

GROUND FISH MANAGEMENT TEAM REPORT ON THE SSC ECONOMICS AND
GROUND FISH SUBCOMMITTEES' REPORT ON DATA AND MODELS TO BE USED IN
THE SOCIOECONOMIC ANALYSIS FOR THE 2015-16 GROUND FISH BIENNIAL
SPECIFICATIONS PROCESS

During the 2012-13 time frame, the Scientific and Statistical Committee (SSC) Economics and Groundfish Subcommittee reviewed data and models to be used by the Groundfish Management Team (GMT) for their analysis of 2015-16 Harvest Specification and Management Measures (2015-16 SPEX). This 2015-16 SPEX analysis will include a long term Tier 1 analysis. At the June 2013 Pacific Fishery Management Council (PFMC) meeting, the SSC submitted a report which included summaries and recommendations from those reviews ([Agenda Item F.7.b, Supplemental SSC Report, June 2013](#)). The following overarching requests were made in the report:

- Provide more data and model documentation, focusing on specific areas suggested in their report;
- Ensure that this documentation be made publically available on the PFMC website or other location;
- Provide the SSC a time frame for when specific model recommendations and updates would be addressed by the GMT;
- Provide a GMT liaison for each model; and
- Allow time for the SSC to review the socioeconomic analysis that will be included in the 2015-16 SPEX analysis.

The SSC report also recommended that review of the current GMT Trawl Bycatch Model was a “high priority”. This model may be part of the 2015-16 SPEX analysis. Reviews of the Northwest Fisheries Science Center’s (NWFSC) voluntary cost-earnings, angler expenditures, and charter operator surveys were considered “lower priority”. The data collected from these surveys will underlie some of the socioeconomic analysis to be included in the 2015-16 SPEX document (2015-16 Environment Impact Statement or EIS).

The SSC report concluded the GMT models reviewed in the 2012-13 time frame represented the best available science and were appropriate for use in the 2015-16 SPEX analysis. Also note that the Landings Distribution Model was reviewed in September 2011 and was also recommended as appropriate for use. The SSC report also pointed to specific areas where models could be updated or improved but did not necessarily suggest that these items had to be completed for the 2015-16 SPEX. Instead, they suggested that continued work and dialogue regarding these

updates be planned in the near future, for example, in the “off-years” (i.e., even numbered years when stock assessments are not being reviewed).

In August, a subgroup of the GMT discussed these recommendations and comments (typically highlighted in bold typeface in the SSC report), and identified the following:

- items that would be addressed in time for the 2015-16 SPEX analysis; and
- items that require more time for analysis and/or discussion (i.e., after the 2015-16 SPEX analysis is complete.

Of note, the full GMT has not had an opportunity to discuss the SSC’s specific model recommendations and how they might help improve the socioeconomic analysis included in each SPEX analysis. Our understanding is that reviewing and improving the socioeconomic analysis was the initial intent of these reviews. Some on the GMT may have different views on such things as priorities for what should be reviewed next and what model updates to work on. We would like an opportunity to discuss any differences in views with the SSC. Moreover, competing workload has meant that the full team has not had the opportunity to participate in each of the model reviews or discuss the bigger picture with the SSC regarding further direction of the reviews by the Economics and Groundfish Subcommittees. Those on the team contributing to this report support the SSC’s recommendation for continued dialogue between the two advisory bodies on these issues.

Oregon Recreational Model

Patrick Mirick from the Oregon Department of Fish and Wildlife (ODFW) presented this model in March 2012. Lynn Mattes (ODFW) is the GMT liaison to the SSC and Mr. Mirick for this model.

To be completed for the 2015-16 SPEX analysis

- Explore whether the distribution of effort by depth bin varies by port. If so, effort projections should be done at the port level.
- Apply a “smoothing or interpolating model” to the angler catch data that is used to populate a multiplier table that underlies the model’s prediction of bag limit changes.
- Changes to the regression line for projecting harvest and discard mortality in the halibut fishery.

Further discussion and future analysis

- Development of variance estimates for harvest and discard mortalities was considered “highest priority” for this model. This recommendation echoed one also made by the Marine Recreational Information Program (MRIP) during their review of this model

([Breidt et al. 2010](#)). To realize this recommendation, the ODFW's Oregon Recreational Boat Survey (ORBS) sampling program would need to provide these estimates. It is our understanding that ORBS is working on this but a specific timeline is not currently available.

- Related to the “Issues for future reviews” in this model's summary report, the GMT would like to note that reconciling the port complex level economic impacts resulting from IO-PAC and the port or community level economic impacts conducted by state agencies (e.g., pp. B97-B101, [Appendix B](#), 2013-14 FEIS) is an issue for further discussion. We would like to continue a dialogue with the SSC about how to interpret these reported impacts.
- Also see “Oregon, Washington and California Recreational Model” section below.

Washington Recreational Model

Heather Reed from the Washington Department of Fish and Wildlife (WDFW) presented this model in September 2012 and is the GMT liaison to the SSC and WDFW for this model.

To be completed for the 2015-16 SPEX analysis

Complete a retrospective analysis of how effort projections compare with post-season effort estimates. However, the GMT notes that this model does not predict changes in effort when the differences between alternative management measures are very small.

Further discussion and future analysis

See “Oregon, Washington and California Recreational Model” section below.

California Recreational Model (CA RecFISH)

John Budrick from the California Department of Fish and Wildlife (CDFW) presented this model in September 2012 and is the GMT liaison to the SSC and CDFW for this model.

To be completed for the 2015-16 SPEX analysis

Validate the current model assumptions related to how effort responds to depth closures and time of year. “This validation could be extended to more broadly examine how the proportion of effort varies by time (month) and depth, using recent historical data.” At minimum, a qualitative analysis of these model assumptions will be completed for the 2015-16 SPEX.

Further discussion and future analysis

- Regarding the retrospective analysis of catch provided by CDFW at this model's review: “redefine the stratification of areas so that they correspond to the areas used in the Spex

process and focus the analysis on effort rather than catch.” This will be considered after the 2015-16 SPEX.

- A diagnostic recommended for this model: the coefficients of variation (CVs) “could be carried through the model to show measures of uncertainty in the final output.” The GMT agrees that this would be valuable. However, similar to the OR Recreational Model, these estimates will need to be calculated by partners outside the GMT: CA's sampling program, the California Recreational Fishing Survey (CRFS). As was the case for ODFW, the MRIP review of the CA RecFISH model provided a similar recommendation ([Breidt et al. 2011](#)). Our understanding is that a specific timeline from CRFS is not currently available.
- One diagnostic recommended for this model included a summary statistics of “the number of correct predictions (with “correct” defined within a given bound).” The GMT would like further discussion with the SSC about how this “correct” definition is to be applied.
- Also see “Oregon, Washington and California Recreational Model” section below.

Oregon, Washington, and California Recreational Model Reviews

The SSC Subcommittee’s report on the OR Recreational Model review pointed to three sets of questions that should be answered for future reviews (“Issues for future reviews”). Though these questions are found only in the OR Recreational Model summary, some on the GMT agreed that they apply to all three state recreational models.

- The first set of questions, which will be discussed in the 2015-16 SPEX analysis, are questions related to the kind of data or model estimates that the state fishery agencies provide for the IO-PAC model and the process for “moving” this data into IO-PAC.
- The second set of questions is related to how RecFIN estimates groundfish landings and effort for each state, and whether these estimates differ from the data inputted into IO-PAC. This item will require collaboration with RecFIN and the NWFSC. Though a specific timeline is unclear, this is an item that requires more time for discussion and may be addressed after the 2015-16 SPEX analysis is complete.
- The third question in the SSC report asked how projection methods used by the GMT differ from the IO-PAC model’s estimation methods. This item will require collaboration from the NWFSC. It is currently unclear when this item can be addressed but it may be included for further discussion following the 2015-16 SPEX process.

Additional recommendations were mentioned specifically in the WA Recreational Model summary that some on the GMT recognized as applicable to all three state recreational models:

- A retrospective analysis of changes in fishing effort over time will be completed for the 2015-16 SPEX. This has already been completed for the OR Recreational Model.
- Develop models that predict the effect of “fishery-related drivers on angler effort” (e.g., area/depth restrictions) to “more accurately consider the economic impacts of management alternatives.” This item will require more time, discussion, and possibly additional expertise from outside the team. This item may be addressed after the 2015-16 SPEX analysis is complete.

Non-nearshore Impact Projection Model

Corey Niles (WDFW) presented this model in March 2013. Mr. Niles and Dan Erickson (ODFW) are the GMT liaisons to the SSC and the West Coast Groundfish Observer Program (WCGOP) for this model. The WCGOP updates this model for the GMT and collects the data underlying this model. Any model updates must be completed by WCGOP and a timeline for addressing recommendations in the SSC report is currently unclear. Also, some GMT members (e.g., NMFS, ODFW) but not all (e.g., CDFW, WDFW) currently have confidentiality agreements with WCGOP that allows access to the datasets used in this model. To the extent that the GMT can address some of the SSC recommendations, this is noted below.

To be completed for the 2015-16 SPEX analysis

- Develop a measure of variability to be included with the projection estimates. Dr. Jason Cope (NWFSC) has developed a method of estimating coefficients of variation for the bycatch estimates of overfished species. This method is currently being reviewed by the WCGOP; the SSC noted that it too would like an opportunity to review this method. The WCGOP will provide these estimates to the GMT prior to the November 2013 PFMC meeting.

Further discussion and future analysis

- Conduct data analysis to determine whether there is a trend in the data and to better understand inter-annual variation in the data. The time frame for completing this is currently unknown and will require collaboration with WCGOP to address this item.
- Explore “possible highgrading of the catch” as a possible source of error, and more generally, the possibility of using “total catch” of sablefish instead of “retained catch” as the denominator in the bycatch ratios. If it is possible to do so, this change might simplify the model by removing the sablefish discard as a variable in the model. However, it may not be possible to do this given how WCGOP collects data and estimates catch. In addition, making this change will not eliminate uncertainty caused by annual variations in discard amounts. Those on the GMT with current confidentiality agreements with WCGOP can begin to address this item after the 2015-16 SPEX analysis is complete and will need to collaborate with the WCGOP as well.

Nearshore Impact Projection Model

Dan Erickson (ODFW) presented this model in March 2013. Mr. Erickson and Bob Leos (CDFW) are the GMT liaisons to the SSC and the West Coast Groundfish Observer Program (WCGOP) for this model. As is the case with the Non-nearshore Impact Projection Model, the WCGOP assists the GMT with the development and maintenance of this model. That is, WCGOP collects and provides bycatch and effort data, and the GMT provides landings data as well as recreational discard-mortality data by depth strata. Any model updates must be completed in collaboration with WCGOP.

The timeline for addressing these recommendations in the SSC report is currently unclear. As mentioned previously, some GMT members (e.g., NMFS, ODFW) but not all (e.g., CDFW, WDFW) currently have confidentiality agreements with WCGOP that allows access to the datasets used in this model. To the extent that the GMT can address some of the SSC recommendations, this is noted below.

To be completed for the 2015-16 SPEX analysis

- Define risk tolerance in this model by identifying “explicit buffers (e.g., one standard deviation for projected annual landings) that are sufficiently wide to avoid exceeding allocations for overfished species.” A range of buffers will be analyzed for Council consideration in November.
- Develop a measure of variability to be included with the projection estimates. Dr. Jason Cope (NWFSC) has developed a method of estimating coefficients of variation for the bycatch estimates of overfished species. This method is currently being reviewed by the WCGOP; the SSC noted that it too would like an opportunity to review this method. The WCGOP will provide these estimates to the GMT prior to the November 2013 PFMC meeting.

Further discussion and future analysis

- Evaluate the representativeness of nearshore vessels included in the WCGOP data. Those members of the GMT with access to the WCGOP data will begin to address this item after the 2015-16 SPEX analysis is complete.
- A comment was made in the SSC report about evaluating trends in this model while noting that small sample sizes and outliers may make interpretation of trends difficult. We would like further discussion with the SSC about how to move forward with this recommendation. That is, how small is a “small sample”, how should years be weighted, how many years to include, etc.
- Related to the above, the SSC report noted that “[s]mall samples of nearshore vessels in the WCGOP have hampered the GMT’s ability to evaluate and improve the performance

of the Nearshore Model. Lack of access to WCGOP data is also an issue for CDFW.” We would like further discussion with the SSC on this item, e.g., how small is too small when it comes to sample sizes used for this model?

- The SSC report mentioned that “changes in overfished species catch ratios is complicated by the fact that the denominator includes a mix of species that are differentially priced in the market and whose availability to the fishery is affected by depth restrictions that change over time.” We would like further discussion with the SSC on how to move forward with this comment. For example, the GMT could choose a few frequently caught species (e.g., black rockfish, north of 40°10') to include in the denominator but we are uncertain whether this is sufficient or desirable.
- The SSC commented that “[i]ncreasing the number of area strata may allow management to be more finely tuned in terms of protecting overfished stocks while reducing negative community effects. However, finer stratification may also suggest that the model can do more than it actually can, given the sample size constraints.” The GMT provided ratios and sample sizes for two additional area strata in the model presentation and documentation presented in March 2013. We would like further discussion with the SSC on how to move forward with this recommendation and whether this comment was specific to an area (e.g., south of 34°27'). As previously mentioned, the GMT would need to collaborate with the WCGOP if changes in the model structure (i.e., changes in area stratification) are recommended.
- The model relies on Oregon gear compositions from 2004-06 to characterize both the Oregon and California fisheries (i.e., longline and pot use versus “recreational-like” gear use). The SSC noted that this “may be problematic” but the “CDFW lacks the data needed to make similar calculation on their own.” Though the GMT can update the estimates derived from the ODFW logbook data to the three most recent years, for example, we would like further discussion with the SSC on whether this approach is sufficient for responding to this item. The GMT could also explore how the WCGOP data might inform estimates of proportions of gear types used by area and depth strata.
- The model assumes that mortality at depths greater than 20 fathoms is 100%, which contradicts the recreational mortality-depth matrix. Though not specifically noted in the SSC Subcommittee’s report, we will explore this assumption further and collaborate with WCGOP to determine whether a model adjustment should be made.

Rebuilding analysis and discussion

A joint GMT and SSC discussion occurred in April 2012 regarding the upcoming rebuilding analysis that Dr. Andre Punt is currently completing. Dr. Punt will present his updated rebuilding analysis at the September 2013 PFMC meeting. The models reviewed by the SSC Subcommittees and discussed in this report all play a part in the analysis of alternative rebuilding plans. The GMT recognizes a need to look at how well these models and rebuilding analyses are

able to compare and contrast rebuilding alternatives relative to the “needs of the fishing community,” a factor that the Council considers when setting and revising rebuilding plans. That is, what weight should be given to short-term needs relative to long-term conservation benefits? Corey Niles is the GMT liaison to the SSC for this ongoing rebuilding discussion.

To be completed for the 2015-16 SPEX analysis

- The GMT will be exploring rebuilding analyses scenarios that will look at the effect of implementation error (i.e., actual catch differing from what was planned for) and add prediction/confidence intervals to rebuilding forecasts.
- The GMT will be interested in continuing discussing with the SSC, and its relevant Subcommittees, the issue of long-term trade-offs in rebuilding and how they might be explored with the rebuilding analyses forecasts and the Management Strategy Evaluation.
- The GMT will be discussing, with the SSC, how adequate progress in rebuilding can be better evaluated and how the Council can best avoid the “chasing of noise” when responding to updated stock assessments and rebuilding forecasts.

After the 2015-16 SPEX analysis

- The GMT agrees with the SSC’s recommendation to continue dialogue on the rebuilding analysis in off-years. It is an ongoing discussion that the GMT would like to remain engaged in.

In addition, the GMT notes that there may be some connection between the rebuilding analysis and the Tier 1 analysis that is part of the 2015-16 SPEX analysis.

Other data and models contributing to the 2015-16 SPEX analysis

Landings Distribution Model (LDM)

This model was presented by Ed Waters (PFMC contractor) in September 2012 to provide the SSC with an overview of the model to help them better understand the connection between the GMT’s landings and effort projection models and the NWFSC’ IO-PAC model (a regional economic impact model) reviewed in 2012-13 time frame. Dr. Kit Dahl (Council staff) serves as the liaison to the SSC, GMT, and Mr. Waters for this model. The LDM was reviewed in September 2011 and the results of that review were provided in the November 2011 Briefing Book ([Draft September 2011 SSC Minutes, November 2011](#)). The SSC report recommended that the 2015-16 SPEX socioeconomic analysis include information regarding the predictive performance of the LDM projections by port area and sector. The SSC report also requested documentation of how effort and landings projections are distributed among ports. The GMT notes that the LDM is documented in [Appendix A](#) of the 2013-14 FEIS. We would like further discussion with the SSC to determine whether this existing information is sufficient for addressing this recommendation.

Council staff and the GMT have been in contact with Mr. Waters regarding the SSC's recommendations but a time frame for responding to them is not available at this time. Further discussion about these recommendations will occur with Mr. Waters at the GMT's October working meeting (9/30 – 10/4, location to be decided).

IO-PAC and the Economic Data Collection Program (EDC)

The IO-PAC model was presented by Jerry Leonard (Northwest Fisheries Science Center or NWFSC) and the EDC Program was presented by Dr. Todd Lee (NWFSC) and Erin Steiner (NWFSC). Dr. Kit Dahl (Council staff) serves as the liaison to the SSC, GMT, and the NWFSC staff for this model. Council staff and the GMT have not yet had an opportunity to discuss with the NWFSC staff regarding the SSC's recommendations and their time frame for responding to them. Council staff and the GMT are currently discussing different options for continuing related dialogue with the NWFSC.

As mentioned previously in the OR Recreational Model section above, the GMT would like further discussion with the SSC on interpreting the port complex level economic impacts generated by the IO-PAC model relative to the community or port level economic impacts generated by state agencies (e.g., ODFW).

References

Breidt, J. and J. Opsomer. 2010. "Consultant's Report: Review of Ocean Recreational Boat Survey." Available at:

http://www.countmyfish.noaa.gov/projects/downloads/MRIP_ORBS_Review_Report_Final.pdf

Breidt, J., Lesser, V., and J. Opsomer. 2011. "Review of California Recreational Fisheries Survey." Available at:

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The PFMC and the NMFS. 2012. "Proposed Harvest Specifications and Management Measures for the 2013-2014 Pacific Coast Groundfish Fishery and Amendment 21-2 to the Pacific Coast Fishery Management Plan: Final Environmental Impact Statement."

Available at: <http://www.pcouncil.org/groundfish/fishery-management-plan/amendment-21-2/>