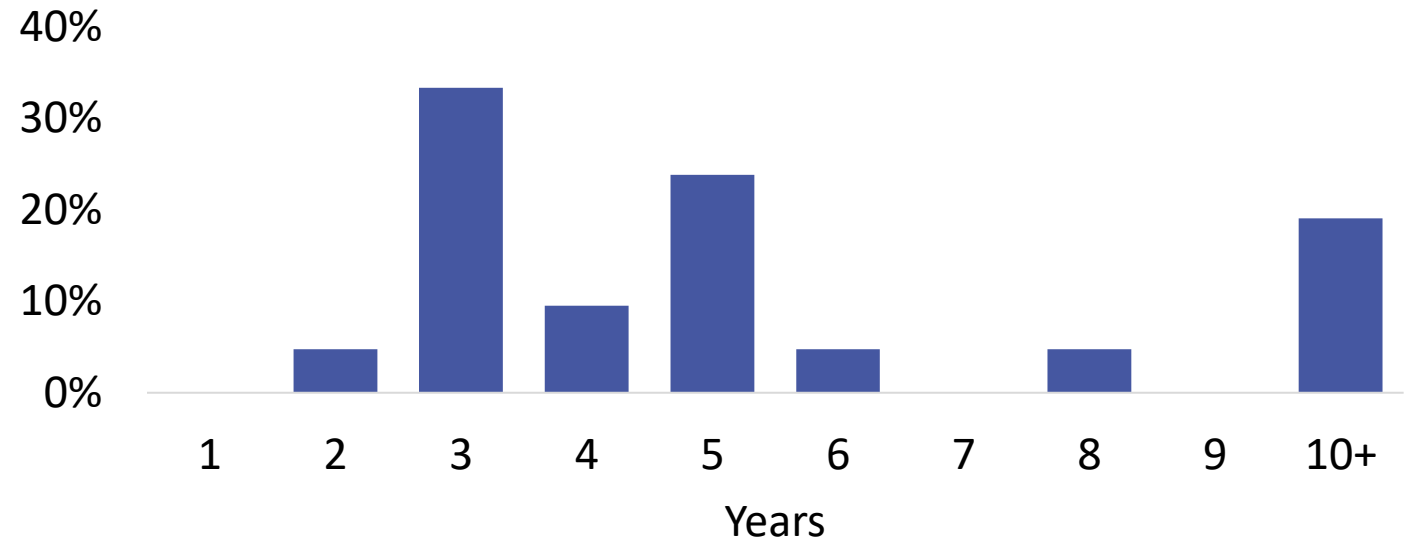
## Objectives and their importance



How important is time in your objectives?



Typical time of your objectives?



## Proposed Objectives (preliminary, to be refined in next workshops)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)
- Maintain catches by different fisheries above historical ranges
- Increase the maximum sustainable yield (MSY)
- Maximizing economic yield (MEY) in the long term
- Minimizing the bycatches of juvenile stages of non-target species
- Establish rebuilding plans by stock status and life-history of species
- Maintain viable fisheries in the long term (CPUE, all fisheries)
- Maintain low variability of catch or effort (e.g. 10%, consider asymmetry of change)
- Define emergency rules when faced with substantial changes
- Consider climate change



# Discussion on preliminary proposed objectives



## Proposed Objectives by Category (preliminary, to be refined)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)
- Maintain catches by different fisheries above historical ranges
- Increase the maximum sustainable yield (MSY)
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- Maintain viable fisheries in the long term (CPUE, all fisheries)
- Maintain low variability of catch or effort (e.g. 10%, consider asymmetry of change)
- Define emergency rules when faced with substantial changes
- Consider climate change

## Objectives on **Status** and **Safety** of the Stocks (preliminary)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)
- Maintain catches by different fisheries above historical ranges
- Increase the maximum sustainable yield (MSY)
- Maximizing economic yield (MEY) in the long term
- Minimizing the bycatches of juvenile stages of non-target species
- Establish rebuilding plans by stock status and life-history of species
- Maintain viable fisheries in the long term (CPUE, all fisheries)
- Maintain low variability of catch or effort (e.g. 10%, consider asymmetry of change)
- Define emergency rules when faced with substantial changes
- Consider climate change

## Proposed objectives on **Yield** and **Abundance** (preliminary)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)
- Maintain catches by different fisheries above historical ranges
- Increase the maximum sustainable yield (MSY)
- Maximizing economic yield (MEY) in the long term
- Minimizing the bycatches of juvenile stages of non-target species
- Establish rebuilding plans by stock status and life-history of species
- Maintain viable fisheries in the long term (CPUE, all fisheries)
- Maintain low variability of catch or effort (e.g. 10%, consider asymmetry of change)
- Define emergency rules when faced with substantial changes
- Consider climate change

## Proposed objectives on **Stability** (preliminary)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)
- Maintain catches by different fisheries above historical ranges
- Increase the maximum sustainable yield (MSY)
- Maximizing economic yield (MEY) in the long term
- Minimizing the bycatches of juvenile stages of non-target species
- Establish rebuilding plans by stock status and life-history of species
- Maintain viable fisheries in the long term (CPUE, all fisheries)
- Maintain low variability of catch or effort (e.g. 10%, consider asymmetry of change)
- Define emergency rules when faced with substantial changes
- Consider climate change

## Proposed **Other** (preliminary)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)
- Maintain catches by different fisheries above historical ranges
- Increase the maximum sustainable yield (MSY)
- Maximizing economic yield (MEY) in the long term
- Minimizing the bycatches of juvenile stages of non-target species
- Establish rebuilding plans by stock status and life-history of species
- Maintain viable fisheries in the long term (CPUE, all fisheries)
- Maintain low variability of catch or effort (e.g. 10%, consider asymmetry of change)
- Define emergency rules when faced with substantial changes
- Consider climate change

## Objectives on **Status** and **Safety** of the Stocks (preliminary)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (with a high probability)
- Maintain stocks at healthy levels in the green sector of the Kobe plot (50%)
- Minimize annual probability of falling below trigger/limit reference points (spawning biomass)

## Objectives on **Status** and **Safety** of the Stocks (preliminary)

- Maintain stocks at healthy levels in the green sector of the Kobe plot (MSY)
  - *With a probability greater than 75% over 20 years*
  - *With a probability of 50%*
- Minimize **annual** probability of falling below trigger/limit reference points (spawning biomass)
  - What trigger reference points? More to discuss during HCR presentation
    - **More proposed by US by e-mail and mentioned during session**
  - What limit reference points? **Define actions when crossing RPs as part of HCRs**
    - *Current IATTC's: 7.7% of virgin spawning biomass, less than 10%*
    - **More precautionary limit level, less than 5%**
- **Other objectives on Status and Safety of Stocks?**
  - ...

## Proposed objectives on **Yield** and **Abundance** (preliminary)

- Maintain catches by different fisheries above historical ranges (**Changes in capacity considerations**)
  - **What range of years?**
  - **What fisheries? Caps?**
- Increase the maximum sustainable yield (MSY)
  - **Species-specific MSY**
  - **What combination of gears? What reference years?**
- Minimizing the bycatches of juvenile stages (**sizes-ages**) of non-target species (**BET-YFT**)
  - **What combination of gears? What reference years?**
- Maintain viable fisheries in the long term (CPUE, all fisheries) (**Depend on economics**)
  - **Use proxies such as CPUE reference levels, reference years? Short-term Long-term**
- **Other objectives on Yield and Abundance?**
  - **...**



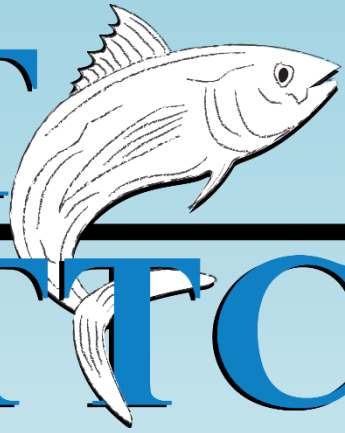
## Proposed objectives on **Stability** (preliminary)

- Maintain low annual variability of allowed catch or effort (include Effort)
  - *Changes in catch limit (Effort, Days of closure) between management periods should be less than 20%*
    - *10% effort?, 20% capture?*
  - *Changes in catch limit (Effort, Days of closure) between management periods should be less than 10% (note differences between effort and catch %)*
  - *Gradual changes in catch limit (Effort, Days of closure)*
  - *Consider asymmetry of changes (precautionary)*
    - *How asymmetric?*
  - *Consider different time span of management periods and associated variability in Catch or Effort*

## Proposed **Other** (preliminary)

- Maximizing economic yield (MEY) in the long term
  - Future work? Current MSE framework does not include economics (proxies?)
- Establish rebuilding plans by stock status and life-history of species
  - See specification of alternative HCRs
- Define emergency rules when faced with substantial changes
  - See specification of alternative HCRs
- Consider climate change
  - See specification of MSE Operating models

# CIAT IATTC



Questions?