



Analytical actions to address the PIFSC and SSC recommendations for improving Ecosystem Component analysis

SSC Recommendations

1. Staff explore the species catch trend over time and catch:biomass ratio to identify species that are no longer targeted by the fishery but the population is still available to the fishery, or whether species have declined over time due to exploitation and should be investigated in more detail;

Comments:

- This is a good recommendation to determine possible weighting factors for species that maybe experiencing a significant decline in catch and low biomass
- Have to be careful in over interpreting the trends due to issues on catch estimate data quality. Also be mindful of the species as it relates to detectability in the SPC

Analytical actions:

- Plot species level catch time series; include mean bar and standard deviation
- Count the number of species with available catch:biomass
- Plot stacked bar of catch:biomass per species

2. Staff explore the use of the BioSampling data (e.g. market sampling, species composition) and relevant life history information as input variables and/or information for post-hoc analysis of the species that had been selected for federal management to consider if any should be removed in consideration of productivity and life history traits;

Comments:

- The BioSampling data cannot be used as an input variable and cannot be incorporated into the analytical framework due to the short time series.
- However, any life history information and mean length trends from the BioSampling and generated from years of data from the creel surveys can be used to conduct a post-analysis validation.
- Life history information and mean length trends can be used to evaluate the remaining species for fishery-related impacts and relative ecological and biological importance

Analytical actions:

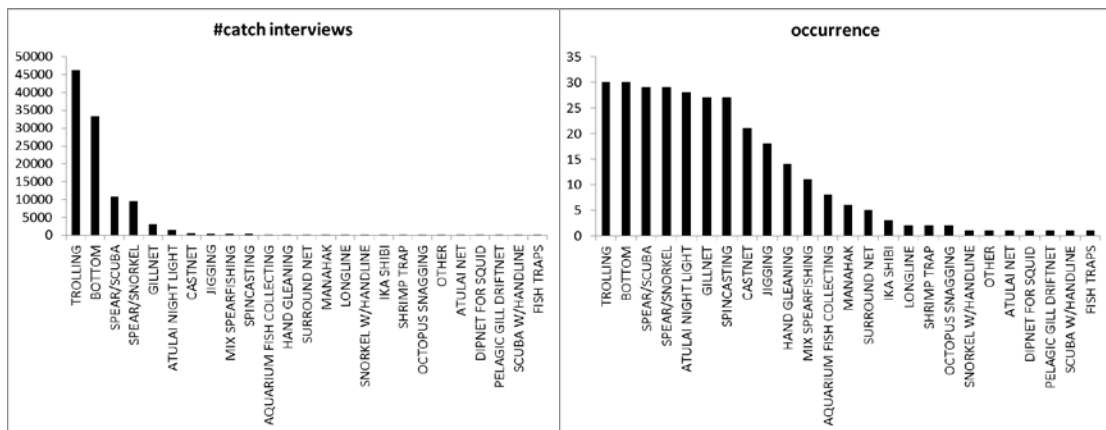
- Request length data for all species that is covered by the BioSampling in American Samoa, Guam, and CNMI;
- Plot the species level average length per month over time; summarize graphs and tables; include standard deviation
- Request all available age and growth information from the Life History Program starting from the SAFE report module;

- Tabulate the information and include in the expert group report as an appendix

3. Staff consider conducting the analysis on a fishery or gear level to minimize the bias towards large fish and as a way to examine the spatial distribution of effort in relation to state/territorial vs federal waters;

Comments:

- Although this raises a good point, conducting the species analysis on a gear level will further reduce the sample size and make the time series more fragmented. Gear level analysis will also exponentially increase the amount of effort into conducting the analysis. For example on the Guam boat based fisheries, there are 25 methods listed on the WPacFIN database and not all methods have sufficient amount of catch information.



- From a management perspective, the FEPs are designed for management at the fisheries level and not at the gear level.
- Larger fish make up the bulk of the weight variable. Smaller schooling fish make up the count variable. Most of the preliminary results showed that the weight and the count trajectories generally follow the same direction. Therefore the small fish are accounted for in the analysis.
- It can be argued to simply focus the analysis on the boat-based fisheries

Analytical actions:

- Conduct analysis on boat-based creel data only;
- Compare results from the original results

4. Staff explore different cut-off levels based on the actual distribution of the input variables;

Comments:

- This is a good recommendation and would be applied to the analysis;
- SSC could also consider varying the selection of the cut-off depending in the importance of the filter (e.g. 25% on the first filter, 50% on the second filter, etc.)

Actions:

- Calculate species frequency distribution and plot histogram on:

- #species x occurrence bins (no data, 1 year increments)
- #species x catch bins (no catch, start with 100 lbs increments)
- #species x depth bins (follow the existing binning)
- #species x economic value bins
- #species x habitat proportion bins

5. Staff test the fidelity of the groupings using other statistical tests such as PERMANOVA;

Comments:

- This is a good recommendation and would be applied to the analysis;

Analytical actions:

- Conduct PERMANOVA analysis

6. Staff convene an expert working group to examine the species that are filtered out to ensure that the final listing requiring Federal management includes species of social, cultural, economic, biological, and ecological importance.

Comments:

- This is a good recommendation and would be applied to the analysis;

Analytical actions:

- Draft memo and include potential date of meeting
- Draft evaluation template and factors to be used of the *post-hoc* analysis

PIFSC Recommendations

7. Consider using absolute cut off for proportion of a species habitat in federal water, rather than use quartiles for that filter (e.g. only include species with >X% of their potential habitat in federal waters, rather than automatically dropping the bottom Y%)

Comments:

- Using an absolute cut-off approach would require knowing the actual depth to which the federal waters starts;
- The analysis actually uses the absolute value for depth range rather than quartiles

Analytical actions:

- Research on the depth federal waters starts

8. Consider whether there is a way to re-include heavily targeted species with low total catch - i.e. targeted but rare species

Comments:

- This can be done by examining the species that gets filtered out.
- Can be included in the expert working group analysis.

Actions:

- Document each species that gets filtered out at each stage of the decision tree;
- Only use the low catch to high biomass variable

9. Consider using a ratio of the average annual catch to current biomass should help filter out species that don't experience much fishing, but not wrongly ignore rare species that are highly targeted

Comments:

- This is similar to #1 and 8;

Actions:

- Addressed in #1 and #8

10. Tabulate the on the dimensions (depth, frequency, weight etc) for the species to determine why the species dropped out;

Comments:

- Related to #8;

Actions:

- Create a species table and tabulate at what stage in the filtering process the species dropped out

11. Explore effect of changing the sequence and thresholds;

Comments:

- This a good sensitivity analysis of the final species list resulting from the filtering process;

Actions:

- Run the MDS starting with different sequence of the filter;
- Can be done with the current Guam outputs

12. explore the use of the NMFS BioSampling data for the analysis or at least to validate the results for the analysis (either to keep species in or remove the species if it passed the filters)

Comments:

- This can be done post-hoc during the expert working group evaluation

Actions:

- This would be addressed in #2 and #6;