

## Alternative Sardine Harvest Control Rules

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Figure 1 shows the three alternative harvest control rules as proposed by the Small Pelagic Scientific Working Group on 27<sup>th</sup> November 2013. These rules differ from Interim OMP-13 v2 (de Moor and Butterworth 2013) in that it is proposed only a proportion of the directed  $\geq 14$ cm sardine TAC is awarded as an initial TAC, with a potential “top up” mid-season.

The current rules allow for half the directed  $\geq 14$ cm sardine TAC to be awarded as an initial TAC when Exceptional Circumstances are declared. The “top up” in the mid-season is dependent on the survey estimate of sardine recruitment (Figure 3).

The three alternatives proposed allow for varying proportions of the directed  $\geq 14$ cm sardine TAC to be awarded initially over a range of survey estimates of sardine 1+ biomass above 300 000t (below which Exceptional Circumstances would be declared):

Alternative 1: linear increase in the initial proportion of the TAC awarded from 50% at 300 000t to 100% at 600 000t.

Alternative 2: linear increase in the initial proportion of the TAC awarded from 50% at 300 000t to 100% at 1 000 000t.

Alternative 3: 50% of the TAC awarded initially up to 550 000t, with a linear increase up to 100% at 650 000t.

The Small Pelagic Scientific Working Group has not yet agreed on what rule would be used to determine whether a “top up” would be awarded mid-season.

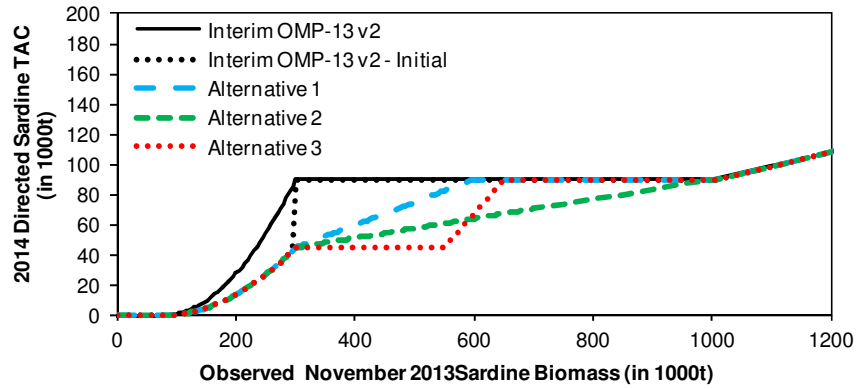
Figure 2 shows the harvest proportions for the alternatives shown in Figure 1.

### References

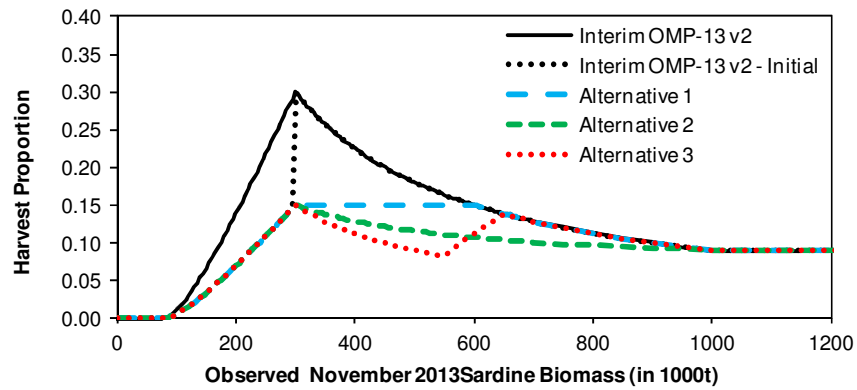
de Moor, C.L. and Butterworth, D.S. 2013. Interim OMP-13 v2. Department of Agriculture, Forestry and Fisheries Document FISHERIES/2013/JUL/SWG-PEL/15. 18pp.

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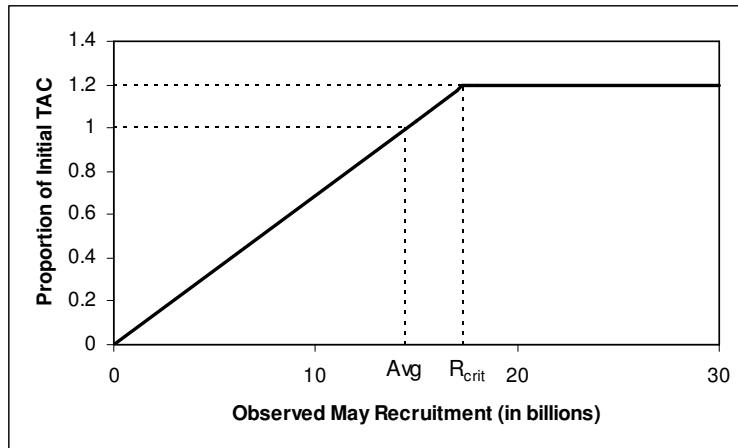
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**Figure 1.** The Harvest Control Rule for directed  $\geq 14$ cm sardine TAC under Interim OMP-13 v2, using the 2013 TAC as input. The initial sardine TAC awarded at the beginning of the year under Interim OMP-13 v2 is plotted against alternative rules for initial sardine TAC (blue, green and red dot/dashed lines).



**Figure 2.** The harvest rate (TAC/survey estimate of sardine 1+ biomass) for the alternative Harvest Control Rules shown in Figure 1.



**Figure 3.** The proportion of the initial directed sardine TAC that is awarded in the mid-year revision to the directed sardine TAC if Exceptional Circumstances are declared. The historic (May 1984 – 2011) average observed May sardine recruitment is 13.74 billion recruits. For Interim OMP-13 v2,  $R_{crit} = 16.48$  billion, such that the mid-year revision is the same as the initial TAC when observed recruitment from the May survey is average. (Figure A2 of de Moor and Butterworth 2013)