period). This lends additional support for the concerns that the log(catch+1) transformation used in the ANOVA method is inappropriate for those species that are rarely encountered in the survey.

Despite these challenges, there are some clear indications in the data, as illustrated in all modeling approaches, of very strong recruitment for some stocks and years, particularly in 2013 for all of these stocks. Such signals were also evident in the 2015 chilipepper assessment update (Field et al. 2015) as well as the 2015 bocaccio assessment (He et al. 2015) and the pending update. Given the consistency of this strong year class with recent observations, the indices should provide some utility for full assessments of blue and yellowtail rockfish this assessment cycle.

Discussion

For bocaccio, the "corrected" ANOVA result is the most consistent with the intent of what had been done in prior assessments, despite the fact that it does not indicate recruitment variability of the magnitude expected from other sources of data (e.g., fishery and survey length frequency data). Consequently, the bocaccio assessment also includes sensitivity analyses that use both the same index (not extended in time) from the 2015 model (the nominally incorrect ANOVA) as well as the indices developed using the delta-GLM and VAST approaches. As none of these approaches suggest unusually strong recruitment since the 2013 year class, which is now largely informed by length composition and other data sources, we think this is a reasonable short-term fix for the purposes of an update.

For the full assessments being conducted in 2017 (blue/deacon, yellowtail rockfish), our current preference would be to use the delta-GLM results. However, the results presented here will need to be refined for the appropriate spatial strata associated with assessment boundaries, and will likely require some additional exploration and documentation. For example, the current VAST outputs include all years regardless of the spatial coverage of the survey, which is inconsistent with previous approaches and should be interpreted with caution (we may have revised in time). The VAST indices also do not include a within-year temporal effect (period effect) to account for the seasonality of sampling, which has varied in surveys throughout the years and has been demonstrated to be an important factor for many species. Consequently, both the delta-GLM and the VAST these results should be considered preliminary, and can be revised and considered in greater detail prior to the full STAR Panels for those two species.

Our intent is to return to alternative means of developing indices, including evaluation delta-GLM models (including the VAST geostatistical approach) as more robust approaches for developing YOY recruitment indices to support West Coast rockfish assessments. Ongoing analyses indicate that in fact there is likely to be considerably more coherence in YOY abundance trends than earlier envisioned, and that the 2005-2006 period was atypical with respect to strong differences in abundance between the historical core survey area and coastwide abundance trends.