Why the horse-mackerel survey data require changes in selectivity over time.

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Summary

This document explores why the horse-mackerel survey data require changes in selectivity over time.

In order to explore why the horse-mackerel survey data require changes in selectivity over time the average catch-at-length (CAL) for each season for which there are CAL data are produced. In Figure 1 these values are plotted along with the average CAL values estimated by the assessment model (Model 3b BC). The vertical green arrows demarcate the periods for which the demersal selectivity is allowed to vary over time within the model. The orange horizontal lines show the length of peak selectivity that is estimated by the model. From Figure 1 it is clear that:

- There has been a steady decline in the average CAL over time until around 2012 when these values then increase.
- The model fits the average CAL data well for the Spring demersal survey, but not well for the recent (2007+) Autumn demersal survey.

Furthermore, Figure 2 compares the trends of the Autumn Demersal survey biomass with the trend in the average survey CAL data. From Figure 2 it is clear that:

- There is a close correlation between the biomass trend and the average CAL trend EXCEPT for the last two seasons 2015 and 2016 where the biomass trend is down and the average CAL trend is up.

Figure 1: Plots comparing the observed (black dots) and model estimated (grey dots) average CAL over time. The vertical green arrows demarcate the periods for which the demersal selectivity is allowed to vary over time within the model. The orange horizontal lines show the length of peak selectivity that is estimated by the model.

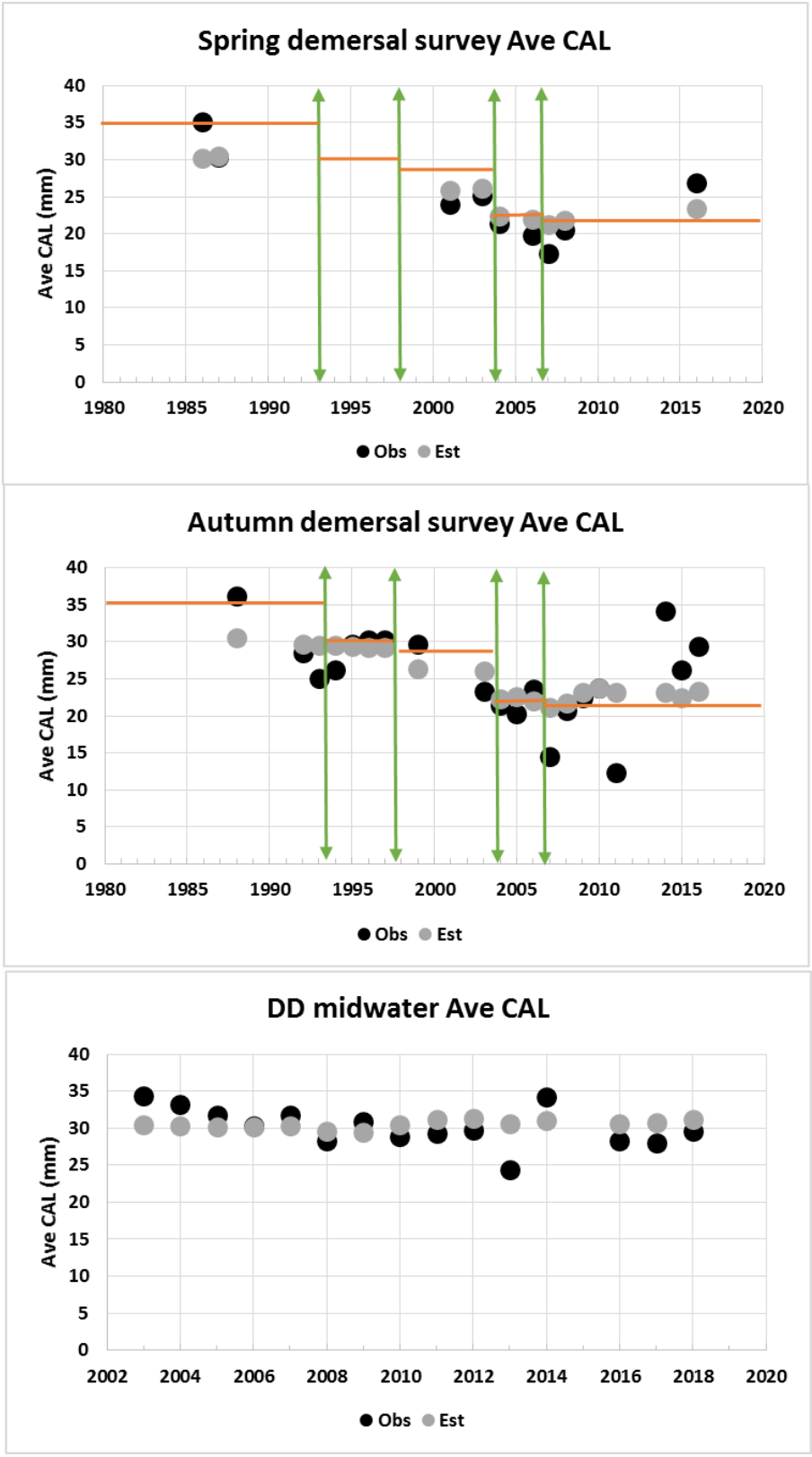

Figure 2: Comparison of the Autumn demersal survey biomass trend along with the average CAL trend over time. The vertical green arrows demarcate the periods for which the demersal selectivity is allowed to vary over time within the model