

**Appendix D: *“Terms of Reference for Technical Panel and Review Committee to Support Development of a Total Allowable Catch (TAC) for Red Abalone at San Miguel Island”***

# **Revised Terms of Reference**

## **Technical Panel and Review Committee to Support Development of a Total Allowable Catch (TAC) for Red Abalone at San Miguel Island (Sixth Draft, July 2, 2007)**

### **Introduction:**

This Terms of Reference (TOR) is intended to spell out the charge for a technical panel and a review committee to undertake research efforts that generally address status determination of a red abalone (*Haliotis rufescens*) population(s) that inhabits waters off San Miguel Island (SMI), California. Ultimately, results (and recommendations) from this research will be used by management bodies to better assess the impact a potential Total Allowable Catch (TAC—i.e., annual yield) would have on this species' long-term sustainability. Henceforth, the TAC is broadly defined and reflects any fishery-based harvest that is executed on some systematic basis. The technical panel and review committee serve in an advisory capacity to the San Miguel Island Abalone Fishery Advisory Group (AAG).

This TOR describes the purpose, background, objectives, and guiding principles of the technical panel and review committee. It also describes the deliverables, recruitment criteria, organization, and communications protocols for these two bodies.

### **Purpose:**

To help fulfill its charge, AAG intends to convene a technical panel along with a review committee to spearhead this research—i.e., population modeling that addresses red abalone, with particular emphasis on determining impacts to this resource associated with re-establishment of a fishery (TAC). Ultimately, the overall research will require the technical panel and review committee to coalesce available sources of data and explore alternative analytical approaches for assessing the resiliency of this population to fishing pressure. Scientific findings from this research will become part of the AAG's final work product and will be transmitted as part of the AAG's recommendations to the Fish and Game Commission for the primary purpose of determining the extent to which this species can support a proposed, limited entry fishery at SMI.

### **Background:**

The Abalone Recovery and Management Plan (ARMP) was adopted by the California Fish and Game Commission (Commission) in December 2005. After plan adoption, the Department of Fish and Game (Department), under the direction of the Commission, initiated a fishery consideration process for a limited abalone fishery at San Miguel Island. The Department embarked on this fishery consideration process by applying a cooperative planning approach and empanelling a constituent advisory group, the AAG. The AAG mission is to provide a limited range of fully developed alternatives for managing a potential fishery at SMI to the Department. The Department will use these management alternatives in recommendations to the Commission when a red abalone fishery at SMI is considered.

The AAG will provide recommendations to the Department regarding the following four key topics:<sup>1</sup>

- A TAC for SMI red abalone
- Alternatives for allocation between recreational and commercial take
- Alternative regulations to achieve the TAC and allocation
- Potential management, enforcement, and monitoring techniques

To help the AAG complete its task to develop a scientifically-based TAC, the AAG agreed that it is appropriate to tap external scientific expertise to complement the expertise of AAG members. The AAG asked the Department to set up a process for involving external scientific experts on population and fishery modeling, as well as TAC development.

A multi-step process is proposed for establishing a methodology for determining the TAC. The structure involves convening a core technical panel and a review committee. Together, these scientific experts will be charged with developing a draft methodology for determining the TAC, to be presented for the AAG's consideration. This methodology will be used to determine the TAC (or alternate versions of the TAC), and the AAG will use the TAC to complete its work product. The AAG will work to receive and review interim and final work products produced by the technical panel and review committee in an iterative review process.

## **Objectives:**

The primary objective for the technical panel and review committee is to provide the AAG with a draft methodology for determination of a TAC as well as other possible alternative TAC determination methodologies.

The process for accomplishing the primary objective is split between the two groups, with each group having specific tasks and objectives that dovetail together to achieve the primary objective.

The objectives for the technical panel are to:

1. Prepare a draft methodology for determining a TAC that best fits the conditions for red abalone stock at SMI.
2. Identify gaps or further data needs for improving the accuracy of the TAC in the future.
3. Propose alternative methodological approaches for TAC determination.
4. Incorporate input from the review committee and prepare a revised draft for presentation to the AAG.
5. Present and discuss the methodology and alternatives with the full AAG.

The objectives for the review committee are to:

1. Conduct an objective scientific review of draft methodology for TAC determination.
2. Provide comments and suggestions to strengthen the logic, rigor, and internal consistency of the draft methodology.
3. Propose methods to filling data gaps and identification of any additional gaps.
4. As appropriate, propose alternative approaches for determining the TAC.
5. Conduct an objective review of the final proposed methodology for TAC determination as recommended by the AAG.

---

<sup>1</sup> AAG Mission Statement: AAG\_MissionStatement\_Sep2706.pdf

## Guiding Principles:

The technical panel and review committee will be guided by the following key principles:

1. *Work with the AAG's ambitious time line for completion.* The AAG and fishery consideration process is governed by a very tight timeline for completion in the fall of 2008. The AAG recognizes that the process of determining the TAC will take place over a period of 6-12 months but is eager to integrate that information as it is being developed. To enable the AAG to receive this information in a timely manor, the technical panel will convene and begin outlining a TAC methodology in April 2007. The technical panel will work to complete a draft methodology, including a preliminary model(s), by December 31, 2007. Achieving this milestone will necessitate bringing a dedicated modeler onto the technical panel by September 1, 2007. The technical panel will distribute a draft methodology and preliminary model(s) to the review committee in January 2008. The review committee will complete its review by the end of February 2008, and the technical panel will revise the methodology (or methodologies) and alternatives and present it to the AAG at a meeting in the March 2008 timeframe.
2. *Prepare a science-based outcome.* The TAC methodology and alternatives must be developed on sound, best available science, including sourcing and justifying all parameters used and providing statistical confidence intervals for important parameters and final TAC.
3. *Balance a long-term planning approach with the need for sufficient levels of certainty in the modeling process.* The technical panel and review committee should seek to balance: 1) the need to model for the long term (i.e., to account for multiple generations and foreseeable but unpredictable events like El Nino) with 2) the decrease in certainty that comes from modeling a decade or more into the future.
4. *Structure the work in an outcome-focused fashion.* The AAG's charge is to provide collaborative-based recommendations to the Department in this fishery consideration process. It is the intention of the AAG to include the advice and proposed work product of the technical panel and review committee in their recommendations to the Department. The AAG intends to conduct an iterative review process of the technical panel and review committee work as the TAC development process unfolds.
5. *Structure the meetings to strike an appropriate balance between the AAG's interest in observing and tracking the technical panel's work and the panel's interest in having a space to deliberate privately.* The Department's overarching goal in the AAG process, including technical panel meetings, and all public processes is to create a high level of transparency and public involvement. It is understood, however, that if all discussions are public, technical panel members may not feel at liberty to participate openly and candidly. Thus, a balance will be struck in the technical panel process between openness and ability to tackle difficult topics without fear of being misinterpreted or misunderstood.
6. *Schedule periodic joint meetings and briefings.* The technical panel will schedule periodic joint meetings or presentations with the AAG to report progress, discuss the status of draft work products, and consider implications for the AAG's final report. These meetings will be the primary venue for discussions between the two groups.

## Key Work Considerations and Deliverables:

### Key Inputs and Considerations

In developing the TAC methodology and model(s), the technical panel will:

1. Take account of existing SMI red abalone stock data as the basis (e.g., population density, habitat structure) and any fishery dependent data from the past fishery.
2. Consider published data on biological parameters of red abalone in general (fecundity, mortality, survival rates, intrinsic growth rate).
3. Consider associated ecological and anthropogenic parameters that may result in stock fluctuations.
4. Consider continued recovery of SMI stock and surrounding areas.
5. Take into consideration the stock in existing reserves and how it is associated with TAC determination.
6. Utilize information from other similar TAC processes from other fisheries as best as possible.
7. Develop an adaptable methodology that uses the precautionary principle, which is more precautionary at lower levels of data and less precautionary as more data and more accurate stock estimates are available. The methodology should include appropriate statistical models (SD/SE negatively correlated with amount of data available) and error propagation procedures.
8. Incorporate a wide variety of information sources besides peer-reviewed literature. Field observations, working papers, and other materials are considered to be relevant for this assignment. All sources must be cited in a traceable fashion.
9. Provide a best estimate of what the effect of a potential TAC(s) is on the population, e.g., how much recovery of the population is slowed due to a given TAC (e.g. provide a null-model of population development).
10. Consider optimum/minimum densities of the abalone beds in determining a TAC and sustainability of the proposed fishery.

### Work Products

The deliverable for the technical panel is a complete methodology for TAC determination with alternative methodological approaches to be used by the AAG. The format of the intended work product is a concise memorandum, with appropriate graphics and tabular information, presented in a manner that can be well understood by AAG members and other policy bodies. The memorandum will include the following:

1. Fully referenced working assumptions and relevant conceptual models used (i.e., akin to Materials & Methods of a scientific paper, and accessible to AAG members).
2. A fully referenced statement of the data consulted.
3. A list of appropriate stock models to use for abalone and determining TAC along with pros and cons for using them.
4. A risk analysis for various ranges of stock level and corresponding TACs.
5. A comprehensive bibliography of all documents and data sources consulted.
6. A list of data gaps for properly determining stock levels and TAC, with brief discussion of how deviation from the current best guess will affect TAC.
7. A timeframe for periodic revision of the TAC (i.e. 1 year, 2 years ... 10 years etc.)

The deliverable for the review committee is a complete review of the draft methodology with suggested changes and further advice for the technical panel. The review committee will also have the opportunity to review the final recommendation from the AAG on the methodology for TAC determination.

### **Technical Panel and Review Committee Expertise and Recruitment Criteria:**

The technical panel will consist of four to six experts. Collectively, their expertise should span the fields of abalone biology, marine ecology, fisheries, population dynamics and modeling, fishery dynamics and modeling, and natural resource policy and management.

Collectively, the candidates for the technical panel and review committee must meet all of the following recruitment criteria:

1. Technical capability in their respective discipline, combined with the ability to work across disciplines
2. Objectivity as reflected in their willingness/ability to understand and integrate diverse disciplinary and resource user viewpoints
3. Ability and willingness to work collaboratively, and commitment to produce concise work products in a timely fashion
4. Availability during the timeframe of this process
5. Experience in population modeling of marine organisms, in particular marine invertebrates
6. Experience in fishery modeling, in particular marine invertebrate fisheries.
7. Demonstrated experience in science advising for public policy, and appreciation for the policy context of this assignment.
8. Technical panelists and review committee members are not explicitly precluded from participating if they have affiliations with stakeholder groups active on the AAG, but they must fully disclose these affiliations.

One technical panel member will be on point for spearheading the analysis and doing much of the legwork of model development. This lead analyst will work closely with and receive guidance, advice, and feedback from the other panel members. This lead analyst will have strong technical expertise in the area of population modeling. Once brought on board, the lead analyst will also be available to work in a dedicated fashion to develop a TAC model(s).

#### Recruitment of lead analyst:

The technical panel will work with members of the AAG's TOR work group to recruit a lead analyst. As needed, funding will be sought to support the work of the lead analyst. The Department will seek an appropriate funding source to ensure the lead analyst is contracted in an appropriate time frame. CONCUR, Inc., a member of the AAG facilitation team, would structure a suitable contracting vehicle to use funds from the Department to support the lead analyst.

Recruitment will proceed according to the following general steps:

1. Technical panel and AAG work group members will establish specific selection criteria for a lead analyst.
2. Technical panel and AAG work group members will identify potential candidates for the lead analyst position and solicit concise statements of qualifications keyed to the selection criteria and the charge.
3. Technical panel and AAG work group members will discuss potential candidates and agree on the selection of a lead analyst.

#### Recruitment of review committee members:

The review committee will consist of four to six experts. Department staff will work with the AAG TOR work group to recruit members of the review committee by December 31, 2007. Recruitment will proceed according to the following general steps:

1. Department staff and the AAG work group will meet to establish the general composition of the review committee.
2. Department staff and the AAG work group will identify potential candidates for the review committee.
3. Department staff and the AAG work group will discuss potential candidates and agree on the selection of a review committee.

## **Communication Protocols:**

The AAG Facilitation Team will assist the technical panel and the review committee as appropriate. The technical panel and review committee's communications are otherwise self-organized.

Technical panel members have at their discretion the use of face-to face meetings, teleconferences, and/or email exchanges in their deliberations. Review committee members, due to their possible wide geographic dispersion, will probably convene via teleconference and communicate by email and/or phone.

Technical panel and review committee members are not precluded from corresponding with members of the AAG, but they should focus their primary deliberations on their fellow technical panel and review committee members while this task is in progress. Technical panel and review committee members will be asked not to disseminate their work on the TAC beyond AAG process participants until the AAG completes its mission.

Technical panel and review committee members will deliver their final recommendations and work products to the AAG.

## **Technical Panel and Review Committee Organization and Deliberations:**

Technical panel members will meet by teleconference initially to organize. The technical panel will then establish their workplan for additional meetings.

It is anticipated that the review committee may meet at least once via teleconference to formulate a coordinated review and select a committee lead. The committee lead will coordinate and summarize the committee's review. Additional review committee meetings and organizational structure will be left to the discretion of the committee.

A joint meeting of the technical panel and the review committee or review committee representatives maybe needed to coordinate the overall methodology product prior to its presentation to the full AAG.

Technical panel and review committee members will deliberate in good faith. Panelists will work towards a consensus recommendation, and specifically identify major areas of scientific agreement. As appropriate, they should identify important areas of scientific disagreement and uncertainty.

## **Roles of AAG Members and Department Staff:**

All participants in the technical panel and review committee process are working in support of a well-informed recommendation.

Within this charge, AAG and Department staff members may serve on the technical panel, provided that they meet the recruitment criteria.

To help strike an appropriate balance between the AAG's interest in observing and tracking the technical panel's work and the panel's interest in having a space to deliberate privately, the technical panel meetings will be organized as follows:

- In general, technical panel meetings will be open to AAG member viewing. AAG members will not speak during technical panel meetings, and comment will only be taken at times specified by the technical panel.
- The Department and facilitation team will agendaize a brief technical panel standing agenda item as part of each meeting to discuss items that may be sensitive or contain confidential information.
- Technical Panel members may request private meetings if a particular topic requires this. These meetings will only be scheduled if the Department feels there is a specific need that cannot otherwise be met in public meeting.
- The Technical Panel will schedule periodic joint meetings or presentations with the AAG to report progress, discuss the status of draft work products, and consider implications for the AAG's final report. These meetings will be the primary venue for discussions between the two groups.
- Department staff and the facilitation team will prepare summaries of the key outcomes of all technical panel meetings for distribution to both the technical panel and the AAG.

AAG and Department staff members may not serve on the review committee, in order to create an external review step in development of the methodology.

The final TAC document will be a work product of the full AAG, and will be submitted as part of the AAG's final report to the Fish and Game Commission.

### **Process Support and Facilitation:**

Department staff is available to provide support to both the technical panel and review committee during their deliberations. As appropriate, the AAG facilitation team is available to assist the process by developing agendas, facilitate meetings and summarize meeting key outcomes, and support development of interim work products.