### Introduction to Interim Harvest Strategy Framework for Tropical Tuna in IAW Campbell Davies, on behalf of the Harvest Strategy Steering Committee and Technical Working Group

1<sup>st</sup> HS Implementation workshop, Bogor November 2018



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# What is a harvest strategy?

An agreed basis for *monitoring* and *assessing* a fishery AND; adjusting the level of fishing;

using a specified *management measure*,

BASED ON the *harvest control rule* 

to meet specific *objectives* 





# **Objectives and Reference Points**

#### Objective

"to ensure the sustainability of yellowfin tuna, bigeye tuna and skipjack tuna resources" through harvest strategy implementation".

#### **Interim Limit Reference Point**

To maintain spawning stock biomass above 0.2 of the unfished level with a probability of 90%.

#### **Rationale for Limit Reference Point**

- Reduce the risk of declines in average recruitment to the stock
- Maintain higher catches, on average, over the long-term



# **Objectives and Reference Points**

#### **Target Reference Point**

"A target reference point for tuna in archipelagic waters has not been decided as it requires more detailed consideration of implications for social and economic objectives for the fishery."

WCPFC TRP for Skipjack = 50% unfished spawning biomass IOTC Interim TRP for SKJ = 40% unfished spawning biomass

#### **Rationale for Target Reference Point**

- To maximise the long-term social and economic benefits from the fishery.
- Will be investigated further through stakeholder consultation and MSE



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# **Role of Stock Assessment**

- Advice on stock status is provided by regional stock assessments from WCPFC.
- Harvest Strategy Framework uses them in two ways:
- Compare stock status to Reference Points for monitoring status
- Used output to "condition" simulation models for testing harvest strategy using MSE





### **Current WCPFC advice on stock status - SKJ**



## **Current WCPFC advice on stock status - YFT**



### Harvest Strategies and Management Strategy Evaluation

### Purpose

#### Harvest strategy

- To provide advice on change in level of fishing to meet management objectives based on agreed monitoring, HCR and management measures.
- Management Strategy Evaluation (MSE, not to be confused with MSC!)
  - a technical and stakeholder process to design and test a *range* of harvest strategies and;
  - identify important uncertainties that impact on effectiveness of management
  - select the most appropriate one for implementation.



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# **Steps in the MSE process**

- **1. Design OM** based on what you know (and don't know) about the system and data
- **2. Detailed analysis** of available data to **understand** sources of bias and observation **uncertainty**
- 3. Identify plausible management measures for fishery
- 4. Design different plausible Harvest Strategies
- Do initial MSE → to identify candidate Harvest
  Strategies
- Iterative dialogue with stakeholders and managers to select and refine most appropriate HS based on performance.





Source: Satria & Sadiyah (2018)



## **Operating models for SKJ for MSE**





- Use fishery and stock parameters from regional stock assessment to characterise Operating Models for case study area for MSE
- "Virtual reality" for testing harvest strategies and defining reference points, given "best available science"

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# **Operating Models for YFT for MSE**





- Preliminary Operating Models for MSE developed based on Area 7
- From 2017 WCPFC Stock
  Assessment
- OMs require further development to represent plausible uncertainty in biology, monitoring and management.





## Skipjack framework





## Yellowfin framework





# **General Management Measures**

- Limit on use of Fish Aggregating Device.
- Spatial closure (of important spawning or nursery grounds) and temporal closure (during important events, such as spawning).
- Number of fishing days (per gear, for semi industrial and industrial vessels).
- Number of vessels limited entry (per gear; for semi industrial and industrial vessels through licensing, permits, taxing, royalties).
- Total Allowable Catch (TAC) limits per Fishery Management Area.



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### Catch by gear by stock assessment region



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### **Need to define specific Management Measures**

- Need to define practically feasible, affordable, effective management measures to control fishing
- Must cover the major sources of fishing mortality to be effective and equitable
- Design process must be consultative and draw on Industry, NGO and provincial and local government experience and expertise to account for regional differences in the fisheries and result in practical options.
- Simplicity is a virtue; the more complex a management measure, generally, the more difficult and expensive it is to monitor and enforce.



# **Action Plan**

- Maintenance, extension and improvement of fisheries monitoring and data collection programs
- Targeted research for biology and improved CPUE standardisation
- Testing, refinement and selection of operational objectives and harvest strategy (MSE process)
- Specification and implementation of management measures
- Confirmation of regulatory and institutional arrangements required for harvest strategy implementation
- Policy, stakeholder and science capacity development for harvest strategy implementation



# Summary

- Harvest Strategy Framework provides a foundation on which to build and identifies requirements for practical implementation
- The HS process to date has:
  - Consolidated and reviewed available monitoring series and identified those "fit for purpose" for harvest strategies for SKJ and YFT.
  - Engaged a wide range of Industry, government and NGO stakeholders
  - Build understanding and technical capacity in operational fisheries management and HS and MSE
  - Developed prototype MSE models required to test and select harvest strategies
  - Contributed to meeting some elements of the MSC FIP process.
  - Provided a draft action plan for further development and implementation
- But, just the start of the journey...



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