

\*As a part of the review process the review panel has the ability to ask additional questions or submit data requests either of the author teams at any point. The author teams can respond either in writing or verbally through a conference call. The list below shows the questions and data requests submitted to each team during the review process to date. Ocean Science Trust will update this list if there are additional questions or data requests submitted to either team.

## **TNC**

### **Submitted to TNC on June 26**

- Can you walk us through your rationale for other indicators (density, nearest-neighbor distance, condition factor) that you chose not to include from the onset or tested and then discarded? In particular, a per-recruit approach implicitly assumes that there is no mate limitation in reproduction, yet there is evidence for such limitation in abalone.
  - Are there reasons you didn't include other indicators? What would need to be changed in current sampling designs to allow them to be included?
  - Can you talk about the potential upsides or downsides to incorporating the multi-year time lag into the model? What is the ability to increase or decrease this time lag and how might that affect the results?
- Can you provide the rationale and any data that supports the assumption that there is a linear relationship between the management regulation and catch?
- What do you feel is insufficient/challenging for putting together an operating model for red abalone?
- What barriers, if any, do you see to combining your multi-indicator approach with the measures provided by CDFW?
- How heterogeneous among the 56 sites in time series of catch, density trend (with uncertainty), SPR\_msy, mode of LFQ, ratio of SPR (some plots on these data/values might help)? Are there apparent differences found by comparing with using 2 or 3 regions as what was done by CDFW?

### **Submitted to TNC on July 17**

- Has TNC thought about or could you expand upon what would be considered adequate data for density and other biological indicators (e.g. body condition)?
- What is TNC's degree of confidence that the data the SPR calculation relies on will continue into the future? Does it solely rely on volunteer data and/or CDFW data?
- Abalone, including red abalone, usually have episodic recruitment with important large recruitment years being less common than years with poor recruitment (here "recruitment" means babies not recruits to the fishery.) How would such recruitment dynamics affect the performance of the TNC approach?
- Data request:
  - Length based data - the variance among the 15 sites and between years
  - Catch data - variance among the 56 sites and years

### **Submitted to TNC on July 26**

- Can you discuss your rationale for the proposed reference points and approaches for reopening the fishery?

### **CDFW**

#### **Submitted to CDFW on June 26**

- Can you describe the ways (and reasoning behind) how you did and did not address recommendations from the Density Review in 2014?
  - If changes were made, have you learned anything from those changes? How did you learn what changed (e.g. additional analysis, ad-hoc observations)?
  - Can you speak to sampling frequency, precision of the methodology employed?
  - Did those changes affect how you interpret past density estimates?
- Can you describe your rationale for using density as an indicator?
  - If other indicators (such as those used in the TNC approach) were not included due to concerns about data requirements, sampling design, or other deficiencies can you describe how they would need to be changed in order to be considered robust enough to include in the FMP?
  - Is there a backup plan in place for instances or protracted periods when surveys (or other necessary monitoring) cannot be conducted?
- What do you feel is insufficient/challenging for putting together an operating model for red abalone?
- Can you further explain how the productivity and environmental indicators are utilized in the strategy?
  - What data streams are available for each of those indicators?
- What was the rationale for decision points within the management strategy (i.e. increase, decrease, or close fishery?)
  - Why were the particular values for the increments/target catch multipliers chosen?
  - How sensitive are the baseline reference points to these rules and choices now and in the past?
- Can you provide the rationale and any data that supports the assumption that there is a linear relationship between the management regulation and catch?
- What barriers, if any, do you see to combining your measure with the approach from The Nature Conservancy group?

#### **Submitted to CDFW on July 25**

- With regard to the density indicator:
  - Double check the average variance presented in the slide show and if correct, explain how the analysis was done.
  - Request for analysis of variance at site level, county level, fishery level for the most recent range of years for which all sites were sampled.
  - Request for analysis of power at site, county, fishery level for the most recent range of years for which all sites were sampled.

- Request for a written explanation of how these two analyses give the confidence that the density methodology is robust to manage the fishery at the level needed.
- What data streams are available for each of the indicators?
  - Can you provide information about the sampling sufficiency (precision, variance, frequency of surveys) for using these data as indicators?
  - Are these data collected by CDFW or third parties?
  - What is your confidence that these different data streams will be available on the frequency needed into the future?
  - Is there a backup plan in place for instances or protracted periods when surveys (or other necessary monitoring) cannot be conducted and data are not available to update information about the population or other environmental indicators?
- Request for CDFW to share protocol for rapid vs. normal density survey assessment
  - Is there a difference in the variance or the power of the data sets in the rapid vs. normal density survey assessments?
  - When does CDFW conduct the rapid assessments vs. the full assessments?
  - How many sites can be surveyed in a year for the rapid assessments? How many sites for the normal assessments?
- Can you discuss your rationale for the proposed reference points and approaches for reopening the fishery?