



**WCPFC
MANAGEMENT OBJECTIVES WORKSHOP**

Manila, Republic of the Philippines
28-29 November 2012

REFERENCE POINTS IN PRACTICE

**MOW1-PRES/08
28 Nov 2012**

SPC-OFP



Agenda item 4.3

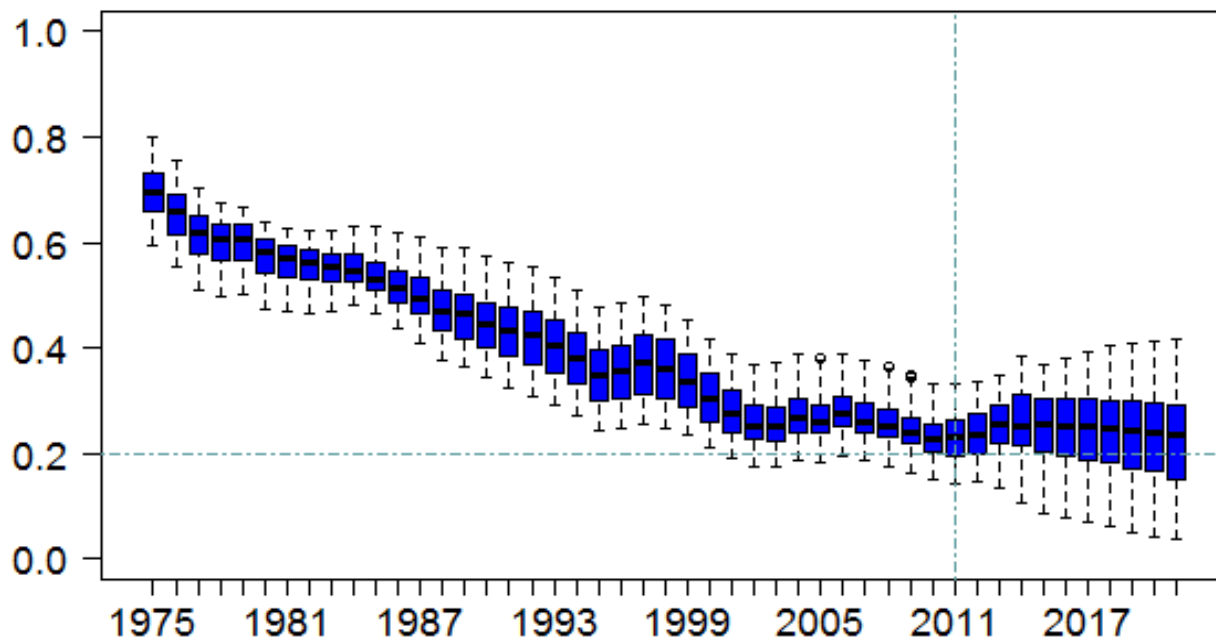
How do we use Reference Points in practice? (Harvest Control Rules)

SPC, OFP
MOW1-WP-07



Current approach

- Population projections
- Fixed (constant) conditions assumed into the future
- Uncertainty can be incorporated





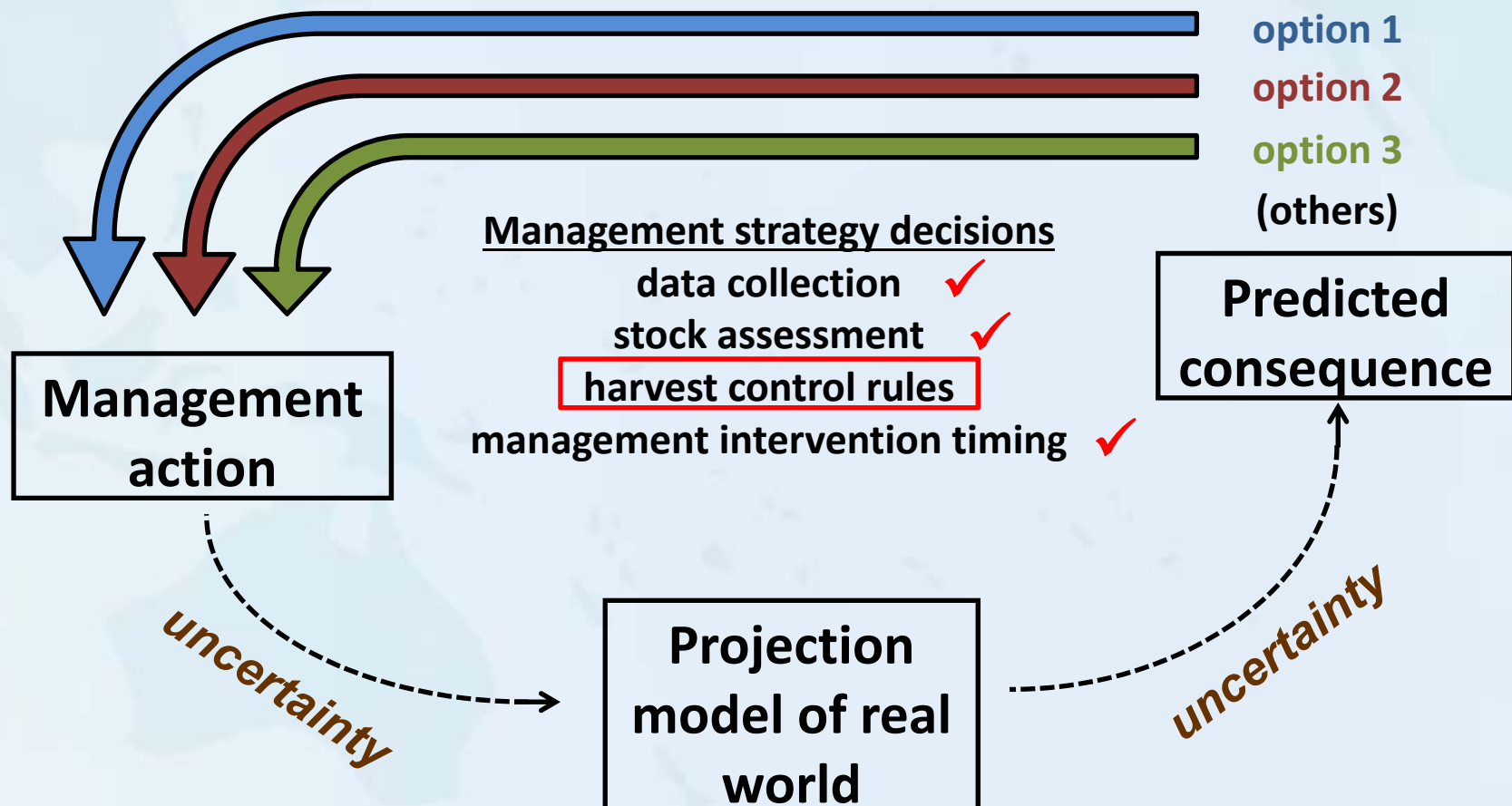
'Dynamic' projections

- Management does not set fishing levels for long periods
 - Adjustment based on latest information
- More realistic: adapt management decisions based on regular stock assessments
- 'Management Strategy Evaluations'
- Allow the testing of different strategies for:
 - Ability to achieve Management Objectives (TRPs)
 - Robustness to uncertainty



'Dynamic' projections

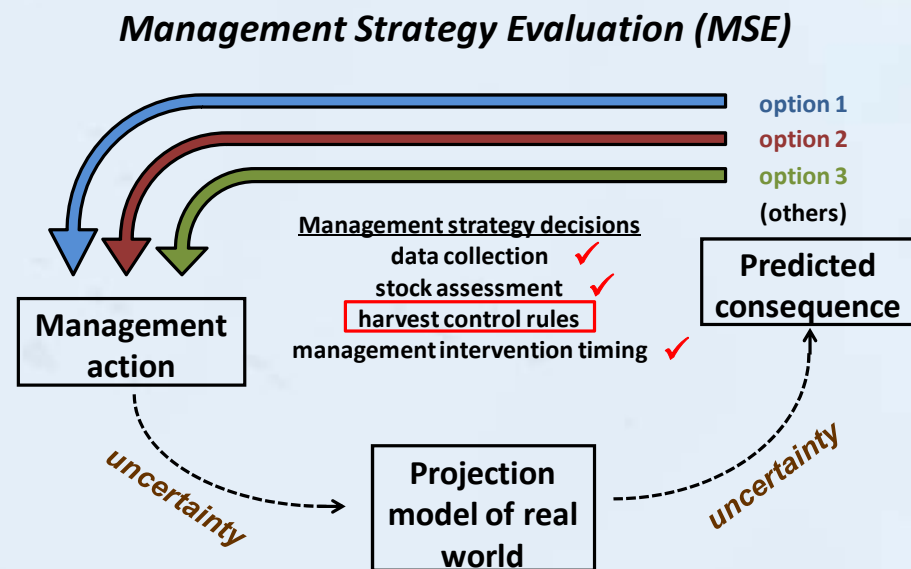
Management Strategy Evaluation (MSE)





'Dynamic' projections

- Now need to define the management decisions that ensure the target reference points are reached, and hence the objectives are achieved:
 - Harvest Control Rules





What are harvest control rules?

- MSC definition:
 - “A set of well-defined pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points”
- **The annual level of fishing is defined by the HCR, not through annual negotiation (quicken management response time)**



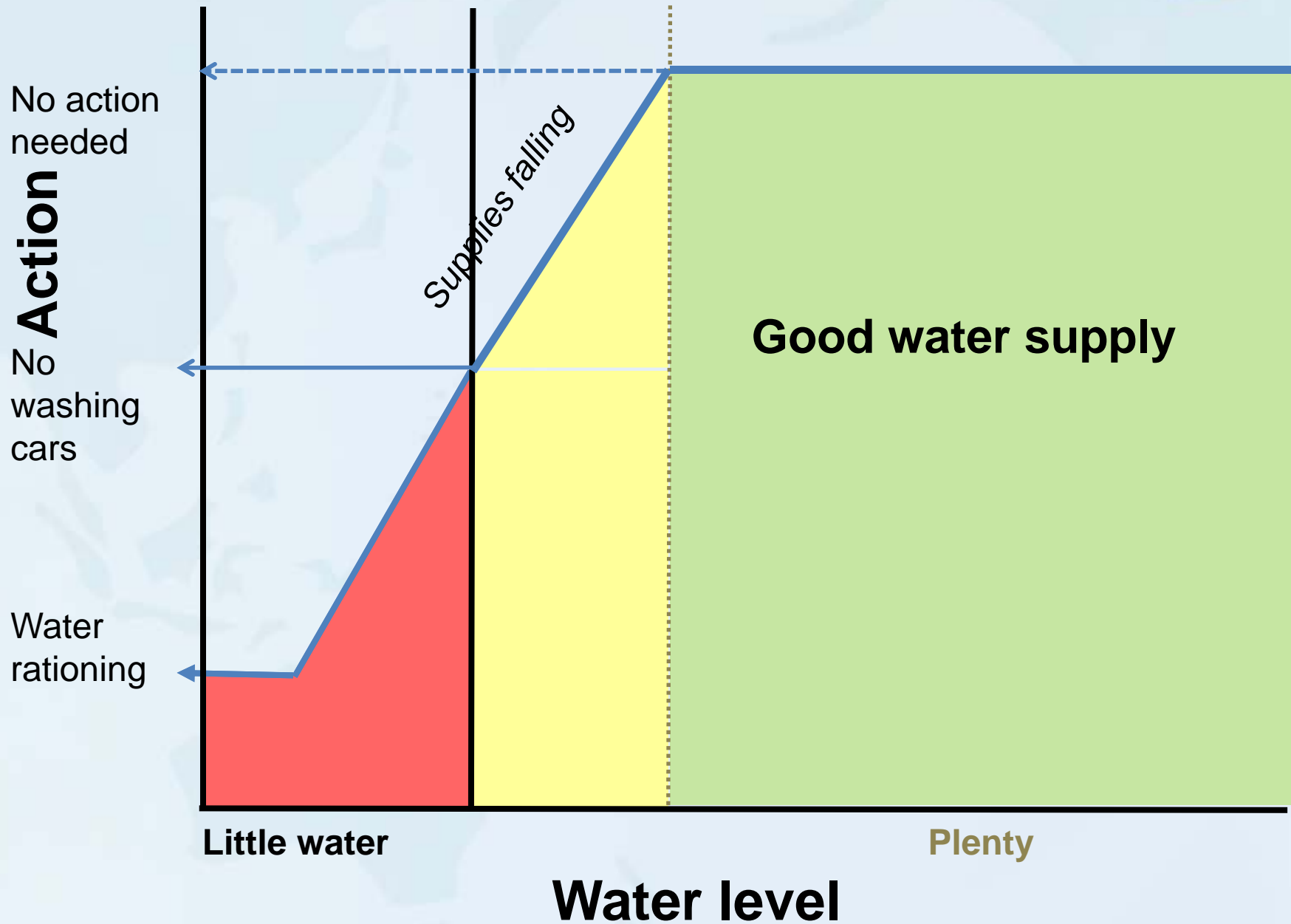
Key Features

- target and limit reference points incorporated
- specify pre-agreed responses to changes in the status of the stock relative to reference points
- increase transparency in how harvest management decisions are made



An example

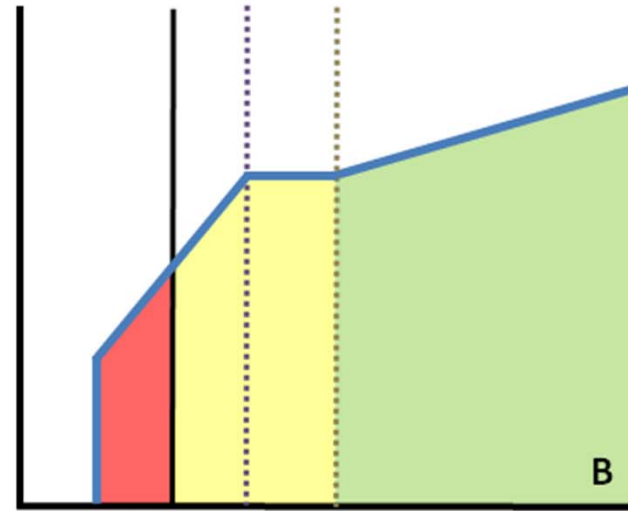
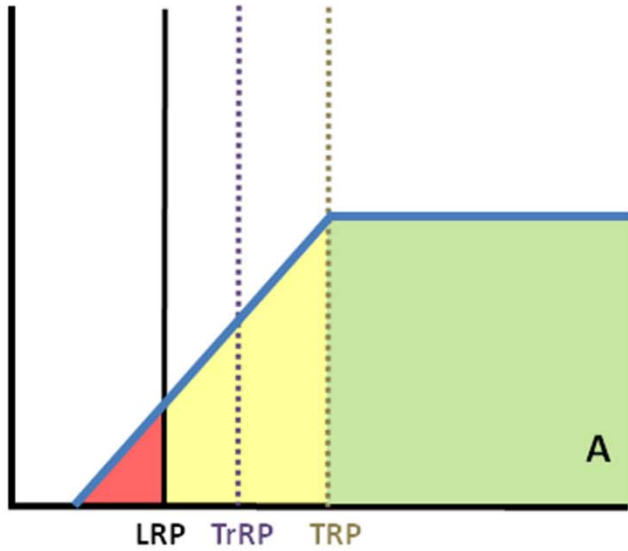




Examples – operationalize reference points



Control measure
(For catch or effort based)

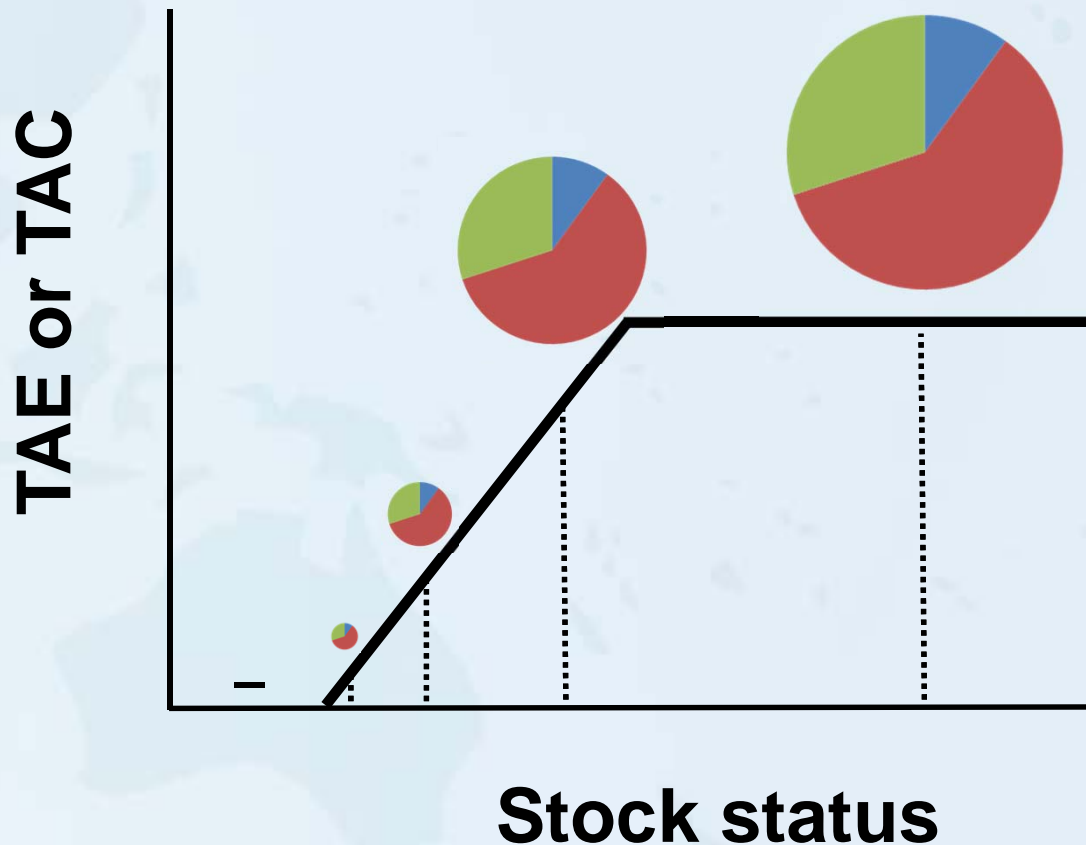


Stock status



'Sliding' HCR

Adjustments fishing level if stock status declines. Higher levels are permitted with improved stock status.



- moderate yields
- lower levels of risk
- higher variation in yield
- gradual changes



HCR testing

- Variety of harvest control rules available
- Need to test them prior to implementation
- A number of HCRs may achieve one/some/all of the objectives
 - But may do this in different ways
 - But may have very different consequences for different fleets/stocks/timescales



Evaluating tradeoffs



- Need to present results and trade offs to stakeholders to allow them to select the 'best' HCR



Early days

- Currently evaluating reference points
- HCRs are being evaluated at the same time
- WCPFC work will progress in the near future



Kobe II Strategy Matrix

- Approach to display advice to managers
- Displays what catch/effort level will likely achieve goals in what timescale
- Tool to facilitate precautionary actions

SP Albacore

Management Target	Time Frame	Probability of Meeting Target	
		Control Rule A	Control Rule B
SB > 50%SB ₀	5 years	0.83	0.94
	20 years	0.60	0.92