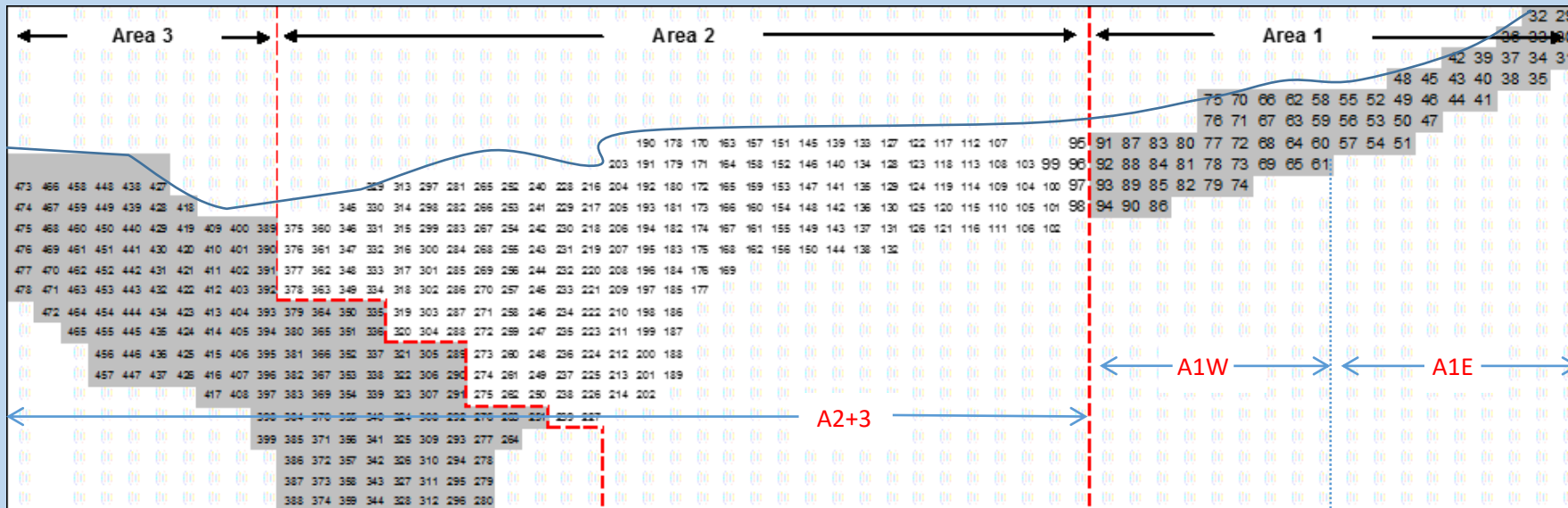


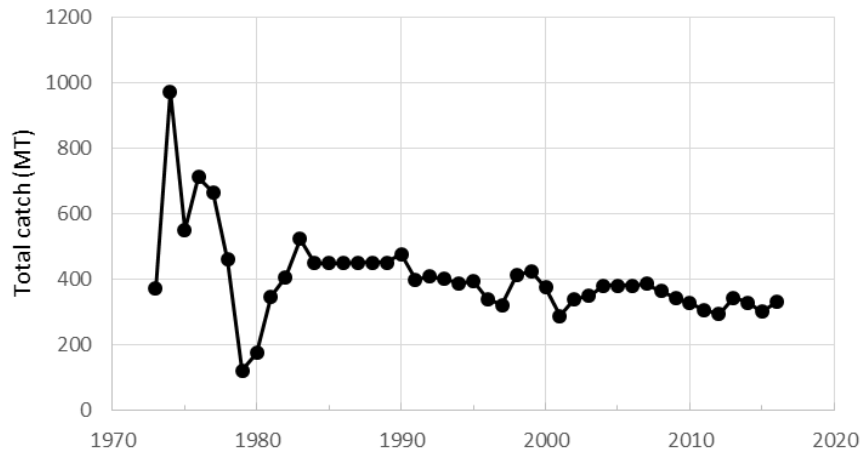
# DEVELOPMENT OF A REVISED OMP FOR SOUTH COAST ROCK LOBSTER

## INTRODUCTION TO FISHERY (BG1)

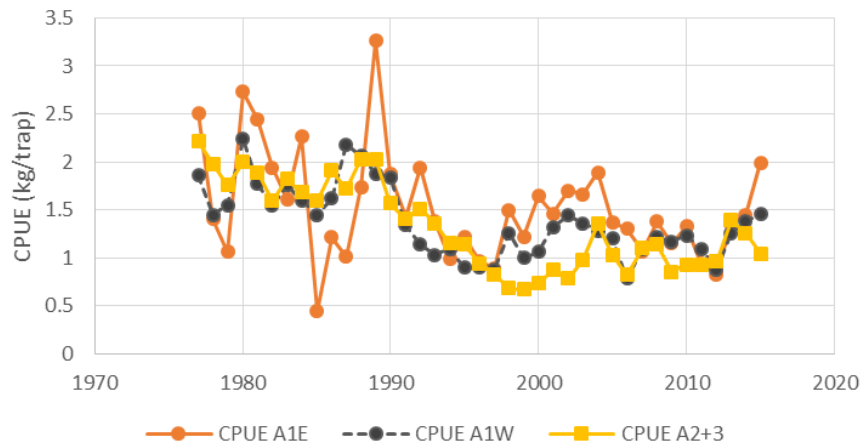


- Deep water 50-200m (need large ocean going vessels)
- Slow growing
- Year round fishing
- Gear = lines of traps
- 3 sub-stocks

Catch (total)



CPUE



- Commercial fishing began in 1974
- TAC introduced in 1984
- Effort increases
- First OMP developed in 2008 for recommending TAC

## QUESTIONS TO PANEL (P1)

- 1)What possible base case Operating Model changes merit consideration?
- 2)What possible future robustness tests are advised (with prioritisation to the extent that the panel feels able to provide such)?
- 3)What future OMP development issues should take priority?

## OPERATING MODEL – KEY FEATURES (BG2)

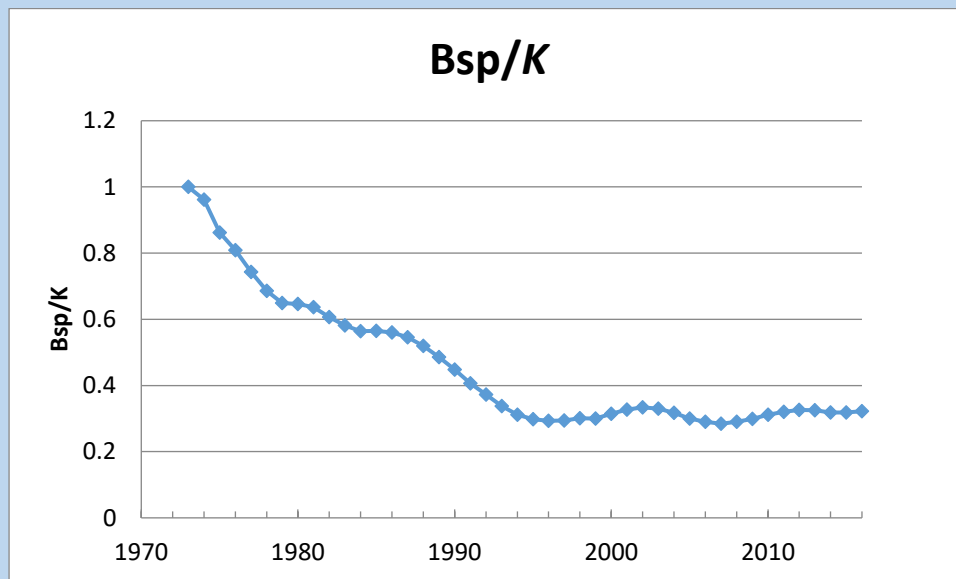
- Age Structured Production Model (**ASPM**) - sex and area disaggregated
- Three **sub-stocks**: A1E, A1W and A2+3
- Data available:
  - 1) Catch data 1974-2015
  - 2) CPUE 1977-2015
  - 3) CAL 1995-2015 (male and female separate)

**NOTE:** for the OM used for simulation testing the current OMP only data up to 2010 used

- all data split into **sub-stocks**.
- Model allows for **time varying selectivity** (TVS) for A2+3.
- CPUE and CAL data receive **equal weight** in the log-likelihood function

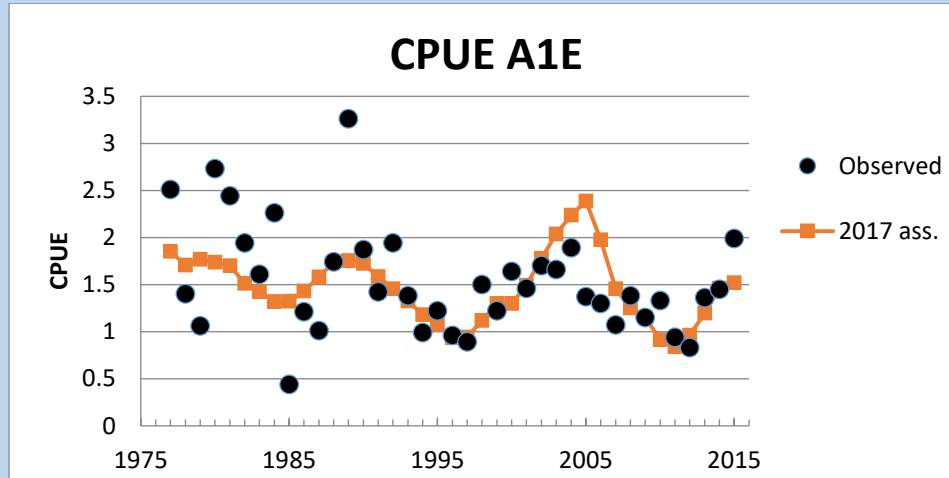
## MOST RECENT (2017) ASSESSMENT RESULTS (P2)

- Stock recruit residuals are estimated for the 1974-2008 period
- CPUE and CAL data receive **equal** weighting
  - Three sensitivity models were also examined:
    - Sen1: CAL data downweighted by a factor of 0.75
    - Sen2: CAL data downweighted by a factor of 0.5
    - Sen3: CAL data downweighted by a factor of 0.1



$$B_{sp}(2016)/K_{sp} = 0.32$$

## Fits to CPUE data

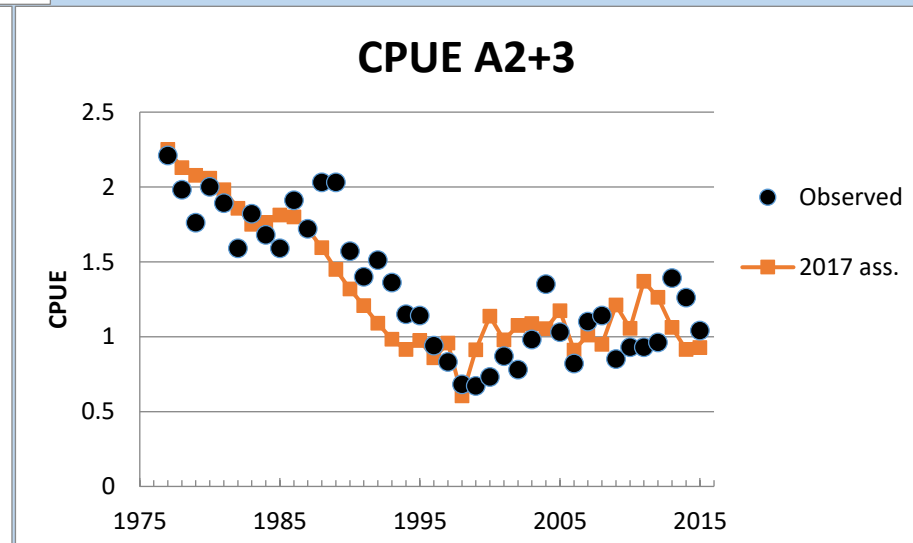
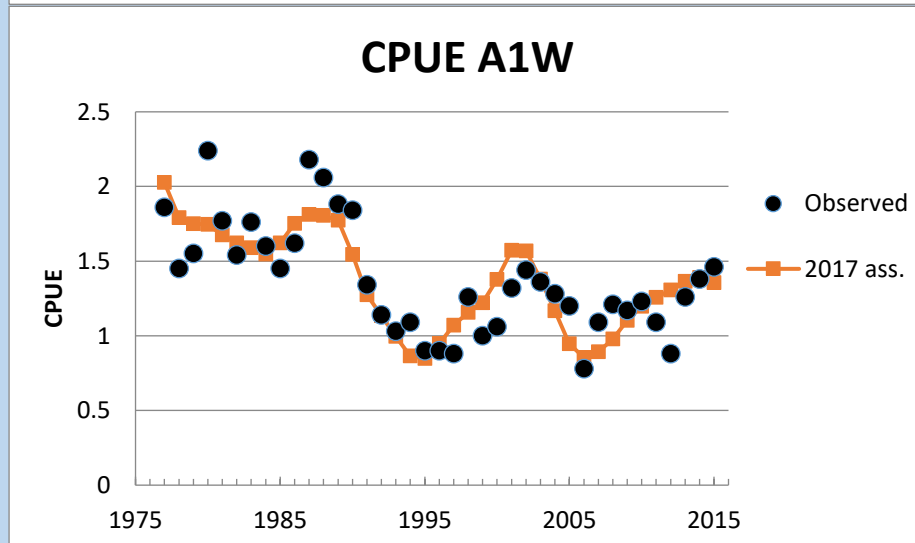


**Bexp(2015)/K:**

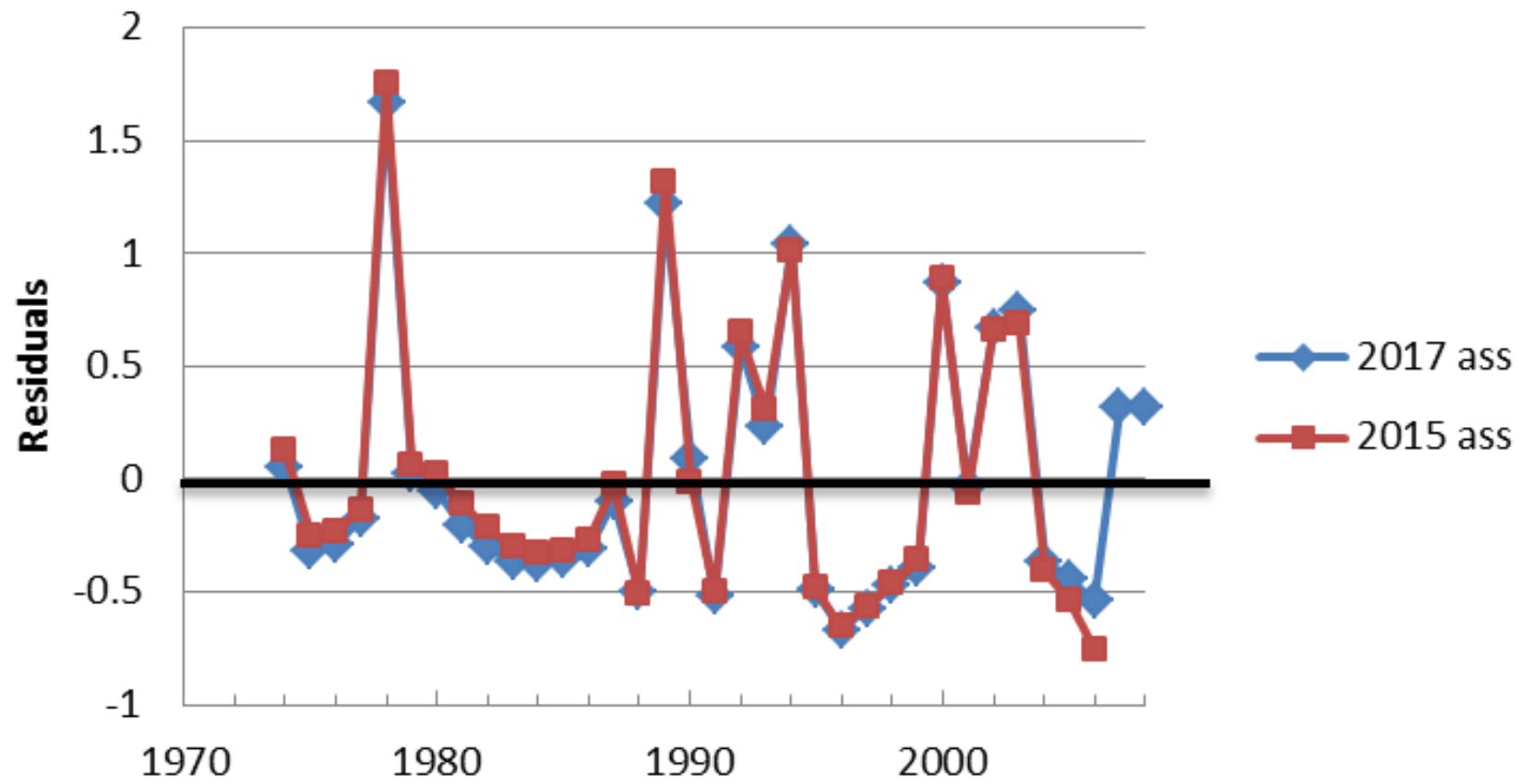
**A1E = 0.49**

**A1W = 0.36**

**A2+3 = 0.32**



# SR residuals

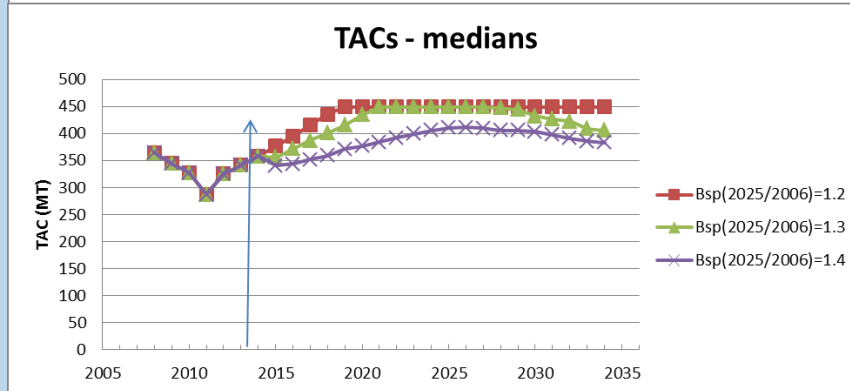
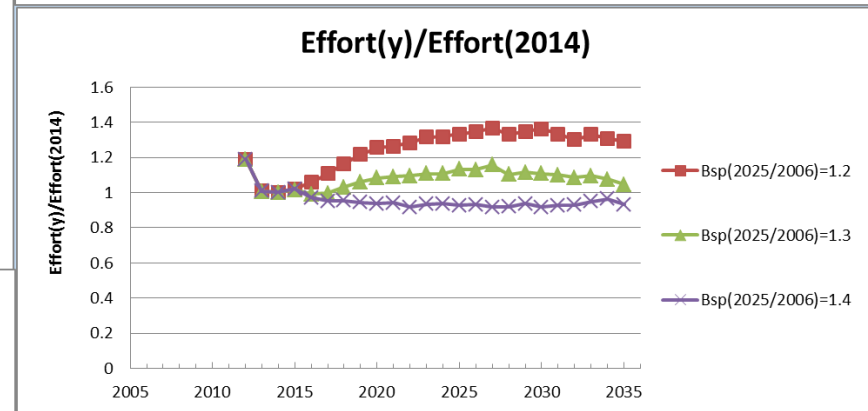
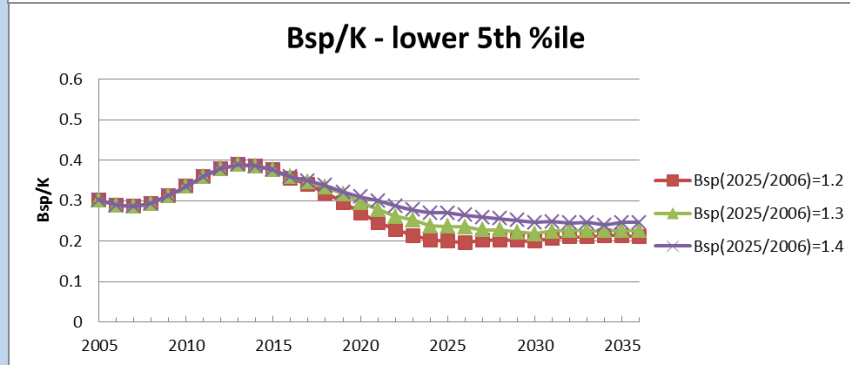
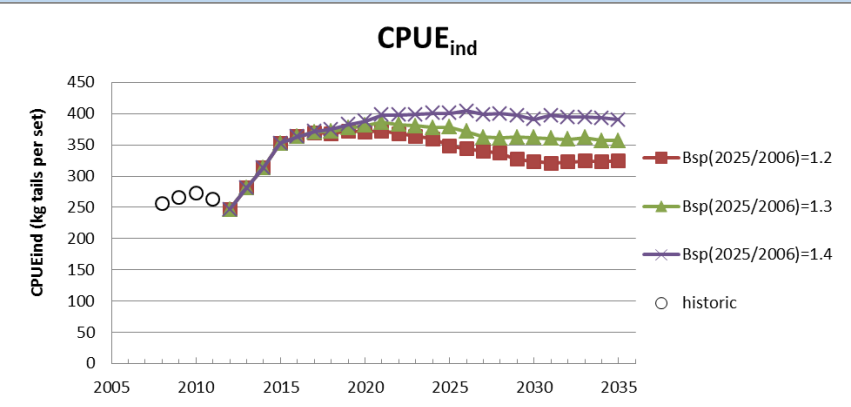
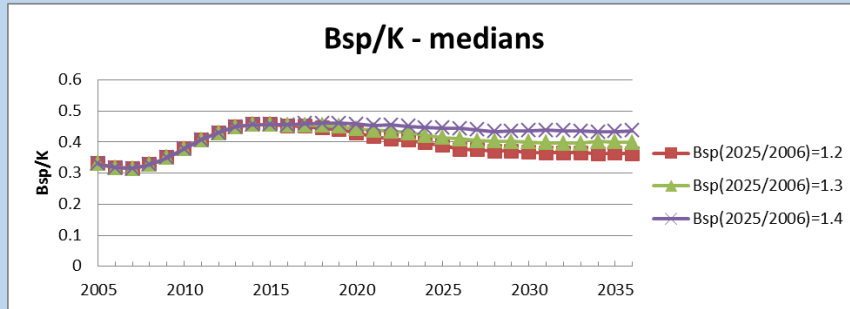


## CURRENT OMP (P3)

- OMP-2014 – used for TAC recommendations for 2014-2017
- **“Target based”** OMP: TAC increases or decreases depending on whether recent CPUE is above or below a pre-specified CPUE value.
- Biomass target: median **Bsp increase of 30%** by 2025 relative to 2006.
- 5% inter-annual TAC change constraint
- TAC for first season (2014) was fixed as a 5% increase
- Maximum cap on TAC in any one year of 450 MT.



# Results of candidate OMPs at time of OMP development



**CPUE<sub>ind</sub> = CPUE measure more meaningful to industry in units of “kg tails per day”**

# ISSUES REGARDING DEVELOPMENT OF REVISED OMP THAT NEED TO BE CONSIDERED

## Possible base case OM changes

- Uncertainty in the initiation of projections: how might taking **estimation uncertainty** into account best be achieved?
- **Selectivity modelling** – are there better formulations than those utilized at present which might be considered for OM development?

## Possible Robustness tests

- A major uncertainty which remains relates to the conflicting signals given by the **CPUE and CAL** data. Currently, as recommended by a previous IWS panel, these two data types receive equal weighting in the log-likelihood. A set of robustness tests that explores **alternate weightings** could be explored.
- Effort saturation – is this something which needs to be reconsidered?
- Different assumptions for  $M$  and  $M$ -at-age, e.g. **increase of  $M$  at larger** ages to offset selectivity doming which is substantial.
- Alternative values for  $\sigma_R$  – currently 0.8 [recruitment residual variability].
- Alternative values for  $\sigma_\lambda$  – currently 1.0 [time variation in recruitment distributions].
- Alternative values for  $\sigma_{sel}$  – currently 7.5 [time variation in selectivity distributions].

## Possible OMP changes

- **Exceptional Circumstances** rule development - start increasing the maximum TAC decrease constraint (currently 5%) if CPUE falls below a critical threshold level.
- **Summary statistics** – are there any statistics used in other fisheries that might be useful?
- More **rapid reaction** in OMP TAC rule - should OMPs that react more rapidly to the most recent data be explored further?
- Use of **a recruitment index** in the OMP – based, for example, on the proportion of younger fish from the catch-at-length data collection.