DRAFT PROCESS FOR SETTING INITIAL DIRECTED SARDINE TAC FOR 2017

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Overall Initial TAC

Note: Below assumes the survey will return a result that corresponds to the OMP specification for an initial TAC to be updated in mid-year after the recruit survey – this seems a reasonably high probability.

1) Existing OMP sets initial TAC for 2017: $\mathbf{T_{init}}$

2) Assume recruitment for 2017 is the average of the values for the last five years for which an estimate is available, and for that the projected the final TAC for 2017 is $\mathbf{T_{proj}}$

3) We do not want a situation where $\mathbf{T_{init}}$ is all caught by end June, and the update to $\mathbf{T_{proj}}$ adds only another 10%, say – there is a need to allow the final TAC to be spread more evenly across the year. Hence we don't want the catch by end June 2017 to exceed a proportion **p** of the likely whole year TAC. The value of **p** is to be decided at the next PWG meeting, but would likely be in the vicinity of 0.6 – 0.7.

4) The initial TAC ($\mathbf{T_{initfinal}}$) would then be set to the lower of $\mathbf{T_{init}}$ and $\mathbf{p*T_{proj}}$.

Initial West Coast maximum catch computation

1) From the current MCMC for the west stock assessment, draw 200 equally likely trajectories and current numbers-at-age vectors.

2) Assume that the May 2016 survey estimate of recruitment is exactly correct. Project forward the 200 trajectories from 1) to obtain the 2+ distributions of biomass in Nov 2017 ($\mathbf{B_{2017}}$) for a variety of possible west catches of directed sardine during 2017 ($\mathbf{C_{west2017}}$).

3) Plot the past west stock recruitment vs 2+ biomass, fit a hockey-stick curve externally, and determine $\mathbf{B_{kink}}$.

4) Plot the probability (**prob**) of $\mathbf{B_{2017} < B_{kink}}$ *vs* $\mathbf{C_{west2017}}$.

5) At a PWG meeting BEFORE the Nov 2016 survey results become available, based on the plot in 4), select an acceptable value of the probability $\mathbf{prob_{select}}$ (probably in the 5- 10% range).

6) Once the survey results are available, project the trajectories in 1) one year further and weight each by the product of the likelihoods of the May 2016 and Nov 2016 survey estimates. Finally renormalize so that these weighted probabilities sum to 1 to get 200 unequally weighted trajectories.

7) Project these 200 trajectories one further year forward to Nov 2017 under different west catches for 2017 to get distributions of $\mathbf{B_{2017}}$. Find the value $\mathbf{C_{west2017select}}$ for which **prob** = $\mathbf{prob_{select}}$.

8) The initial west coast maximum catch of directed sardine is then given by:

5) $\mathbf{C_{west2017init} = C_{west2017select} * (T_{initfinal} / T_{proj})}$

Example calculation (in thousand tons)

1) $\mathbf{T_{init}} = 50$
2) $\mathbf{T_{proj}} = 70$
3) $\mathbf{p =} 0.6$
4) $\mathbf{T_{initfinal}} = 42$ (being the lower of 42 and 50)

1) $\mathbf{prob_{select}} = 0.05$
2) $\mathbf{C_{west2017select}} = 40$
3) $\mathbf{C_{west2017init} =} 40 * (42/70) = 24$