

# Kobe Advice Framework

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## Day 1

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Day 1	
09:30 – 10:15	<b>Presentation:</b> The Kobe advice framework
10:15 – 10:45	<b>Presentation:</b> Assessment, data needs and assumptions
10:45 – 11:00	<b>Tea Break:</b>
11:00 – 12:15	<b>Exercise:</b>
12:15 – 13:15	<b>Lunch:</b>
13:15 – 14:30	<b>Presentation:</b> Assessment, data needs and assumptions
14:30 – 15:15	<b>Exercise:</b>
15:15 – 15:30	<b>Tea Break:</b>
15:30 – 16:30	<b>Presentation:</b> Stock Status and Reference points
16:30 – 17:00	<b>Summary of the day:</b>

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## The Kobe advice framework

The provision of fisheries management advice requires the assessment of stock status relative to reference points, the prediction of the response of a stock to management, and checking that predictions are consistent with reality.

Elements of advice frameworks are

- Management objectives
- Target and limit reference points
- Estimates of probability from stock assessments
- Harvest control rules
- Risk and uncertainty

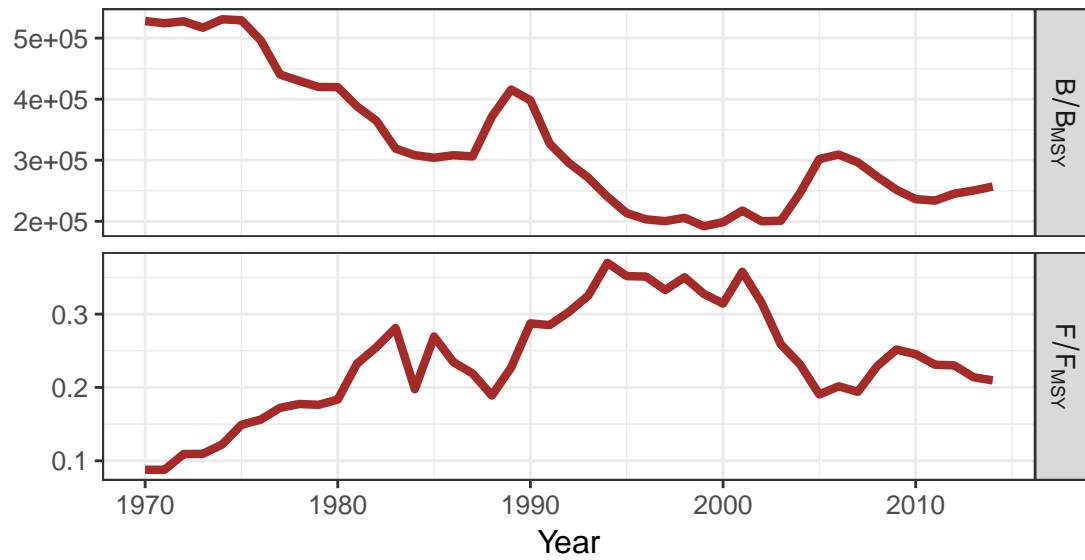
## Management objectives

The original objective of the tRFMOs is to keep stocks at a level that will support MSY. It is no longer sufficient to just know where we are, however, we also need to know where we are headed and to assess the impact of uncertainty on our ability to meet management objectives. There is increasingly a need to consider a range of management objectives and the trade-offs between them, e.g. related to yield, safety and stability. It is also important that indicators do not overlap in what they tell us. Therefore to help implement the Precautionary Approach the tRFMOs have proposed limit reference points and are beginning to simulation test Harvest Control Rules using MSE.

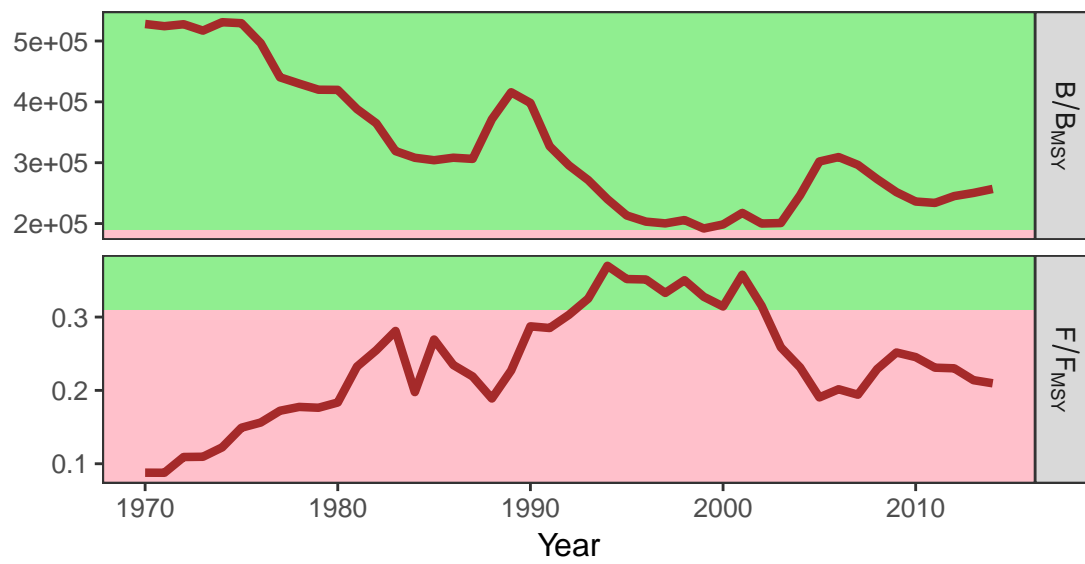
## Stock Status

The data are for the last Yellowfin assessment where there were 4 methods and 2 scenarios related to choice of CPUEs. These will be used to illustrate the advice framework and uncertainty in parameter estimates, model assumptions and data

### Stock synthesis and 1 set of CPUE indices

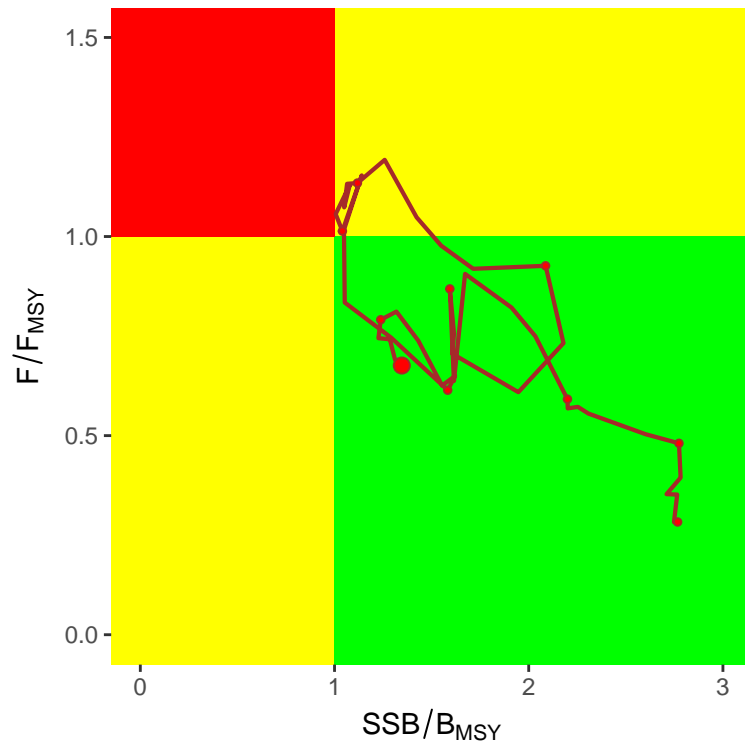


**Figure 1.** Absolute estimates



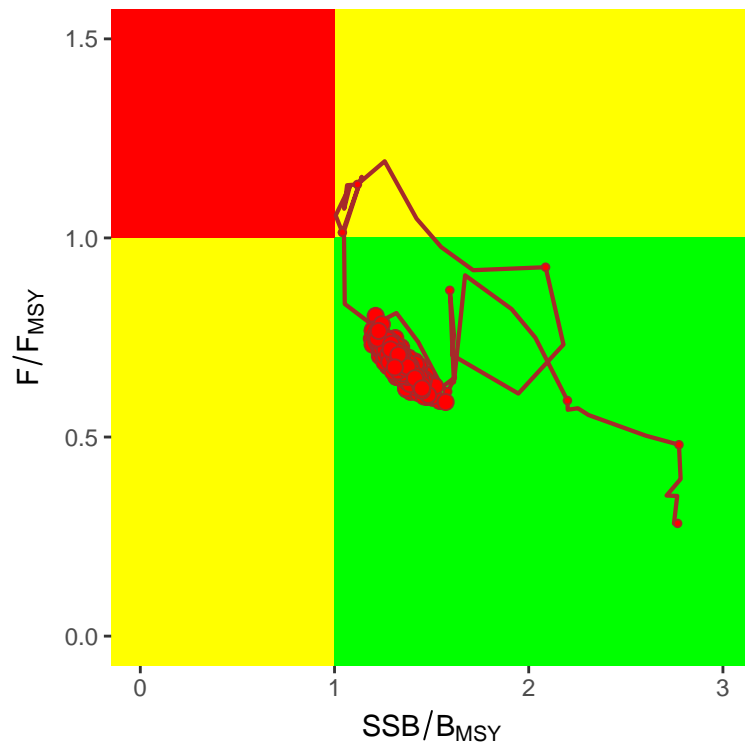
**Figure 2.** Estimates relative to reference points

### Kobe Phase Plot



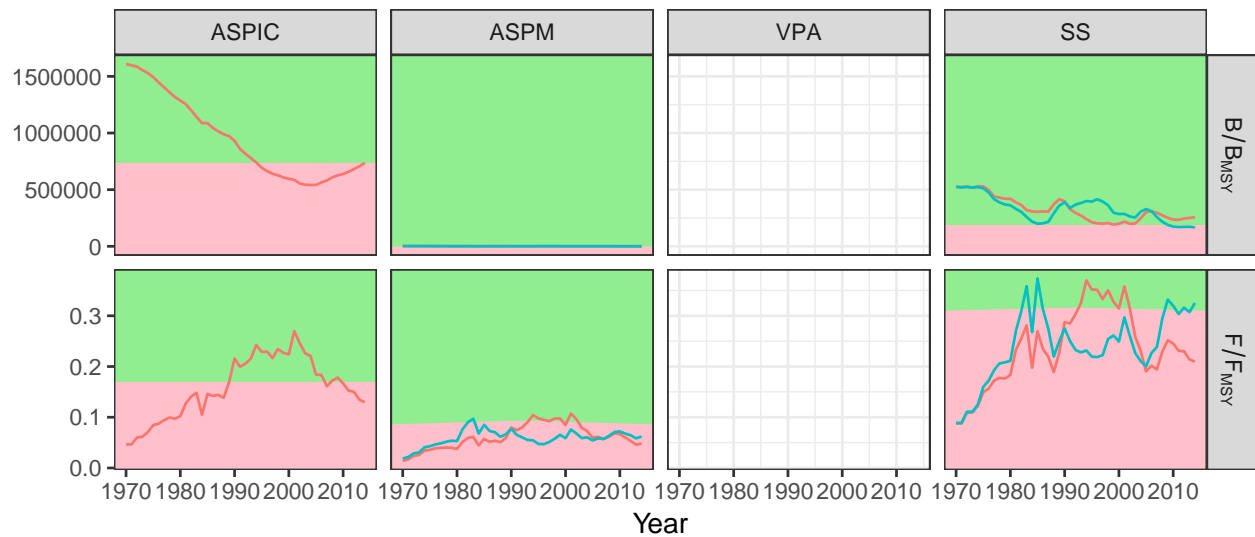
**Figure 3.** Phase plot

Estimates of probability from stock assessments



**Figure 4.** Uncertainty in current estimates

## Structural uncertainty



**Figure 5.** Estimates relative to reference points

**Figure 6.** Phase plot

**Figure 7.** Phase plot

**Figure 8.** Phase plot

**Figure 9.** Phase plot

## Projections

**Figure 10.** Strategy matrix

**Figure 11.** Decision table

Next I will i) provide examples of projections based on these, ii) do some hindcasting for validation iii) project under a HCR

## Stock Assessment, data needs and assumptions

The provision of fisheries management advice requires the assessment of stock status relative to reference points, the prediction of the response of a stock to management, and checking that predictions are consistent with reality.

- Data
- Model assumptions
- Diagnostics
- Reliability
- Stock status wrt reference points
- Projections

Then we can

- compare the assessment mode
- run some simulations using a shiny app where we vary options, i.e.  $M$ , steepness, ...
- run simulations with HCR options
- convert Catch-at-size to Catch-at-age and run a VPA

## Data

### Catch per unit effort

**Figure 12.** CPUE **Figure 13.** CPUE correlations

### Catch at size

**Figure 14.** Catch-at-size **Figure 15.** Catch-at-age

## Assessments

### biomass based

### Age based

### Exercise:

### Assessment, data needs and assumptions

### Exercise:

### Stock Status and Reference points

### biomass based

### Age based

## Day 2

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Day 2	
09:00 – 10:15	<b>Presentation:</b> Projection scenario
10:15 – 10:45	<b>Exercise:</b>
10:45 – 11:00	<b>Tea Break:</b>
11:00 – 12:15	<b>Presentation:</b> Management Plans
12:15 – 13:15	<b>Lunch:</b>
13:15 – 14:00	<b>Exercise:</b>
14:00 – 16:00	<b>Summary of the day</b>

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### Projection scenarios

Exercise:

### Management Plans

Exercise:

## Advice Framework

### Scientific Advice

### Scientific Advice

### Risk and uncertainty

### Stock Assessment

<http://rscloud.iccat.int:3838/swo-med-xsa/>

### Data

### Model assumptions

### Diagnostics

### Reliability

### Stock status wrt reference points

### Projections

<http://rscloud.iccat.int:3838/swo-med/>

Prediction is often used synonymously with `bray2009prediction` with forecast, projection and scenario. To avoid confusion we base our definitions on those of the International Panel on Climate Change

`citep[IPCC][\{field2012managing\}`. A projection is a potential future evolution of a quantity or set of quantities, a prediction or forecast is the result of an attempt to produce an estimate of the actual evolution of the future, while a scenario is a possible, plausible, internally consistent, but not necessarily probable, development.