

Report on the bocaccio and widow rockfish
Stock Assessment Review (STAR) Panel
July 13 - 17, 2009
Santa Cruz, CA

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Prepared for the Center for Independent Experts
Northern Taiga Ventures, Inc. (NTVI)
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Executive Summary

The assessment documents for the two reviewed species were made available sufficiently early before the meeting to allow for an in-depth review. The documents for the two species were well prepared and contained the required information.

The assessments for both species do represent the best available scientific information and each assessment provide a reliable basis for setting OFLs and ABCs as mandated by the Magnuson-Stevens Act. The assessment for widow rockfish is more uncertain than that for bocaccio rockfish. For widow rockfish, there was insufficient time to fully explore alternative model configurations during the STAR Panel meeting because of difficulties in developing a suitable base model.

The two assessments use Stock Synthesis as their main analytical tool as is the case for many USA West Coast stock assessments. Stock Synthesis is a highly flexible assessment tool in which it is possible to use several sources of information (growth information, catch, length and age frequencies, indices of stock sizes, etc.) to evaluate stock status. Stock Synthesis is highly structured with many options and built-in assumptions; it can be configured to mimic several other types of assessment approaches. Because of its structure and underlying assumptions, Stock Synthesis can provide stock estimates and fisheries management benchmarks even when very little data are available. It is sometimes difficult to ascertain the most important influence on the assessment results: the data or the assumptions in the assessment model. Using assessment software other than Stock Synthesis, including simpler statistical catch at age models, would be helpful to validate Stock Synthesis results and to determine the relative influence of data versus assumptions.

In other stock assessment and peer review systems, considerable time is spent examining input data prior to modeling. Analysts who use Stock Synthesis seem to spend less time on that stage: all available data is included in the assessment software and the analysts look at what comes out. Input data could be more carefully examined prior to being included in the Stock Synthesis framework.

Estimates of catches in California have been extended backwards considerably, sometimes to the end of the 19th century and there are recommendations to do similar extension for Oregon and Washington. One of the main reasons for extending estimates of catches as far back as possible is to avoid the “shifting baseline” syndrome that could result in lost fishing opportunities. The danger, however, is that because of limited data other than catches and because catch estimates are themselves highly uncertain, unrealistic estimates of virgin biomass may be estimated, which, when compared with reasonably well informed and well estimated recent biomass estimates, imply that the stocks remain below the rebuilding target and should continue to be severely constrained.

Background

The STock Assessment Review (STAR) panel is part of the Pacific Fishery Management Council's (PFMC) process to provide peer review as referenced in the 2006 Reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act, which states that "the Secretary and each Regional Fishery Management Council may establish a peer review process for that Regional Fishery Management Council for scientific information used to advise the Regional Fishery Management Council about the conservation and management of the fishery (see Magnuson-Stevens Act section 302(g)(1)(E)). If a peer review process is established, it should investigate the technical merits of stock assessments and other scientific information used by the Council's Scientific and Statistical Committee (SSC). The peer review process is not a substitute for the SSC and should work in conjunction with the SSC." The Pacific Fishery Management Council's Terms of Reference for the West Coast Groundfish Stock Assessments and STAR Process for 2009-2010 require that reviewers be appointed from the Center for Independent Experts (CIE). Two reviewers from the Center for Independent Experts (CIE) took part in the 2009 STAR panel on Bocaccio and Widow rockfishes.

The previous full assessment of bocaccio rockfish was done in 2003 with update assessments in 2005 and 2007. Compared with the previous assessment, the 2009 assessment uses the SS3 modeling framework instead of previously employed SS1; extends the north boundary of the assessment area from Point Mendocino to Point Blanco; extends the period modeled from 1892 to 1951; uses two trawl fisheries rather than one; uses a revised catch history based on Ralston et al. (2009); includes the NWFSC shelf-slope trawl survey; uses revised triennial trawl survey estimates based on a GLMM approach instead of the swept-area-swept; adds a NWFSC Southern California Bight hook and line survey and; uses revised juvenile indices (Pier index and juvenile trawl survey index).

The previous full assessment of widow rockfish was conducted in 2005 and subsequently updated in 2007. Compared with the previous assessment, the current assessment uses the SS3 modeling framework instead of direct ADMB code; extend the modeled period backward from 1958 to 1916; uses a revised catch history based on Lynde (1986), Tagart (1985) and Ralston et al. (2009); includes the NWFSC shelf-slope trawl survey; and uses a revised triennial survey estimates using a GLMM approach instead of the swept-area biomass estimate used previously.

These two benchmark stock assessments are expected to provide the basis for the management of the groundfish fisheries off the West Coast of the U.S. including providing scientific basis for setting OFLs and ABCs as mandated by the Magnuson-Stevens Act. The technical review took place during July 13-17, 2009 in a formal, public meeting of fishery stock assessment experts at the SWFSC in Santa Cruz, CA.

Review Activities

Prior to the July 13-17, 2009 STAR panel meeting, I downloaded and reviewed the main assessment papers. I attended the STAR Panel and was rapporteur for widow rockfish. I took active part on the discussions for the two species being reviewed.

Summary of Findings for each ToR

1. Become familiar with the draft bocaccio and widow rockfish stock assessments and background materials. Along with other members of the Panel, determine if the stock assessment document is sufficiently complete according to the Pacific Fishery Management Council's Terms of Reference for West Coast Groundfish Stock Assessment and STAR Panels (to be included once finalized).

The bocaccio rockfish assessment document was complete, very well researched, very well documented and very clearly presented. It incorporated the results of recent research, documented the effects of moving from Stock Synthesis 1 to SS3, included several sensitivity runs covering a range of plausible cases, and it included a retrospective analysis where the results were not extended past the last year used in the assessment which facilitated interpretation of the results. The responses to the panel requests were provided using a base model (Mod50) slightly different than that in the draft assessment. It included a corrected fecundity relationship and CPFV observer length composition split from those from RecFIN.

The widow rockfish assessment document was complete, including comparison with the previous assessment software (based on ADMB code) and retrospective analyses, but there were problems with the data and structure of the model in the draft document. Through fruitful interchanges between the STAT and the STAR Panel, considerable improvements in both model structure and data were achieved. The base case available at the end of the Panel meeting is considered reasonably well investigated and a substantial improvement on the original base case. There remain problems, however, particularly with the sharply-peaked selectivity patterns. Because the panel spent time trying to reconstruct catch history and because an inappropriate tuning algorithm had been used, there was insufficient time to fully examine models fits and model results and the Panel recommended that the next widow rockfish assessment be a full assessment rather than an update.

2. Evaluate data collection operations and survey design and make recommendations for improvement.

The data collection operations were not discussed in detail, but do seem to be appropriate and follow standard procedures. A presentation on the reconstruction of landings estimates for California was made to the Panel and the approach taken appears entirely appropriate, making best use of the various sources of information.

While the bocaccio rockfish catches were considered reliable, those for widow rockfish had to be agreed during the panel meeting.

Widow rockfish catches were estimated from a spreadsheet prepared by Tagart (1985), total rockfish catches by state from 1938 to 1955 published in the Bulletin of Commercial Fisheries (red books), an Alaska Fisheries Science Center report on catch reconstruction (Lynde 1986) for 1956 to 1980, and on the percent widow rockfish in the total rockfish category. This should be seen as provisional reconstruction that should be re-evaluated in the next assessment. These new landings were assigned to the OR bottom trawl fishery for modeling as opposed to the Vancouver – Columbia fishery. This was not expected to make a large difference, but was felt to correspond more to reality.

The bocaccio assessment uses 10 indices of stock sizes, but only four cover the most recent year of the assessment period, and except for the recreational pier fishing recruitment index (1954-2008), the other indices are only available since the early 2000s.

The widow rockfish assessment uses 7 indices of stock size (the triennial and NWFSC surveys are divided in north and south indices) but only the NWFSC survey covers up to 2008, and it is not considered to be a very good index of the stock size of widow rockfish.

3. Comment on quality of data used in the assessment.

Data from the early 1980s to the present are considered to be more reliable than for years before 1980. As indicated the pre 1980 catch estimates for widow rockfish were derived during the meeting and should be considered as interim estimates that need to be validated in the next assessment.

As a result of fisheries management measures, the widow rockfish assessment, which was relatively data rich, has become data poor because low allowable catches have resulted in sparse age and length compositions. In addition, management measures are believed to have sufficiently influenced fishery-dependent stock size indices that were used in previous assessments as to have rendered them uninformative and there are no reliable fishery independent indices of stock size.

S. Ralston made a presentation on the California Catch Reconstruction project. While all relevant sources of information available appear to have been used, and all assumptions seem reasonable, there is no doubt that actual catches by species remain highly uncertain. One of the main reasons for extending estimates of catches as far back as possible is to avoid the “shifting baseline” syndrome where the objective to rebuild to recent high biomasses, which may be considerably smaller than historical highs, could result in lost fishing opportunities. The danger, however, is that because of limited data other than catches and because catch estimates are themselves highly uncertain, unrealistic estimates of virgin biomass may be estimated, which, when compared with reasonably well informed and well estimated recent biomass estimates, imply that the stocks remain below the rebuilding target and should continue to be severely constrained.

If quantitative stock assessments are to continue to be done for these species, it would be useful to have more reliable indices of stock size, particularly for widow rockfish where trawl surveys may not provide reliable indices. Longline or pot surveys could be more appropriate.

4. Evaluate and comment on analytic methodologies.

Both assessments used the most recent version Stock Synthesis as their main analytical tool. Stock Synthesis is a standard assessment tool for many USA West Coast stock assessments. It is a highly flexible assessment tool in which it is possible to use several sources of information (growth information, catch, length and age frequencies, indices of stock sizes, etc.) to evaluate stock status. Stock Synthesis is highly structured with many options and built-in assumptions; it can be configured to mimic several other types of assessment approaches. Because of its structure and underlying assumptions, Stock Synthesis can provide stock estimates and fisheries management benchmarks even when very little data are available. It is sometimes difficult to ascertain the most important influence on the assessment results: the data or the assumptions in the assessment model.

5. Evaluate model assumptions, estimates, and major sources of uncertainty. Specifically, recommend improvements including alternative model configurations or formulations as appropriate during the panel meeting and comment on the primary sources of uncertainty in the assessment model.

Recommendations for improvements made during the meeting are documented in the panel report in the additional runs requested and in the research recommendations. Using assessment software other than Stock Synthesis, including simpler statistical catch at age models, would be helpful to validate Stock Synthesis results and to determine the relative influence of data versus assumptions.

6. Insert an explicit statement as to whether this stock assessment represents the best available science.

Both the bocaccio rockfish assessment and the widow rockfish assessment do represent the best available scientific information and provides a reliable basis for setting OFLs and ABCs as mandated by the Magnuson-Stevens Act. The assessment for widow rockfish is more uncertain than that for bocaccio rockfish. For widow rockfish, there was insufficient time to fully explore alternative model configurations during the STAR Panel meeting because of difficulties in developing a suitable base model.

7. Recommendations for any further improvements.

Use other models, including simpler statistical catch at age models, to determine the relative influence of data versus assumptions in Stock Synthesis.

Prior to running any assessment model, investigate what the data are saying. This would allow the identification of stock size indices that are may or may not be consistent. If stock size indices are consistent, the analyses can proceed, but if they are not, a scientific judgment has to be made on how to use conflicting indices. Similarly, age and length compositions should be examined for signals on recruitment and abundance of various age/size classes.

Maps used in the assessment documents and in PowerPoint presentations should identify all important geographic locations relevant to the assessment.

8. Brief description on panel review proceedings highlighting pertinent discussions, issues, effectiveness, and recommendations.

The meeting proceeded smoothly along the agreed schedule. The STATs diligently conducted additional analyses and presented them. There was a real good spirit of cooperation between the STAT and the STAR panel to improve the quality and usefulness of the assessment. All participants had internet access in the meeting room which greatly facilitated review activities and exchange of material.

Conclusions and Recommendations

In other stock assessment and peer review systems, considerable time is spent examining input data prior to modeling. Analysts who use Stock Synthesis seem to spend less time on that stage: all available data is included in the assessment software and the analysts look at what comes out. Input data could be more carefully examined prior to being included in the Stock Synthesis framework. Prior to running any assessment model, analysts should investigate what the data are saying. This would allow the identification of stock size indices that are may or may not be consistent. If stock size indices are consistent, the analyses can proceed; but if they are not, a scientific judgment has to be made on how to use conflicting indices. Similarly, age and length compositions should be examined for signals on recruitment and abundance of various age/size classes.

It is sometimes difficult to ascertain the most important influence on the assessment results: the data or the assumptions in the assessment model. Using assessment software other than Stock Synthesis, including simpler statistical catch at age models, would be helpful to validate Stock Synthesis results and to determine the relative influence of data versus assumptions.

If quantitative stock assessments are to continue to be done for these species, it would be useful to have more reliable indices of stock size, particularly for widow rockfish where trawl surveys may not provide reliable indices. Longline or pot surveys could be more appropriate.

In addition to retrospective analyses, the assessment document should include a comparison of assessment results with those of previous assessments. The sensitivity of results to using only recent reliable data should be investigated.

Appendix 1: Bibliography of materials provided for review

Field, J.C. and Ralston, S. 2005 . Spatial variability in rockfish (*Sebastes* spp.) recruitment events in the California Current System. *Can. J. Fish. Aquat. Sci.* 62: 2199–2210

Field, J.C., Dick, E.J., Parson, D. and MacCall, A.D. 2009. Status of bocaccio, *Sebastes paucispinis*, in 2009 STAR Panel Review Draft June 29, 2009

Hastie, J. and Ralston, S. 2009. Pre-Recruit Survey Workshop September 13-15, 2006 Southwest Fisheries Science Center Santa Cruz, California. A summary report.

He, X., Pearson, D.E., Dick, E.J., Field, J.C., Ralston, S. and MacCall, A.D. 2009. DRAFT: Status of the widow rockfish resource in 2009.

He, X., Pearson, D.E., Dick, E.J., Field, J.C., Ralston, S. and MacCall, A.D. 2007. Status of the widow rockfish resource in 2007, An Update.

He, X., Pearson, D.E., Dick, E.J., Field, J.C., Ralston, S. and MacCall, A.D. 2005. Status of the widow rockfish resource in 2005

MacCall, A.D. 2007. Status of bocaccio off California in 2007, with rebuilding projections. Stock status update.

MacCall, A.D. 2005. Status of bocaccio off California in 2005. Stock status report.

Methot, R.D. 2000. Technical description of the stock synthesis assessment program. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-43, 46 p.

Methot, R.D. 2009. User Manual for Stock Synthesis Model Version 3.02C. Updated January 29, 2009. NOAA Fisheries Seattle, WA

Ralston, S. 2009. Coastwide Pre-Recruit Indices from SWFSC and PWCC/NWFSC Midwater Trawl Surveys (2001-2008)

Ralston, S., Pearson, D.E., Field, J.C. and Key, M. 2009. Documentation of the California catch reconstruction project. Draft

STAR Panel . 2007. Bocaccio STAR Panel report.

STAR Panel . 2005. Bocaccio STAR Panel report.

STAR Panel.1 2005. Widow rockfish STAR Panel report.

Appendix 2: A copy of the CIE Statement of Work

Statement of Work for Jean-Jacques Maguire

External Independent Peer Review by the Center for Independent Experts

Stock Assessment Review Panel for Bocaccio and Widow Rockfish

Scope of Work and CIE Process: The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract to provide external expertise through the Center for Independent Experts (CIE) to conduct impartial and independent peer reviews of NMFS scientific projects. This Statement of Work (SoW) described herein was established by the NMFS Contracting Officer's Technical Representative (COTR) and CIE based on the peer review requirements submitted by NMFS Project Contact. CIE reviewers are selected by the CIE Coordination Team and Steering Committee to conduct the peer review of NMFS science with project specific Terms of Reference (ToRs). Each CIE reviewer shall produce a CIE independent peer review report with specific format and content requirements (**Annex 1**). This SoW describes the work tasks and deliverables of the CIE reviewers for conducting an independent peer review of the following NMFS project.

Project Description: Both bocaccio and widow rockfish have been declared overfished and are subject to rebuilding plans. The last benchmark assessment of bocaccio was conducted in 2003, using the Stock Synthesis 1 platform. The last benchmark assessment for widow rockfish was conducted in 2005, using a species-specific ADMB model. Both assessments will be conducted using the most recent version of the Stock Synthesis platform. These two benchmark stock assessments will provide the basis for the management of the groundfish fisheries off the West Coast of the U.S. including providing scientific basis for setting OFLs and ABCs as mandated by the Magnuson-Stevens Act. The technical review will take place during a formal, public, multiple-day meeting of fishery stock assessment experts. Participation of external, independent reviewer is an essential part of the review process. Participation of external, independent reviewer is an essential part of the review process.

The STAR panel is part of the Pacific Fishery Management Council's process to provide peer review as referenced in the 2006 Reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act, which states that " the Secretary and each Regional Fishery Management Council may establish a peer review process for that Regional Fishery Management Council for scientific information used to advise the Regional Fishery Management Council about the conservation and management of the fishery (see Magnuson-Stevens Act section 302(g)(1)(E)). If a peer review process is established, it should investigate the technical merits of stock assessments and other scientific information used by the Council's Scientific and Statistical Committee (SSC). The peer

review process is not a substitute for the SSC and should work in conjunction with the SSC.”

The Pacific Fishery Management Council’s Terms of Reference for the West Coast Groundfish Stock Assessments and STAR Process for 2009-2010 requires that some reviewers be appointed from the Center for Independent Experts (CIE). The Council’s terms of reference document will be included as background material. The Terms of Reference (ToRs) specific to the CIE are attached in **Annex 2**. The tentative agenda of the panel review meeting is attached in **Annex 3**.

Requirements for CIE Reviewers: Two CIE reviewers are required with one of the reviewers participating in all 2009 STAR panels (other than hake) to provide a level of consistency between the panels. The CIE reviewers shall conduct an impartial and independent peer review in accordance with the SoW and ToRs herein. Each CIE reviewer’s duties shall not exceed a maximum of 14 days to complete all work tasks of the peer review described herein. CIE reviewers shall have the expertise, background, and experience to complete an independent peer review in accordance with the SoW and ToRs herein. CIE reviewers shall have expertise and work experience in fish population dynamics, with experience in the integrated analysis modeling approach, using age-and size-structured models, use of MCMC to develop confidence intervals, and use of Generalized Linear Models in stock assessment models.

Location of Peer Review: Each CIE reviewer shall conduct an independent peer review during the panel review meeting scheduled in Santa Cruz, California on July 13-17, 2009.

Statement of Tasks: Each CIE reviewers shall complete the following tasks in accordance with the SoW and Schedule of Milestones and Deliverables herein.

Prior to the Peer Review: Upon completion of the CIE reviewer selection by the CIE Steering committee, the CIE shall provide the CIE reviewer information (name, affiliation, and contact details) to the COTR, who forwards this information to the NMFS Project Contact no later the date specified in the Schedule of Milestones and Deliverables. The CIE is responsible for providing the SoW and ToRs to the CIE reviewers. The NMFS Project Contact is responsible for providing the CIE reviewers with the background documents, reports, foreign national security clearance, and information concerning other pertinent meeting arrangements. The NMFS Project Contact is also responsible for providing the Chair a copy of the SoW in advance of the panel review meeting. Any changes to the SoW or ToRs must be made through the COTR prior to the commencement of the peer review.

Foreign National Security Clearance: When CIE reviewers participate during a panel review meeting at a government facility, the NMFS Project Contact is responsible for obtaining the Foreign National Security Clearance approval for CIE reviewers who are

non-US citizens. For this reason, the CIE reviewers shall provide requested information (e.g., name, contact information, birth date, passport number, travel dates, and country of origin) to the NMFS Project Clearance for the purpose of their security clearance, and this information shall be submitted at least 30 days before the peer review in accordance with the NOAA Deemed Export Technology Control Program NAO 207-12 regulations (available at the Deemed Exports NAO website: <http://deemedexports.noaa.gov/sponsor.html>).

Pre-review Background Documents: Two weeks before the peer review, the NMFS Project Contact will send by electronic mail or make available at an FTP site the CIE reviewers all necessary background information and reports for the peer review. In the case where the documents need to be mailed, the NMFS Project Contact will consult with the CIE on where to send documents. The CIE reviewers shall read all documents in preparation for the peer review.

Documents to be provided to the CIE reviewers prior to the STAR Panel meeting include:

- The current draft stock assessment reports;
- The most recent previous bocaccio and widow rockfish stock assessments and STAR Panel reports;
- The Pacific Fishery Management Council's Scientific and Statistical Committee's Terms of Reference for Stock Assessments and STAR Panel Reviews;
- Stock Synthesis (SS) Documentation
- Additional supporting documents as available.
- An electronic copy of the data, the parameters, and the model used for the assessments (if requested by reviewer).

This list of pre-review documents may be updated up to two weeks before the peer review. Any delays in submission of pre-review documents for the CIE peer review will result in delays with the CIE peer review process, including a SoW modification to the schedule of milestones and deliverables. Furthermore, the CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance to the SoW scheduled deadlines specified herein.

Panel Review Meeting: Each CIE reviewers shall conduct the independent peer review in accordance with the SoW and ToRs. **Modifications to the SoW and ToRs can not be made during the peer review, and any SoW or ToRs modifications prior to the peer review shall be approved by the COTR and CIE Lead Coordinator.** Each CIE reviewer shall actively participate in a professional and respectful manner as a member of the meeting review panel, and their peer review tasks shall be focused on the ToRs as specified in the contract SoW. The NMFS Project Contact is responsible for any facility arrangements (e.g., conference room for panel review meetings or teleconference arrangements). The CIE Lead Coordinator can contact the Project Contact to confirm any peer review arrangements, including the meeting facility arrangements.

In most circumstances a STAR Panel will include a chair appointed from the SSC's Groundfish Subcommittee and three other experienced stock assessment analysts. The STAR panel chair is responsible for: 1) developing an agenda for the STAR panel meeting, 2) ensuring that STAR panel members and STAT teams follow the Terms of Reference, 3) participating in the review of the assessment, 4) guiding the STAR panel and STAT team to mutually agreeable solutions, and 5) coordinating review of final assessment documents.

The CIE reviewer's role includes being an active panel participant and participants are strongly encouraged to voice all comments regarding the assessment data, model configurations, and uncertainty during the STAR Panel so the assessment teams can address the comments during the Panel meeting and incorporate changes when appropriate. The assessments are finalized by the end of the Panel meeting and comments made after the fact will not be able to be included in the final assessment document. The CIE reviewer should also contribute to the final STAR Panel Review Report. Additional details regarding the STAR Panel reviewer's responsibilities will be included in the Pacific Fishery Management Council's final Terms of Reference for Groundfish Stock Assessments and STAR Panel meetings.

Contract Deliverables - Independent CIE Peer Review Reports: Each CIE reviewer shall complete an independent peer review report in accordance with the SoW. Each CIE reviewer shall complete the independent peer review according to required format and content as described in Annex 1. Each CIE reviewer shall complete the independent peer review addressing each ToR as described in Annex 2.

Other Tasks – Contribution to Summary Report: Each CIE reviewer will assist the Chair of the panel review meeting with contributions to the Summary Report. CIE reviewers are not required to reach a consensus, and should instead provide a brief summary of their views on the summary of findings and conclusions reached by the review panel in accordance with the ToRs.

Specific Tasks for CIE Reviewers: The following chronological list of tasks shall be completed by each CIE reviewer in a timely manner as specified in the **Schedule of Milestones and Deliverables**.

- 1) Conduct necessary pre-review preparations, including the review of background material and reports provided by the NMFS Project Contact in advance of the peer review;
- 2) Participate during the panel review meeting in Santa Cruz, California during July 13-17, 2009, as called for in the SoW, and conduct an independent peer review in accordance with the ToRs (Annex 2);
- 3) No later than July 31, 2009, each CIE reviewer shall submit an independent peer review report addressed to the "Center for Independent Experts," and sent to Mr. Manoj Shivlani, CIE Lead Coordinator, via email to shivlanim@bellsouth.net, and CIE Regional Coordinator, via email to David Die at ddie@rsmas.miami.edu.

- Each CIE report shall be written using the format and content requirements specified in Annex 1, and address each ToR in Annex 2;
- 4) CIE reviewers shall address changes as required by the CIE review in accordance with the schedule of milestones and deliverables.

Schedule of Milestones and Deliverables: CIE shall complete the tasks and deliverables described in this SoW in accordance with the following schedule.

8 June 2009	CIE sends reviewer contact information to the COTR, who then sends this to the NMFS Project Contact
29 June 2009	NMFS Project Contact sends the CIE Reviewers the pre-review documents
13-17 July 2009	Each reviewer participates and conducts an independent peer review during the panel review meeting in Santa Cruz, California.
31 July 2009	CIE reviewers submit draft CIE independent peer review reports to the CIE Lead Coordinator and CIE Regional Coordinator
14 August 2009	CIE submits CIE independent peer review reports to the COTR
21 August 2009	The COTR distributes the final CIE reports to the NMFS Project Contact and regional Center Director

Modifications to the Statement of Work: Requests to modify this SoW must be made through the Contracting Officer’s Technical Representative (COTR) who submits the modification for approval to the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the CIE within 10 working days after receipt of all required information of the decision on substitutions. The COTR can approve changes to the milestone dates, list of pre-review documents, and Terms of Reference (ToR) of the SoW as long as the role and ability of the CIE reviewers to complete the SoW deliverable in accordance with the ToRs and deliverable schedule are not adversely impacted. The SoW and ToRs cannot be changed once the peer review has begun.

Acceptance of Deliverables: Upon review and acceptance of the CIE independent peer review reports by the CIE Lead Coordinator, Regional Coordinator, and Steering Committee, these reports shall be sent to the COTR for final approval as contract deliverables based on compliance with the SoW. As specified in the Schedule of Milestones and Deliverables, the CIE shall send via e-mail the contract deliverables (the CIE independent peer review reports) to the COTR (William Michaels, via William.Michaels@noaa.gov).

Applicable Performance Standards: The contract is successfully completed when the COTR provides final approval of the contract deliverables. The acceptance of the contract deliverables shall be based on three performance standards: (1) each CIE report shall have the format and content in accordance with Annex 1, (2) each CIE report shall

address each ToR as specified in Annex 2, (3) the CIE reports shall be delivered in a timely manner as specified in the schedule of milestones and deliverables.

Distribution of Approved Deliverables: Upon notification of acceptance by the COTR, the CIE Lead Coordinator shall send via e-mail the final CIE reports in *.PDF format to the COTR. The COTR will distribute the approved CIE reports to the NMFS Project Contact and regional Center Director.

Key Personnel:

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Annex 1: Format and Contents of CIE Independent Peer Review Report

1. The CIE independent report shall be prefaced with an Executive Summary providing a concise summary of the findings and recommendations.
2. The main body of the reviewer report shall consist of a Background, Description of the Individual Reviewer's Role in the Review Activities, Summary of Findings for each ToR, and Conclusions and Recommendations in accordance with the ToRs.
 - a. Reviewers should describe in their own words the review activities completed during the panel review meeting, including providing a detailed summary of findings, conclusions, and recommendations.
 - b. Reviewers should discuss their independent views on each ToR even if these were consistent with those of other panelists, and especially where there were divergent views.
 - c. Reviewers should elaborate on any points raised in the Summary Report that they feel might require further clarification.
 - d. Reviewers shall provide a critique of the NMFS review process, including suggestions for improvements of both process and products.
 - e. The CIE independent report shall be a stand-alone document for others to understand the proceedings and findings of the meeting, regardless of whether or not they read the summary report. The CIE independent report shall be an independent peer review of each ToRs, and shall not simply repeat the contents of the summary report.
3. The reviewer report shall include as separate appendices as follows:
 - Appendix 1: Bibliography of materials provided for review
 - Appendix 2: A copy of the CIE Statement of Work
 - Appendix 3: Panel Membership or other pertinent information from the panel review meeting.

Annex 2: Terms of Reference for the Peer Review

Stock Assessment Review Panel for Bocaccio and Widow Rockfish

1. *Become familiar with the draft bocaccio and widow rockfish stock assessments and background materials. Along with other members of the Panel, determine if the stock assessment document is sufficiently complete according to the Pacific Fishery Management Council's Terms of Reference for West Coast Groundfish Stock Assessment and STAR Panels (to be included once finalized).*
2. *Evaluate, data collection operations and survey design and make recommendations for improvement*
3. *Comment on quality of data used in the assessment.*
4. *Evaluate and comment on analytic methodologies*
5. *Evaluate model assumptions, estimates, and major sources of uncertainty. Specifically, recommend improvements including alternative model configurations or formulations as appropriate during the panel meeting and comment on the primary sources of uncertainty in the assessment model.*
6. *Insert an explicit statement as to whether this stock assessment represents the best available science.*
7. *Recommendations for any further improvements*
8. *Brief description on panel review proceedings highlighting pertinent discussions, issues, effectiveness, and recommendations*

Note – CIE reviewers typically address scientific subjects, hence ToRs usually do not involve CIE reviewers with regulatory and management issues unless this expertise is specifically requested in the SoW.

Annex 3: Tentative Agenda

Stock Assessment Review Panel for Bocaccio and Widow Rockfish
Santa Cruz, California

July 13-17, 2009

Point of contact for reviewer security & check-in: Dr. Steve Ralston

The agenda will be submitted to CIE at least two weeks before the meeting.

Appendix 3: Panel Membership or other pertinent information from the panel review meeting.

Panel Reviewers

Martin Dorn	Panel Chair, Scientific and Statistical Committee (SSC) Representative
Chris Francis	Center for Independent Experts (CIE)
Vladlena Gertseva	NMFS, Northwest Fisheries Science Center (NWFSC)
J. J. Maguire	Center for Independent Experts (CIE)

Panel Advisors

John DeVore	Pacific Fishery Management Council
Gerry Richter	Groundfish Advisory Subpanel (GAP) Representative
John Budrick	Groundfish Management Team (GMT) Representative

Bocaccio rockfish STAT

John Field	NMFS, Southwest Fisheries Science Center (SWFSC)
Alec MacCall	NMFS, Southwest Fisheries Science Center (SWFSC)
E. J. Dick	NMFS, Southwest Fisheries Science Center (SWFSC)

Widow rockfish STAT

Xi He	NMFS, Southwest Fisheries Science Center (SWFSC)
Alec MacCall	NMFS, Southwest Fisheries Science Center (SWFSC)
Stephen Ralston	NMFS, Southwest Fisheries Science Center (SWFSC)
John Field	NMFS, Southwest Fisheries Science Center (SWFSC)
E. J. Dick	NMFS, Southwest Fisheries Science Center (SWFSC)

Others present:

Mr. Pete Leipzig, Fishermen's Marketing Association
Mr. Brad Pettinger, Oregon Trawl Commission
Mr. Tom Jagielo
Mr. Dan Erickson, Oregon Department of Fish and Wildlife
Mr. Daniel Hively, University of California Santa Cruz
Ms. Kate Richerson, University of California Santa Cruz
Ms. Valerie Brown, University of California Santa Cruz
Mr. Pete Adams, NMFS Southwest Fisheries Science Center
Mr. Michael Mohr, NMFS Southwest Fisheries Science Center
Mr. Mike O'Farrell, NMFS Southwest Fisheries Science Center
Ms. Meisha Key, California Department of Fish and Game
Mr. Tom Ghio