

Stock Assessment Review (STAR) Panel 2 for Chilipepper Rockfish

Southwest Fisheries Science Center Auditorium, NOAA
110 McAllister Way | Santa Cruz CA 95060

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1 - Request

Explore whether a flexible 2D selectivity parameterization improves model fit to age data from the California trawl fleet. Plot the expected fit to mean age and mean length using this run. Also show the Pearson residual plots.

1 - Rationale

Given the poor fit to mean ages from the mid-1980s to 2000s (~ 10 yr fish) and high selectivity of 25-30 cm fish during the same time period, changes in sex-specific selectivity may be having an effect. If this run improves the fits to mean age and mean length, it indicates that an alternative selectivity parameterization or time block structure may be considered.

1 - STAT Response

1 - Panel Conclusion

2 - Request

Run a sensitivity analysis by replacing the dome-shaped selectivity of the commercial fleets that showed estimation issues with the descending limb parameter based on the MCMC analysis, with asymptotic selectivity. Plot the spawning output, fraction unfished, and recruitment deviations, and compare estimates with the pre-STAR base model.

2 - Rationale

The parameters for the descending limb were not well-defined based on the MCMC analysis. Using an asymptotic selectivity will also simplify the model. If overall fits and population predictions do not change with asymptotic selectivity, that would support a more parsimonious model.

2 - STAT Response

2 - Panel Conclusion

3 - Request

Re-compute the WCGBTS index by including the depth effect (WCGBTS_depth). Compare the time series estimate between the current index and the WCGBTS_depth in a single plot including confidence intervals.

3 - Rationale

Depth is an important habitat variable for rockfish species. Although the spatial model can capture much of the depth effects (via anisotropy and spatial field), previous work ([Johnson et al. 2019](#)) has shown that it may be beneficial to include.

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3 - STAT Response

3 - Panel Conclusion

4 - Request

Calculate the average of the main period recruitment deviations in the pre-STAR base model. Present results from a run with the constraint for the recruitment deviations to sum to zero. Provide a table showing the parameters for these two runs along with the sensitivity with recruitment deviations fixed at zero (3 runs). Please include reference points. Plot dynamic B_0 for these three runs.

4 - Rationale

The constraint to sum recruitment deviations to zero ensures that the reference points are consistent with the assumptions of the model. Without that constraint, the reference points implied by the main recruitment period may differ considerably from the reported reference points. This request will provide insight into the magnitude of this potential discrepancy.

4 - STAT Response

4 - Panel Conclusion

5 - Request

Replot fits to the CalCOFI index (absolute) without confidence intervals.

5 - Rationale

This will enable additional scope for interpretation of the model fit to the time series. Including the confidence intervals compresses the y-axis.

5 - STAT Response

5 - Panel Conclusion

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6 - Request

Run an additional sensitivity replacing the CalCOFI index with the Southern CaCOFI index but without the early (1950s) estimates. Please plot fits without confidence intervals. Investigate why the terminal years in the coastwide index are increasing while the separate indices are decreasing.

6 - Rationale

To inform on why removing the whole area CalCOFI index results in an increase in stock status and why adding central and southern CalCOFI separately results in a decrease, when covering different time periods.

6 - STAT Response

6 - Panel Conclusion

7 - Request

Run an additional sensitivity estimating the additional variance for the WCGBT survey as well. Show the estimated $\ln Q$ as well.

7 - Rationale

Although there is some justification for estimating additional variance for the CalCOFI index, the justification of not estimating additional variance on the WCGBT survey is missing (high, early index points; high q).

7 - STAT Response

7 - Panel Conclusion

8 - Request

Provide two runs with all length composition data and age composition data down-weighted by a factor of 2 and 10 using the input sample multiplier (from the final Francis tuned multipliers). Present length and age Pearson residual plots for the Commercial CA trawl fleet and the fits to all fishery-independent indices compared to the pre-STAR base model.

8 - Rationale

It is possible that the composition data are over-weighted.

8 - STAT Response

8 - Panel Conclusion

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9 - Request

Present length-fecundity relationships that depict the variability in estimates given different environment regimes alongside the assumed length-fecundity relationship in the pre-STAR base model. Conduct sensitivities using the alternative values of the exponent of the fecundity-length relationship, with M fixed at the value from the pre-STAR base model for all of the runs. Plot the spawning output, fraction unfished, and recruitment deviations, and compare estimates with the pre-STAR base model.

9 - Rationale

This will help to characterize the uncertainty in fecundity estimates under varying environmental conditions. These results could be used to identify an appropriate axis of uncertainty.

9 - STAT Response

9 - Panel Conclusion

10 - Request

Create a squid plot using a 15-year retrospective analysis. This plot has the recruitment deviation on the y-axis and age on the x-axis, which shows the age at which estimated recruitment begins to be informed by data.

10 - Rationale

There are a few large year classes that are important to the population trend, one of which is a recent 2013 year class. It is useful to know how long it takes to have a reasonable estimate of recruitment, whether low or high.

10 - STAT Response

10 - Panel Conclusion