OREGON DEPARTMENT OF FISH AND WILDLIFE COMMENTS REGARDING THE RECENT MODEL DEVELOPMENT AND OFL DETERMINATION FOR KELP GREENLING FOR 2015-2016 HARVEST SPECIFICATIONS

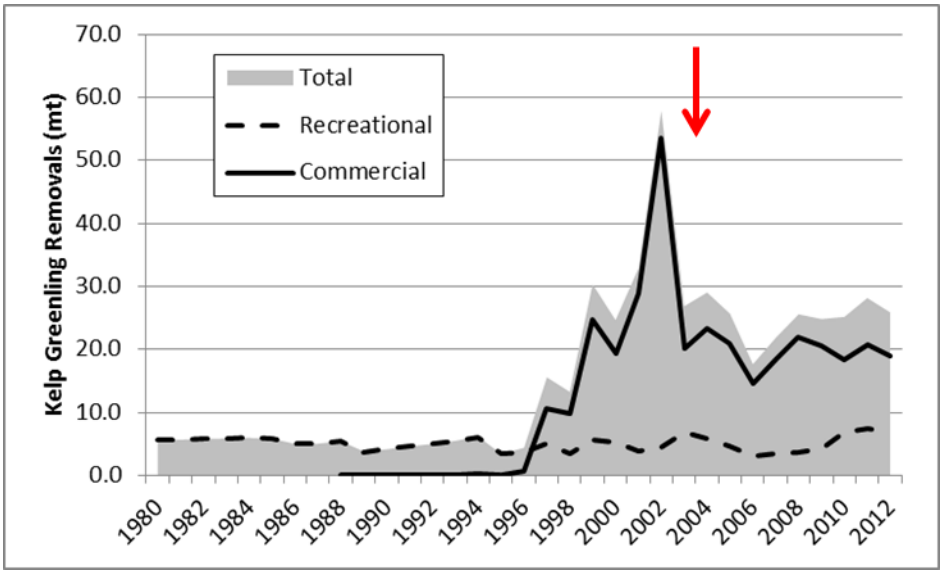
The Oregon Department of Fish and Wildlife (ODFW) is concerned with the recent process used to develop harvest specifications for kelp greenling in Oregon for the 2015-2016 cycle. We believe the results are conservative and inherently uncertain for several reasons addressed in this state report. We strongly recommend that the Council consider managing kelp greenling as part of the Shallow-water Roundfish complex[1] until further model evaluation can be conducted in the next harvest specifications cycle. We also recommend that the process for the development and implementation of data poor models be revisited and revised, to include consideration of additional models when they are available relatively early in the process, as they were for kelp greenling. Finally, we request increased state participation in the development of assessment models, particularly with nearshore species for which the states can contribute both local expertise and valuable data.

Recent kelp greenling landings and effort in the Oregon

The ODFW has been proactive in its approach to managing nearshore groundfish, which include kelp greenling, in both the commercial and recreational fisheries. Following an increase in landings that peaked in 2002, a limited-entry permit system, annual harvest caps and trip landing limits were implemented for the commercial nearshore fishery. Recreational harvest caps were also implemented concurrently. Since the implementation of the state permit program, commercial landings of kelp greenling have stabilized at an average of 19.8 mt (2003-2012; Figure 1). A new data stream for recreational catch was developed for kelp greenling in 2012 (1980-2012), due to concerns with extremely inflated estimates from the Marine Recreational Fisheries Statistics Survey program, with Oregon Recreational Boat Survey estimates. These recent efforts reveal that the sport landings have been very consistent as well, averaging 5.3 mt over the last decade (2003-2012; Figure 1). Commercial landings are closely monitored with weekly updates and actively managed in-season. Recreational landings are monitored monthly, with periodic biweekly preliminary updates as necessary. The ODFW is committed to careful and sustainable management of these nearshore species.

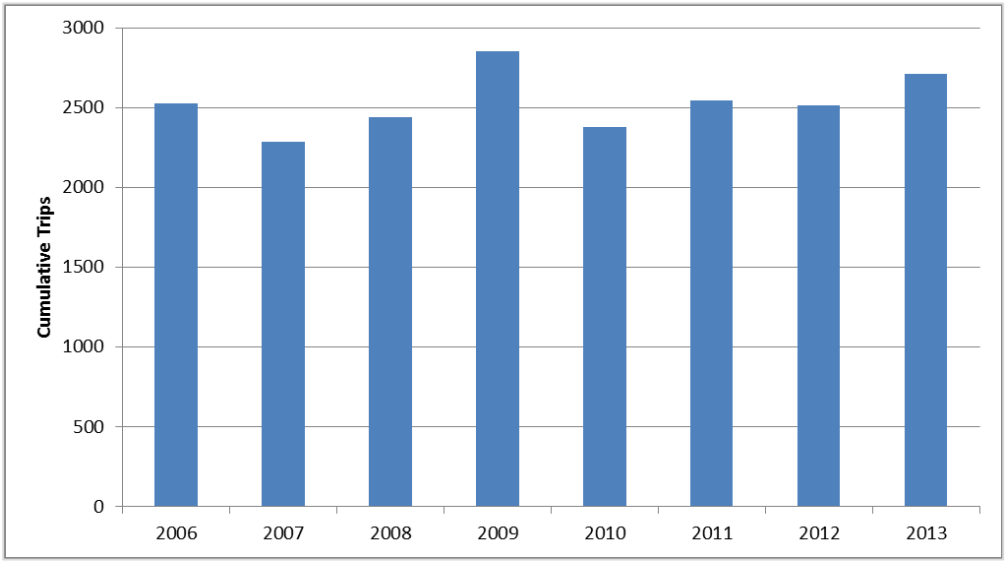
[1] The Shallow-water Roundfish complex, as proposed in November 2013 Council motion H.4, is suggested to include kelp greenling (Oregon, Washington and California), leopard shark, and cabezon (Washington only).

Figure 1: Total landings of kelp greenling in Oregon from 1980-2012. Note the decrease in landings following the implementation of the nearshore limited entry permit fishery and the harvest caps for commercial and recreational (2003, red arrow).



Effort in the commercial fishery has also stabilized, averaging 2530 daily trips per year (2006-2013; Figure 2), with only 2009 as a relatively high year in terms of participation. Effort in the commercial nearshore fishery is also monitored weekly. Anecdotal information from commercial fishermen suggests that kelp greenling are relatively abundant among the nearshore species they target and that trip limits can be met easily.

Figure 2: Cumulative number of landings (all species) in the Oregon nearshore commercial fishery (2006-2013).



This close monitoring of both sport and commercial fisheries enables the state to use active in-season management in order to ensure annual harvest caps are not exceeded. Given the relative stability of the total kelp greenling catch averaging 25.0 mt per year over the previous decade, an

OFL of 14.0 mt is difficult to justify to coastal communities and will require extreme management measures with severe impacts to fisheries and coastal economies.

Model Selection Process

In December 2013, at the time the DB-SRA model used for 2015-2016 harvest specifications was initially presented to the Scientific and Statistical Committee - Groundfish Subcommittee (SSCGF), the ODFW had been working closely with another federal stock assessor (J. Cope, NWFSC) to develop a data moderate assessment (an exSSS model) for kelp greenling in Oregon waters. Preliminary results from this assessment were presented to the SSCGF during its December 2013 meeting. The ODFW was seeking a data moderate assessment for Oregon as a proactive approach to managing kelp greenling in state waters, after it was not included in the list of stock assessments to be completed during the 2015-2016 cycle at the September 2012 Council meeting (Agenda Item H.3.b NMFS Report).

Yet, the SSCGF chose not to review the exSSS model, even when the assessor who developed the DB-SRA model (E. Dick, SWFSC) proposed to develop a data moderate model for 2015-2016 specifications (March 2014 Agenda Item D.5.b Supplementary SSC Report). At the time, the SSCGF stated that a comprehensive review of a data moderate model could not be completed in time to finalize harvest specifications. It is unfortunate that other data moderate models (e.g. China rockfish) were able to be reviewed and that the kelp greenling exSSS model was not a part of this process. ODFW is concerned about that inconsistency and the impact of considering results from only the DB-SRA model. When a data poor model known to produce relatively more conservative OFL estimates is selected, additional justification is needed for the selected model category (e.g. data moderate versus data poor), especially when there is a clear alternative to consider. In order to manage to the best available science, as is federally mandated, all data and models should be considered during this process.

Additional Population Models for Kelp Greenling

Though exSSS models have been accepted as a data moderate assessment method (September 2012 Agenda Item H.3.a), we would like to note that the kelp greenling exSSS model has not been formally reviewed and, at this stage, should not be used for harvest specifications. The kelp greenling exSSS model results are not directly comparable to those from the DB-SRA model, primarily due to differences with internal productivity models and the inclusion of abundance indices. However, with identical catch inputs, the exSSS model results in a much different picture of the kelp greenling population in Oregon compared to the DB-SRA model. General trends in status of the stock are very similar (Figure 3), although the magnitude of the difference is extremely important when translating results into active management. Projected OFLs for 2015-2016 biennium using the exSSS model are over 20 mt (Figure 4), much closer to average catches from the last decade

Figure 3: Stock status (depletion) for kelp greenling with a preliminary exSSS data-moderate model.

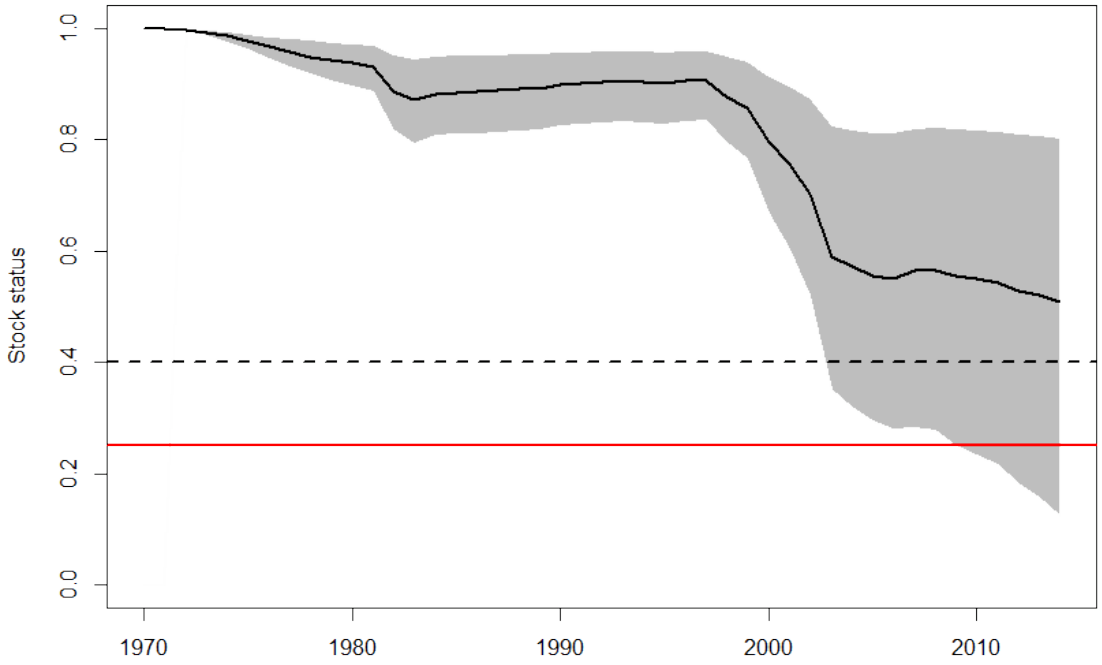
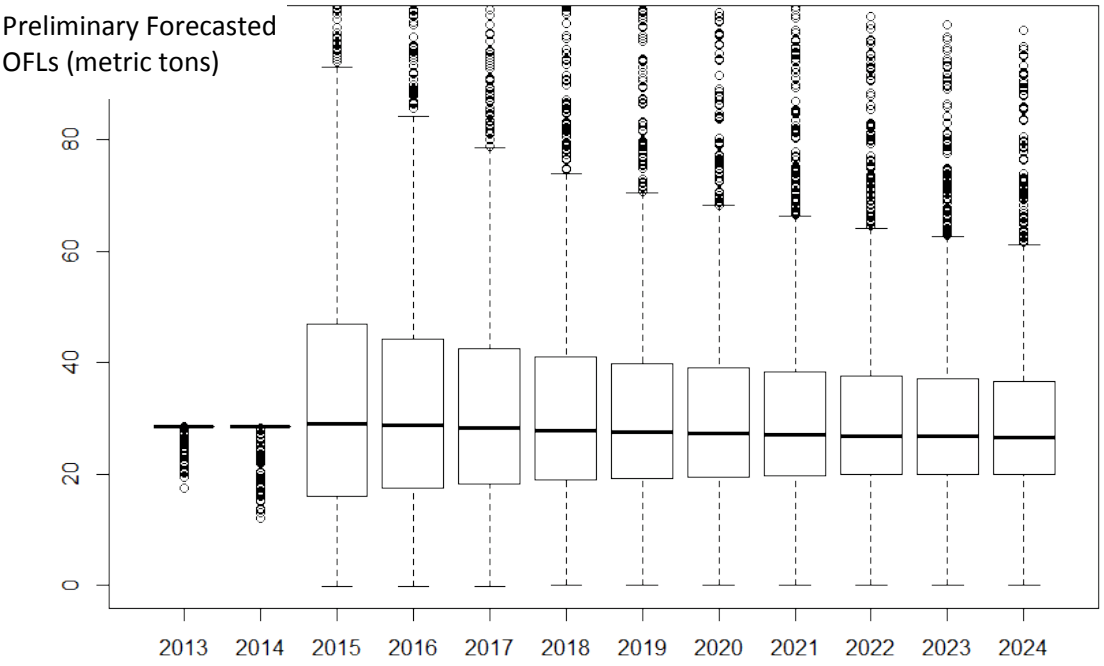


Figure 4 : Forecasted OFLs for kelp greenling with a preliminary exSSS data- moderate model.



Over the last two years, a group of researchers from the Heppell Lab at Oregon State University has been evaluating the applicability of data poor models at smaller, regional management scales (Oregon Sea Grant #NA10OAR4170059-NB223D), again working closely with ODFW staff. Though emphasizing the preliminary nature of this work, the results support the sensitivity of DB-SRA models to specific parameter selections, particularly for the depletion parameter and

the year of application of that parameter (Wetzel and Punt 2011). Their work also suggests that OFL estimates tend to be more sensitive to changes in depletion than other parameters necessary to run DB-SRA, and to a greater degree with kelp greenling than with other nearshore groundfish, such as black rockfish or cabezon (pers. comm. S. Heppell). For these reasons, relatively small decisions regarding these parameters can have dramatic impacts on management outcomes.

The choice of using the depletion estimate from the 2005 kelp greenling stock assessment was a critical factor in the development of the current DB-SRA model. Default parameter values for DB-SRA have been developed for specific life histories, and it is recommended that these be used unless there is justification for other values (Dick and MacCall 2010). Use of default depletion parameters (delta = 0.6) and a different depletion year (most recent year of catch data available at the time, 2011) results in OFLs higher than with the 0.49 prior from the 2005 assessment (pers. comm. S. Heppell), and a relatively small absolute difference could potentially result in a dramatically different situation for coastal communities. The heavy reliance on catch data, which is strongly confounded by state management practices over time in this case, and the common practice of borrowing information from other assessments or areas other than the west coast reduces overall confidence in the results of these models. More consideration needs to be given to the selection of these parameters, as with any other stock assessment, and justification for the use of specific, non-default parameters needs to be presented along with the assessment. The ODFW would like to work more closely with federal assessors to continue to investigate these issues and assist with the development of the best possible information specific to the kelp greenling population within Oregon waters.

Revision of the process for model development and selection

The process by which these data-poor models are developed needs to be reviewed and potentially revised. More state involvement in the development of the models is needed, not only for the catch data but also the additional parameters that go into the model. This is especially relevant for nearshore species for which the state is most knowledgeable, as noted by the March 2014 Agenda Item D.5.b Supplemental Report from the state agencies.

The ODFW would like to note that the assessor for kelp greenling did incorporate multiple ODFW suggestions after the model had been initially presented (i.e., sensitivity analyses regarding the age at maturity and the incorporation of the equilibrium catches), and it was clear that our input was highly valued. The ODFW appreciated the ability to be actively involved and requests that this involvement begin earlier in the process in the future. In this case, improved communication through more formalized channels might have resulted in a different model brought forward during this specification process. As suggested in the March 2014 Agenda Item D.5.b Supplemental Report from the state agencies, model development could even be delegated to the state for specific nearshore species. The ODFW strongly agrees with the recommendations presented in the SSC Supplemental Report on the 2015-16 harvest specifications (March 2014 Agenda Item D.5.b) – that more help from the states is needed, both for workload and for local knowledge of the resource and fisheries, to improve the process by which data poor models are implemented into management.

Recommendations

Given the sensitivity of data poor models to changes in parameters and catch streams, a modification of the procedure by which models are selected may be warranted. In the North Pacific Fishery Management Council, it is standard practice for many species to have assessors

present a range of models, with different parameters and multiple catch streams, in order to directly compare results among the models. This is might be considered a more formalized and extensive set of sensitivity analyses through which the states could actively contribute both expertise and data. The Scientific and Statistical Committee could then select the model in which they have the most confidence from those available, and could request additional models for the following cycle with specific changes. This would improve assessment accuracy and benefit both state fishery managers and federal stock assessors by increasing confidence in the models' ability to track real changes in the population over time, and to diminish the perception of "results-based management".

With the inherent uncertainty in the DB-SRA model and the ad-hoc process to implement into management, the ODFW believes it is premature to manage the species in the Shallow-water Roundfish complex[2], such as kelp greenling, individually. The DB-SRA model used for 2015-2016 harvest specifications was developed as a substitute for a more comprehensive assessment. The SSCGF has recommended developing a data moderate model for the following specification cycle for kelp greenling. The ODFW supports this recommendation, but would further suggest that NMFS consider kelp greenling as a priority species for a full assessment during the next cycle. The ODFW also has additional data that could be incorporated into a full or data moderate assessment, including several suggestions for appropriate indices of abundance, such as the newly completed state observer database or nearshore commercial logbook data, fisheries-dependent length and age data, and maturity information. The ODFW is dedicated to continuing to work with federal assessors to improve the assessment of kelp greenling in Oregon waters. However, we are now faced with serious management challenges for the 2015-2016 biennial cycle that have dramatic implications for our coastal economies and communities.

References:

Dick, E.J., and A. D. MacCall. 2010. Estimates of sustainable yield for 50 data-poor stocks in the Pacific coast groundfish fishery management plan. NOAA Technical Memorandum. NOAA-TM-NMFS-SWFSC-460.

Wetzel, C.R. and A.E. Punt. 2011. Model performance for the determination of appropriate harvest levels in the case of data-poor stocks. Fisheries Research 110 (2): 342-355.

[2] The Shallow-water Roundfish complex, as proposed in November 2013 Council motion H.4, is suggested to include kelp greenling (Oregon, Washington and California), leopard shark, and cabezon (Washington only).