



# Framework for Tropical Tuna Harvest Strategy in IAW

Campbell Davies on behalf of many others.

4<sup>th</sup> Harvest Strategy Implementation Meeting,

Bogor and Virtual, 9-10 December, 2021

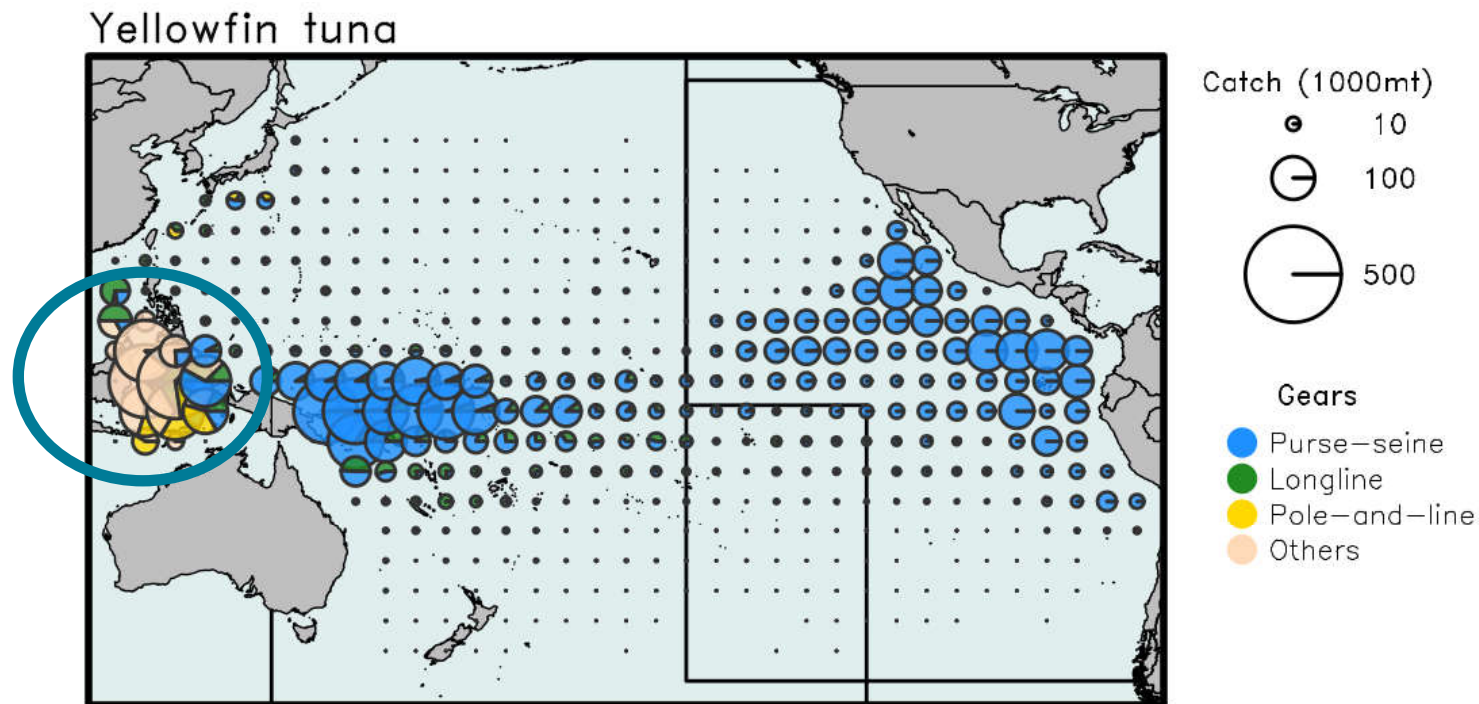


Australian Government  
Australian Centre for  
International Agricultural Research



# Highly migratory tuna

- Tropical tuna are:
  - highly migratory
  - Fished by many fleets from many countries
- Assessed and managed cooperatively at regional level



Australian Government  
Australian Centre for  
International Agricultural Research



# Role of Stock Assessment, Harvest Strategy and Management Strategy Evaluation

## Stock Assessment:

- Estimate the state of the stock and the level of fishing mortality
- Regional stock assessments are source of *best scientific advice*

## Harvest Strategy:

- An agreed basis for monitoring a fishery and **adjusting the level of fishing** to meet specific objectives.
- Generally, are based on “**feed-back**/adaptive management”.
- Aim of IAW HS for tuna is to adaptively manage the level of fishing

## Management Strategy Evaluation:

- A simulation modelling approach used to **test** a range of HS and **select one with most acceptable management performance**



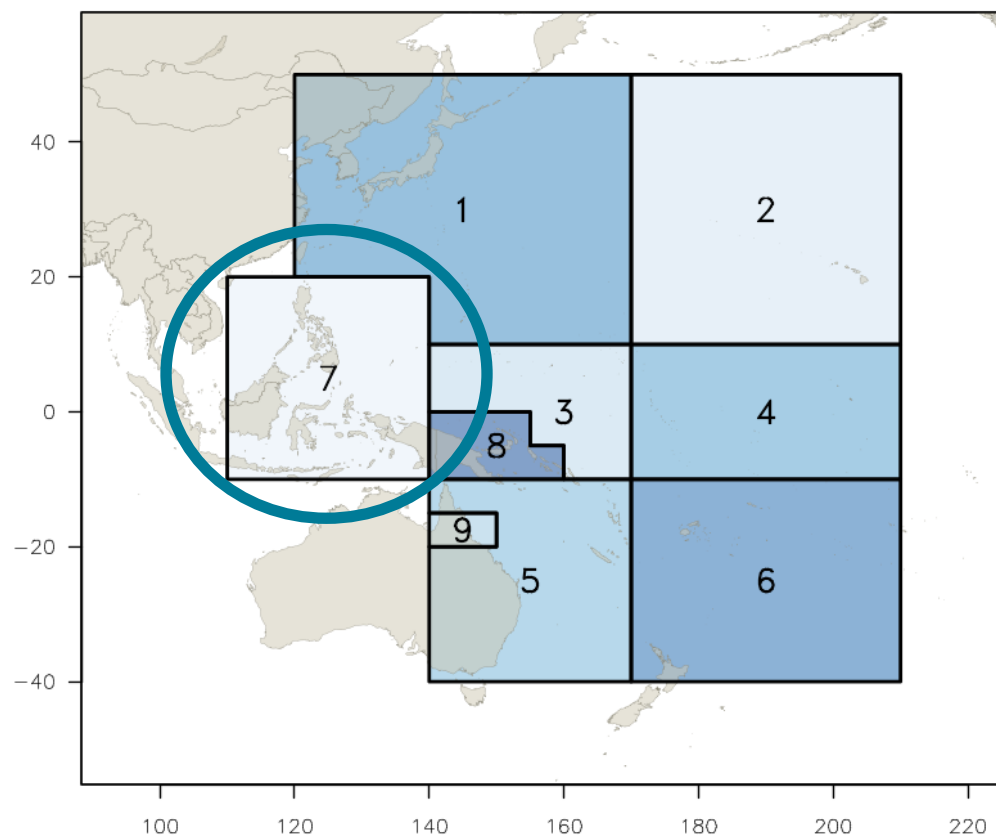
Australian Government  
Australian Centre for  
International Agricultural Research





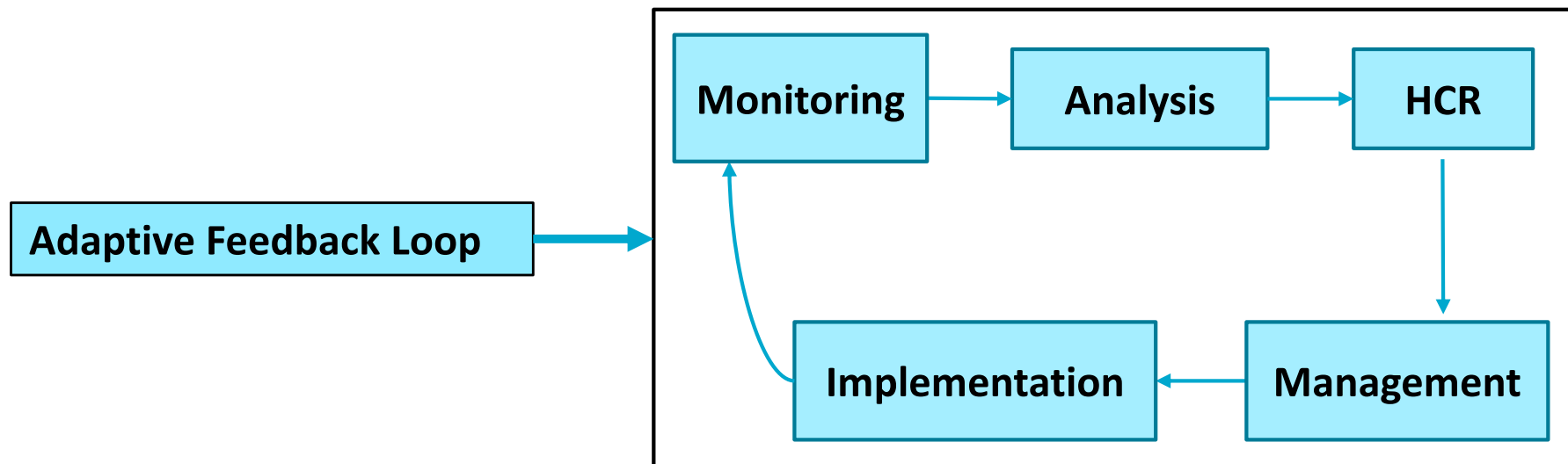
# Role of Stock Assessment

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

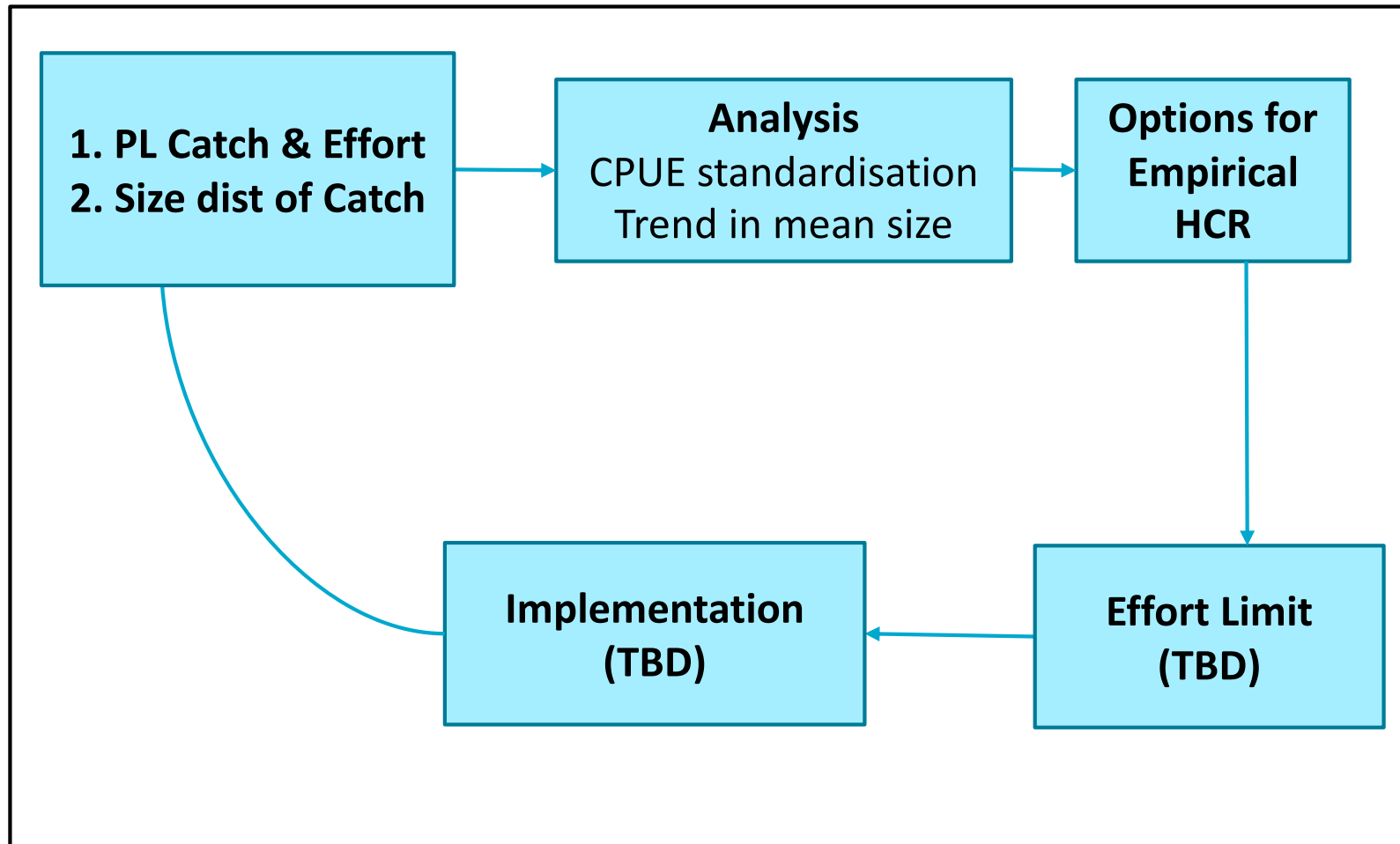


# What is a harvest strategy?

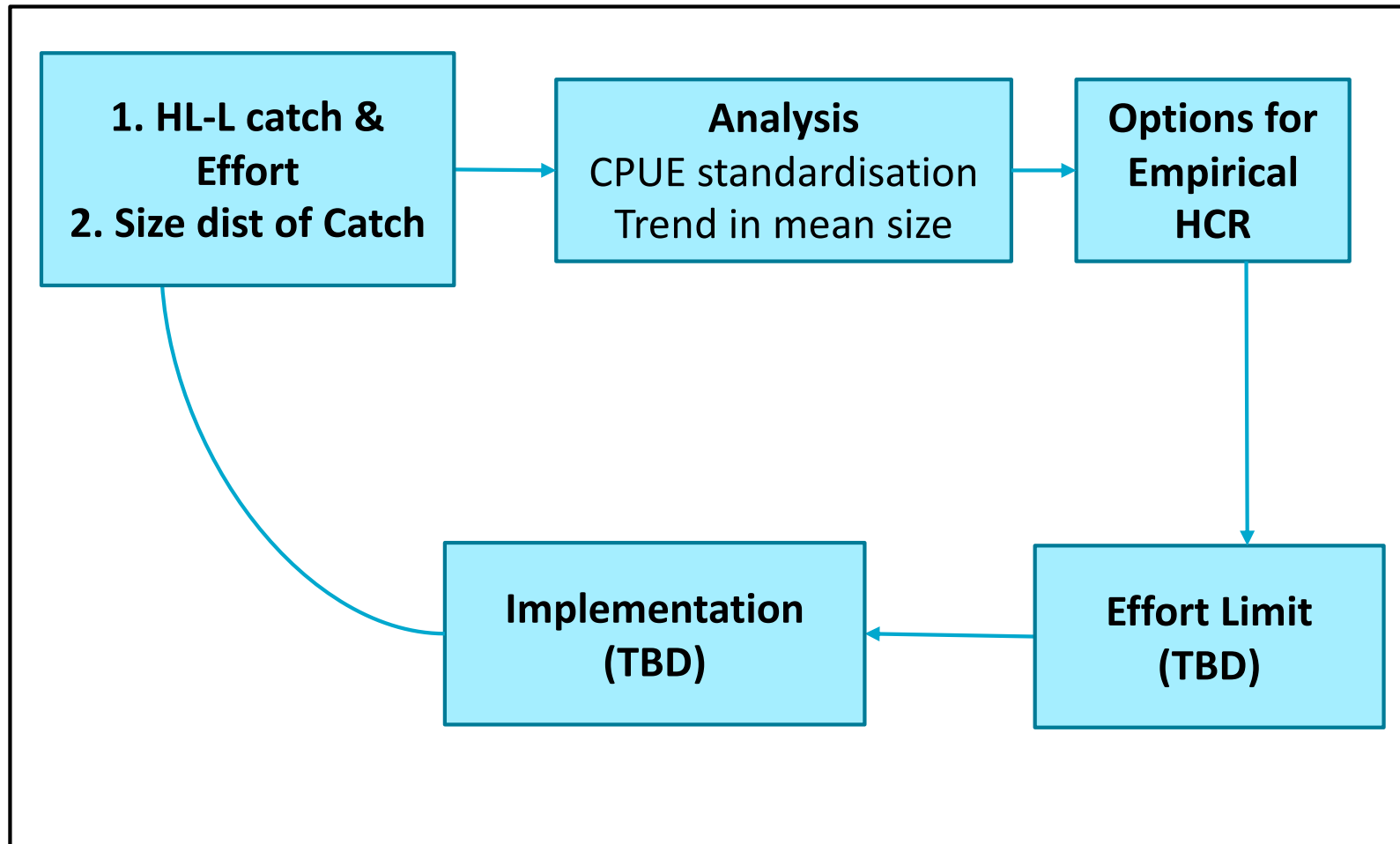
An agreed basis for *monitoring* and *assessing* a fishery **AND**;  
**adjusting the level of fishing**;  
using a specified *management measure*,  
**BASED ON** the *harvest control rule*  
to meet specific *objectives*



# Skipjack framework



# Yellowfin framework



# 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**.



Australian Government  
Australian Centre for  
International Agricultural Research

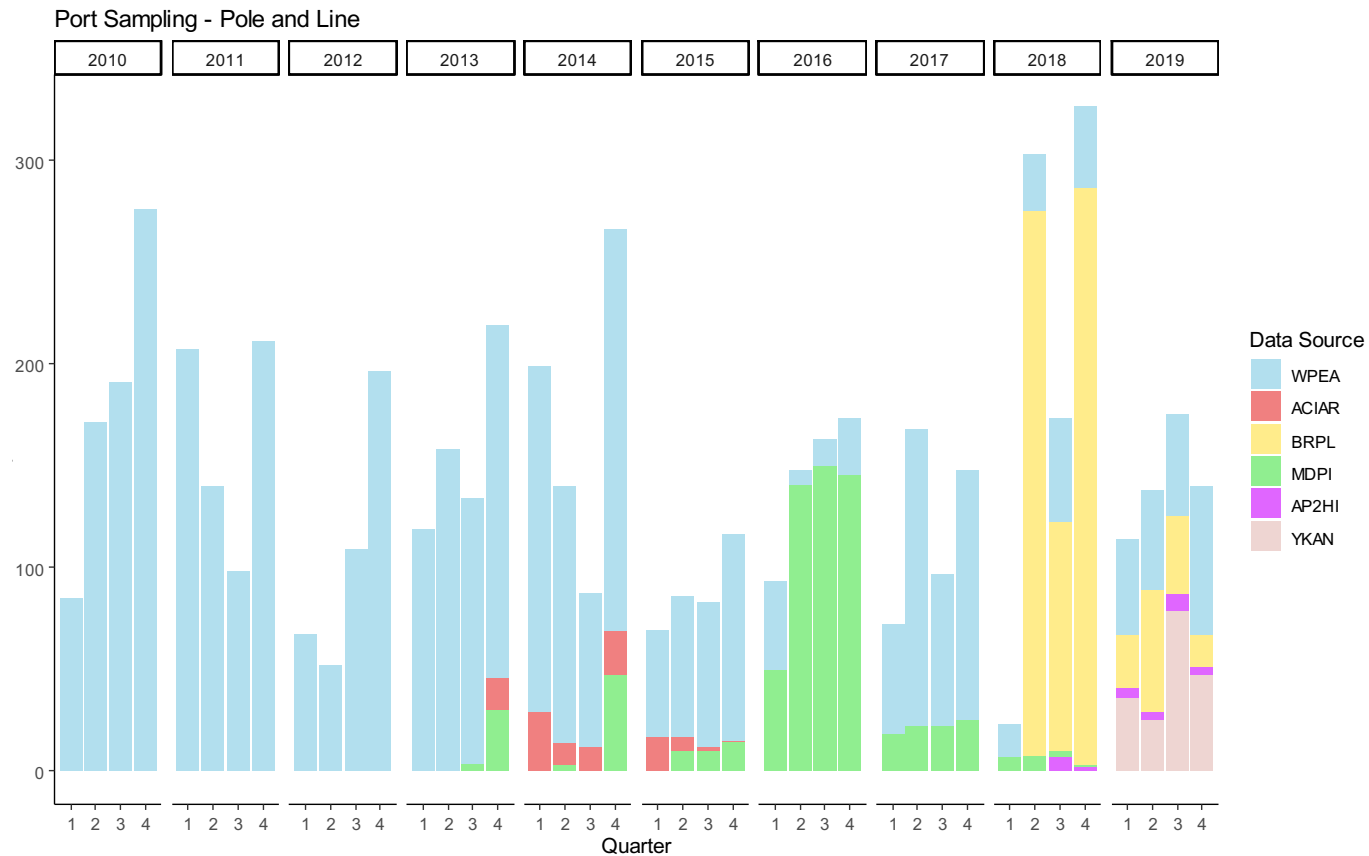




# The importance of ongoing monitoring

## Port Sampling - Pole and Line

No. of Trip per Quarter



Australian Government  
Australian Centre for  
International Agricultural Research



# 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.
  - Recent Ministerial announcement on quota management for Indonesian Fisheries



Australian Government  
Australian Centre for  
International Agricultural Research



# Need to define specific Management Measures

- Need to define practically feasible, affordable, effective management measures to control level of fishing from one year to the next
- 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.
- Some initial actions have been taken:
  - Spawning closure in Banda Sea.
  - Limit the total capacity (no. of licenses) of the large-scale industrial vessels.
  - Investigation of possibility to manage number of vessel days/yr for smaller vessels
  - New FAD regulations



Australian Government  
Australian Centre for  
International Agricultural Research



# Issues for consideration for Management Measures

- Current measures are “constant” or fixed. That is, they are not adaptive: i.e. the level of management does not change in response to monitoring data on an annual basis.
- Limit on number of licenses is important to contain total capacity and to manage for economic objectives over longer term.
- Generally require measures that are revised on an annual basis to effort/catch relative to current fishing mortality.
- For HS implementation, we require:
  - an operational management measure to change the level of fishing in response to the monitoring and HCR each year (or perhaps every 2-3 years).
  - separate monitoring to determine whether the response (e.g. total effort/catch by fleet) is in line with that required by the HS.



Australian Government  
Australian Centre for  
International Agricultural Research



# Terima Kasih

## Acknowledgements

MMAF (DGCF, CFR)

WPEA

MDPI

IPLNF

AP2HL

SFP

YKAN

Tony Lewis

Stakeholder Workshop participants

WCPFC

SPC-OFP