Terms of Reference

Red Abalone Fishery Management Plan Management Strategy Scientific Peer Review Process

2018

CALIFORNIA
OCEAN
SCIENCE
TRUST

Developed by California Ocean Science Trust on behalf of the California Department of Fish and Wildlife and The Nature Conservancy, 2018. Funding provided by California Ocean Protection Council.

Contents

1. Introduction

1.1. Management Context

The northern California populations of red abalone support a very popular recreational fishery throughout northern California. While past landings (2002-2011) appear to be stable, recent declines in subtidal stocks have been recorded and the fishery is now closed. Red abalone has several characteristics, which make it vulnerable to fishing pressure and environmental fluctuations.

In 2005, the Fish and Game Commission (FGC) adopted the Abalone Recovery and Management Plan (ARMP), which governs the management of the recreational red abalone fishery and recovery of southern abalone stocks. This plan sets management guidelines and triggers for Total Allowable Catch (TAC) adjustments based on 2 criteria – density and recruitment. The ARMP has two phases of adaptive management: the interim management plan which the fishery is currently managed under, and the long-term management plan. The interim plan manages the northern California fishery as a single unit on a highly precautionary basis. The ARMP objective is to move the fishery into long-term management, where management is locally based, more responsive and adaptive, while maintaining sustainability. Management changes to the fishery in 2014 marked the beginning of this move to long term management conceptually by differing regulations between southern and northern areas of the fishery. The transition to ARMP long-term management provides an opportunity for the California Department of Fish and Wildlife (CDFW) to move management of the recreational red abalone fishery to a fishery management plan (FMP) under the Marine Life Management Act (MLMA).

A primary goal of fishery management under the MLMA is to ensure that fishing levels are sustainable and do not result in an overfished stock. Recent declines and concerns about changing ocean conditions have prompted the need for more information and a quicker management response, which the long-term management under an FMP seeks to provide for this fishery. FMPs assemble information, analyses, and management options that serve as a vehicle for the CDFW to present a coherent package of information, and proposed regulatory and management measures to the FGC. The FMP becomes effective upon adoption by the Commission, following their public process for review and revision.

Thus, it is important for the scientific underpinnings of the draft FMP to undergo external, independent peer review prior to submission to the FGC. This process is one way to provide FGC and stakeholders assurances that FMPs are based upon the best readily available scientific information, as set forth under the MLMA. The FGC and CDFW have asked for both the management strategy proposed by CDFW and a stakeholder submitted management strategy, led by The Nature Conservancy (TNC), to be included in the peer review. Each of the groups have provided an independently developed management strategy for consideration.

1.2. Review Process Goals and Objectives

Ensuring the best use of best available information in fisheries management is an important tenet of the MLMA. The MLMA identifies external scientific review as a key tool to ensure management decisions are based on the best available scientific information. CDFW is committed to incorporating the best available scientific information into fisheries management through a peer review process.

Scientific and technical peer review (review) is widely applied across numerous technical disciplines to assure products are of high quality, reflect solid scholarship, and that the information contained is accurate and based on rigorous, sound scientific methods (OST 2016). In any review, Ocean Science Trust's (OST) intent is to provide an assessment of the work product that is balanced, fairly represents all reviewer evaluations, and provides feedback that is actionable. When building a review process, OST seeks to balance and adhere to six core review principles: scientific rigor, transparency, legitimacy, credibility, salience, and efficiency. These principles ground the review and shape the products that we develop.

As such, the goals and objectives of the FMP review process are to:

1. ensure that the science underpinning the FMP represents the best scientific information available and is appropriately used to inform a harvest control rule;
2. follow a detailed calendar and fulfill explicit responsibilities for all participants to produce required reports and outcomes;
3. provide an independent external scientific and technical review of the agreed upon sections of the red abalone FMP;
4. use review resources effectively and efficiently.

1.3. Review Coordinating Body: Ocean Science Trust

Ocean Science Trust is an independent non-profit organization working across traditional boundaries to bring together governments, scientists, and citizens to build trust and understanding in ocean and coastal science. We empower participation in the decisions that are shaping the future of our oceans. We were established by the California Ocean Resources Stewardship Act (CORSA) to support managers and policymakers with sound science.

For more information, visit our website at www.oceansciencetrust.org.

Contact information

Errin Ramanujam, California Ocean Science Trust (errin.ramanujam@oceansciencetrust.org)

2. Peer Review Scope and Process

2.1. Review Request

CDFW and FGC's purpose in asking OST to conduct a review of the scientific and technical components of both the CDFW and the TNC management strategy is to ensure the scientific and technical elements provide a rigorous underpinning for management decisions and regulatory action should they be implemented. Ocean Science Trust is serving as the review coordinating body, and worked with CDFW and TNC to develop a scope of review that focuses on key scientific and technical components of the management strategies where independent scientific assessment would add value (this document). Components subject to review were determined using criteria from OST 2017 (here).

2.2. Scope of review

CDFW is seeking an independent assessment of the red abalone management strategy developed by CDFW, as well as the stakeholder-submitted management strategy led by TNC.

The central question of this review is:
Are the underlying data and analysis, and application of those in each of the proposed management strategies scientifically sound, reasonable and appropriate while also meeting the management goals for the recreational red abalone fishery in northern California as defined by MLMA?

The review will focus on evaluation of the following components of both management strategies:

- Evaluation of the data collection methods that inform management indicators, triggers, and decisions including informing responses to changes in the environment, fishing, or other stressors.
- What is the scientific rationale for the indicators used and their link to responses in the abalone population?
- Is the proposed quantitative analysis and application of the data scientifically rigorous and is the scientific rationale for the proposed management actions it triggers accurate?
- Evaluation of modelling approach used including model assumptions, analyses, interpretation, and application of the model results to evaluate performance of the harvest control rules against management objectives.

- From a scientific perspective, provide a general assessment of the proposed methodologies including application, assumptions, and management implications of uncertainties in the stock status, data streams, and analytical method within the confines of CDFW capacity and regulatory authority

For clarity we note that this is not a comprehensive review of the entire FMP. Rather, we are reviewing only the management strategies submitted by TNC and by CDFW.

2.3. Process

Review Process Overview

- **Select a review mode.** A review process is selected in consultation with CDFW, Ocean Protection Council, and any other relevant groups (contractors, authors, etc.) by considering complexity, management risk, uncertainty, socioeconomics, level of previous review, and novelty (OST 2016; OST 2017).
- **Assemble review team.** Ocean Science Trust will convene a ~6 member review panel composed of Ocean Protection Council Science Advisory Team members and other experts (see "Assembling a Review Team," OST 2016 and "assembling a review team" below for additional details).
- **Conduct review via a series of webinars.** Group webinars will allow CDFW and TNC to engage directly with reviewers at the outset to present the inputs, model methods, and application of analyses and provide two-way interaction to provide any additional clarity needed to complete the review. Many of the webinars will allow for independent deliberation and conversation among reviewers. Given the timeline no in person workshop will be convened.
- **Develop and share final report.** Reviewers will contribute to the development of a final report, which will be made available on OST and CDFW webpages.
- **Review process**: A single peer review panel will review both the CDFW management strategy and the stakeholder-submitted management strategy at the same time. CDFW, FGC, TNC, and OPC formally requested OST to conduct the review in this way. There will be one summary report will be submitted which covers both management strategies.

Review Mode: Remote Panel Review

All meetings will take place via remote online meetings (webinars). At the outset of the review, OST will work with CDFW and TNC to develop detailed reviewer instructions that encourage focused scientific feedback throughout the process. Instructions will include directed evaluation questions and may delegate tasks for reviewers based on their individual areas of expertise. This document will be used to guide the development of meeting agendas and track progress throughout the course of the review. For each meeting, advance work will be required of participants (e.g. drafting responses to guiding

questions) in order for all parties to come prepared for meaningful discussions. OST will notify CDFW and TNC of additional requested materials and data immediately throughout the duration of the review.

Webinar 1: Initiation of Review

Ocean Science Trust will host an initial webinar to provide the review committee, CDFW, and TNC an overview of the scope and process, and clarify the roles and responsibilities of each participant. CDFW will also provide a summary of the relevant management context to ensure reviewers understand the role of the review in the larger FMP development process, and how the outputs will be considered. The bulk of the webinar will then focus on a presentation by CDFW and TNC of the scientific and technical components of each management strategy. This webinar is an opportunity to develop a shared understanding of the tasks and allow reviewers to ask CDFW and TNC any clarifying questions about the review materials or request additional materials before they convene independently to conduct their technical assessment.

Webinar 2-3: Reviewers convene with OST to conduct review

Ocean Science Trust will convene approximately two remote two to three-hour webinars with the review committee to conduct an in-depth evaluation of the components identified in the Scope of Review (above). In advance of each webinar, reviewers will be asked to prepare responses to guiding evaluation criteria questions specified in the review instructions. During each webinar, reviewers will discuss their findings and develop conclusions and recommendations within the context of these questions. Additional follow-up phone conversations may be scheduled as needed to complete the review. Outputs from each webinar, as well as reviewer responses to the questions, will guide the development of the final report.

Webinar 4: Final summary report feedback

Ocean Science Trust will host a final 2-hour webinar to gather final feedback and input from the review panel on the summary report. The review panel will be asked to review the draft summary report in advance of this meeting. This final meeting will provide a space for reviewers to voice any suggested edits or clarifications, and a chance to have a final discussion about results before sharing the final report with CDFW and TNC.

Assembling Reviewers

Transparency

Reviewer names will be published on OST's webpage for the review at the outset of the review; however, specific review comments in the final review report will not be attributed to individual reviewers.

Selection of Reviewers

Ocean Science Trust will implement a reviewer selection process to assemble a review committee composed of ~6 external scientific experts. Ocean Science Trust will consult with and solicit reviewer recommendations from CDFW, TNC, the Ocean Protection Council Science Advisory Team (OPC-SAT), as well as OST's own professional network among the academic and research community. Membership may include experts from academia, research institutions, and government agencies as appropriate to deliver balanced feedback and multiple perspectives. Reviewers will be considered based on three key criteria:

Expertise: The reviewer should have demonstrated knowledge, experience, and skills in one or more of the following areas:

- ecology of invertebrates and/or red abalone
- fisheries science and management (e.g. HCR, TAC, management triggers)
- modeling for fisheries management use (e.g. Management Strategy Evaluation)
- invertebrate and/or red abalone population dynamics and indicators specific to understanding the response to environmental, fishing, and other stressors
- sampling and data collection methods for invertebrate and/or red abalone population studies
- statistical analysis methodologies

Objectivity: The reviewer should be independent from the generation of the product under review, free from institutional or ideological bias regarding the issues under review, and able to provide an objective, open-minded, and thoughtful review in the best interest of the review outcome(s). In addition, the reviewer should be comfortable sharing his or her knowledge and perspectives and openly identifying his or her knowledge gaps.

Conflict of Interest: Reviewers will be asked to disclose any potential conflicts of interest to determine if they stand to financially gain from the outcome of the process (i.e. employment and funding). Conflicts will be considered and may exclude a potential reviewer's participation.

Final selection of the review committee panel will be made by the OPC-SAT Executive Committee. Ocean Science Trust will select one member of the review committee to serve as chair to provide leadership among reviewers, help ensure that all members act in accordance with review principles and policies, and promote a set of review outputs that adequately fulfill the charge and accurately reflect the views of all members.

Transparency in the Review Process

Once selected and shared with the CDFW and TNC teams, Ocean Science Trust will publish this terms of reference document to our website. OST will reach out to key communicators to share the website information and alert them to the review. Upon delivery of the final report to CDFW, the report will also be made public on the OST review webpage. OST will then host a webinar with key members of the review team to share results of the review with any interested stakeholders. CDFW and TNC may participate in this webinar at their discretion.

Management Preview and OPC-SAT Endorsement

Ocean Science Trust will share the final summary report with CDFW and TNC for a preview before the review results are published and shared with the public. There will be an opportunity for CDFW and TNC to ask clarifying questions of the review committee and for reviewers to make clarifying edits only, as appropriate. This may occur via email, conference call or short webinar as time allows.

As a product of the OPC-SAT, near-final reports must go through a full OPC-SAT endorsement before public release.

2.4. Review Report (reference appendix template)

Ocean Science Trust will work with reviewers to synthesize reviewer assessments (responses to the review instructions and input during webinars) into a cohesive, concise final written summary report. This review summary will be delivered to CDFW by xxx 2018, and made publically available on OST's website. We acknowledge that reviewers may provide recommendations beyond the given reviewer charge; such recommendations will be honored and represented in the final summary as deemed appropriate by the review panel.

2.5. Timeline

The review will commence May 2018 with the expected delivery of a final summary report to CDFW by August 2018. A timeline of each task is provided below.

	April	**May**	**June**	**July**	**Aug**	**Sept**
Receive Draft FMP			June 1			
Terms of Reference Development (April-May)		X				
Develop and Finalize Terms of Reference	X	X				

Assemble Review Team and Develop Guidance for Reviewers (April - May)	X	X				
Develop/put up webpage		X	X			
Solicit, select, and confirm reviewers	X	X				
Schedule webinars		X	X			
Develop Review Instructions	X	X				
Develop webinar agendas		X	X	X	X	
Conduct Review (June-August)						
Distribute TOR, review materials, and Review Instructions to reviewers			X			
Kickoff webinar			X			
Webinar 2			X	X		
Webinar 3				X	X	
Final Webinar					X	
Additional data requests to DFW/TNC			X	X		
Develop outline and draft report, edits from reviewers					X	
Final draft to reviewers					X	
Final edits					X	
Management preview					X	
Final Report to DFW						X
Post final report on OST website						X
Follow-up as appropriate						X

3. Roles and Responsibilities of Peer Review Participants

3.1. Shared Responsibilities

All participating parties share the responsibility in assuring adequate technical and scientific review of the Red Abalone management strategies in accordance with the MLMA.

3.2. Reviewer Responsibilities

The role of the review committee is to conduct a detailed evaluation of the scientific underpinnings of aspects of both the Red Abalone management strategies, where external review will be valuable. The specific responsibilities of the review committee are included in the Review Instructions. The review committee may request additional information, data, and analyses as appropriate to support a comprehensive and useful review.

The review committee chair has, in addition, the responsibility to: 1) provide leadership among reviewers; 2) ensure that review committee participants follow the terms of reference, adhere to the charge for the review, and review instructions and guidelines; and 3) promote review outputs that adequately fulfill the charge and accurately reflect the views of all members.

The review committee is required to make an honest and legitimate attempt to resolve any areas of disagreement during the review process. Occasionally, fundamental differences of opinions may remain between reviewers that cannot be resolved. In such cases, the review committee will document the areas of disagreement in the final summary report.

Selected reviewers should not have financial or personal conflicts of interest with the scientific information, subject matter, or work product under review within the previous year (at minimum), or anticipated. Reviewers should not have contributed or participated in the development of the product or scientific information under review. Review committee members who are federal employees should comply with all applicable federal ethics requirements. Reviewers who are not federal employees will be screened for conflicts of interest.

3.3. CDFW and TNC Team Responsibilities

CDFW and TNC will participate in the review process as follows:

1. *Provide all relevant project documents, data, and supporting materials.*

   a. Identify and provide all project documents, data, and other information necessary for reviewers to conduct a constructive assessment.
   b. Work to ensure all related materials are clear and accessible to reviewers in a realistic timeframe and respond to additional requests in a timely manner.
2. *Constructively engage with reviewers and OST staff, and respond to data and other information requests in a timely manner.*
   a. Engage in the process and be available to answer questions or present materials to the review committee as necessary.
   b. Sonke Mastrup (CDFW) and Alexis Jackson (TNC) will serve as the primary contacts during the review process. In order to adhere to review timelines, CDFW and TNC will respond to and provide feedback on requested materials from OST in a reasonable, mutually agreed-upon timeframe.
3. *Consider reviewer comments and recommendations.* CDFW, FGC, and TNC intend to consider and incorporate reviewer feedback and recommendations into the management strategy for the FMP and supporting materials as appropriate.

3.4. Ocean Science Trust Responsibilities

California Department of Fish and Wildlife, FGC, and TNC have requested OST to serve as the independent appointed entity to design and coordinate all aspects of this scientific and technical review. Ocean Science Trust will design and implement all aspects of the review process to meet management needs, including assemble and guide a committee of expert reviewers, conduct a review process that is on task and on time, schedule and host remote meetings as appropriate, work with reviewers to produce a written final summary report, and encourage candor among reviewers, among other activities. Upon completion of the review, the final report will be delivered to CDFW and TNC and made publicly available on the OST website for all constituents. Throughout, OST will serve as an honest broker and facilitate constructive interactions between CDFW, TNC, and reviewers as needed in order to ensure reviewers provide recommendations that are valuable and actionable, while maintaining the independence of the review process and outputs.

Appendix: Outline of Example Peer Review Report

The following is an example template for a peer review report:

1. Summary of the Peer Review Committee, containing:
   a. Names and affiliations of committee members
   b. Topic(s) being reviewed
   c. List of analyses requested by the Committee, the rationale for each request, and a brief summary the responses to each request

2. Comments on the technical merits and/or deficiencies in the applications of the analyses underpinning the FMP and recommendations for remedies. Comments should address issues such as the following:
    a. What are the data requirements of the analyses underpinning the FMP?
    b. What are the situations/stock status for which the analyses are applicable?
    c. What are the assumptions of the methodology and/or in applying the proposed analyses?
    d. Are the methodology and application of the analyses correct from a technical perspective?
    e. How robust are results to departures from the assumptions of the analyses?
    f. Do the application of the analyses take into account estimates of uncertainty? How comprehensive are those estimates?
    g. Will the new analyses and application of analyses result in improved stock assessments or management advice?

3. Areas of disagreement regarding panel recommendations:
    a. Among panel members
    b. Between the panel and proponents
4. Unresolved problems and major uncertainties (e.g., any issues that could preclude use of the analyses underpinning the FMP)
5. Management, data, or fishery issues raised by the public and other representatives during the panel review
6. Prioritized recommendations for future research and/or data collection