Refining the Draft Management Strategy

Recreational Red Abalone FMP Project Team
Meeting #4: Revised Management Strategy & Continued Discussion on De Minimis Fishery

Thursday September 19, 2019

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Goal of this presentation:

Present a revised draft management strategy and supporting rationale for decisions, including how Project Team feedback was considered and integrated (and where/why it was not integrated in some cases)

- Project Team last met on Aug 27th
- Modelers had a full day meeting on Aug 28th

High-level Summary of Revisions:

- Management strategy re-structured into two parts. Part A assesses if exceptional circumstances have occurred (referred to as conducting a ‘catastrophic environmental safety check’ and ongoing monitoring of ‘investigative triggers’ during the August 27 Project Team meeting). And if no exceptional circumstances have occurred, Part B follows an indicator-based decision tree.
- Environmental indicators (e.g. ocean temperature, kelp abundance, sea urchin density, etc.) were removed from decision tree and included in Part A of management strategy (as an ‘investigative triggers’). The list of environmental factors to monitor was also expanded by the Project Team.

● Decision tree further streamlined to only include two indicators: length-based spawning potential ratio (SPR) and red abalone density.

- Body condition and gonad index included in exceptional circumstances provision.

● Maintained that two fishing zones (1 - Marin, Sonoma counties; 2 - Mendocino, Humboldt, Del Norte counties) will be evaluated via MSE, however three fishing zones (1 - Marin, Sonoma counties; 2 - Mendocino county; 3 - Humboldt, Del Norte counties) could still be considered by the Project Team.

Key developments arising from Aug 27th and Aug 28th meetings

1. Development of emergency circumstances or exceptional circumstances provision
   - includes updates to indicators

2. Re-visit fishing zone delineation

Let's discuss each of these…

Exceptional circumstances provision

Exceptional circumstances provision

- Step 1 in a two-part decision process
- Allows for examination of the state of the northern California environment and the productivity of red abalone
- Acts as an ecological safe-guard

Exceptional circumstances provision

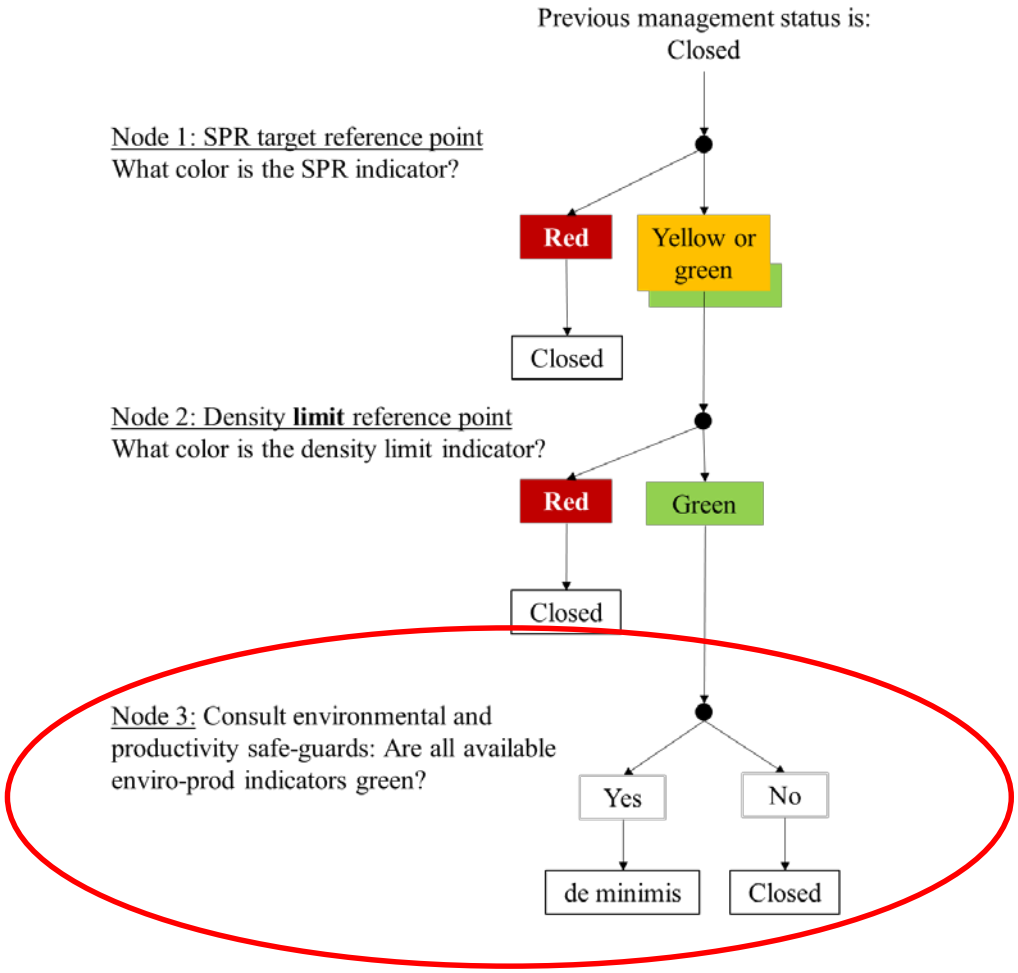
- Peer review and Project Team identified a variety of environmental and productivity indicators that could be considered during this step:

  - Ocean Temperature
  - Canopy-Forming Kelp Abundance
  - Sea Urchin Density
  - Body condition and gonad condition
  - Pacific Decadal Oscillation
  - Sea star presence/density
  - Acidification, pH
  - Oxygen saturation
  - Harmful algal blooms
  - Disease
  - Abalone empty shells
  - Sea otter presence

Exceptional circumstances provision

- What if an exceptional circumstance is triggered?
- Project team discussed two types of responses:
  - Commission direction and potentially resulting in ad hoc management adjustment(s)
  - Collection of additional or more up-to-date data

Exceptional circumstances provision



- Environmental/productivity indicators shifted to separate provision
- Enables many more 'indicators' to be holistically discussed in the context of an exceptional circumstances provision
- This provision addressed first, before proceeding to the decision-tree

Exceptional circumstances provision (some cautions)

- What will be reflected in the MSE report:
  - Comment on the essential nature of such a protocol
  - Utility of such a protocol to incorporate a variety of environmental and red abalone productivity indicators into a more holistic decision-making framework
  - Any short-comings of the decision-tree that are identified by MSE, can become guidance for development of the exceptional circumstances provision

Exceptional circumstances provision (some cautions)

- What will NOT be reflected in the MSE report:
  - Explicit definition(s) of what constitutes an exceptional circumstance
  - Justifications for triggering an exceptional circumstance
  - Protocol or advisory process involving Commission/Department
  - How indicators will be considered together/holistically

Fishing zones

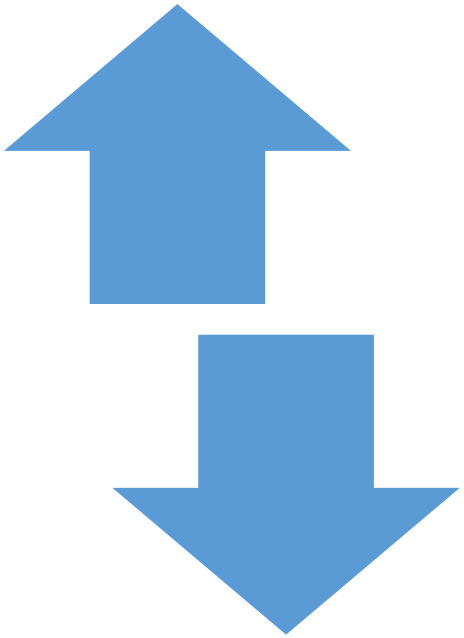
Fishing zones

- Modeling team proposal, prior to Aug 27th:
  - Zone 1: Mendocino, Humboldt, Del Norte
  - Zone 2: Marin, Sonoma
- During the Aug 27th meeting:
  - Project Team asked for consideration of separate Marin, Sonoma, Mendocino, Humboldt + Del Norte, and combinations thereof.
- Reminder, that previous proposals have also asked for report card site-specific fisheries

Fishing zones

- Importantly, this discussion is focused on the following:
  - Summarizing options raised by the Project Team
  - Identifying those options that can be evaluated using management strategy evaluation (MSE).

Fishing zone size



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Decision-making based on existing sampling programs*

Report card site-specific fisheries

- In concept, criteria could be constructed for implementing de minimis fishery triggers at various report card sites

- The challenge is that continual monitoring of sites where a de minimis fishery is operating while also ensuring coast-wide monitoring coverage to later enable broader fishery opening appears intractable

- Secondarily, serial depletion could be more problematic when fishing is concentrated at only a few sites, depending on the magnitude of catches, in comparison to dispersing fishing effort across many sites

Report card site-specific fisheries

- Some Project Team proposals reflect the desire for report card site-specific fisheries

- Given the stated challenges, the modeling team is not planning to subject site-specific proposals to MSE testing.

Fishing zone-based fisheries

- Conflicting challenges with Humboldt/Del Norte

- Challenge #1: Lack of historical baseline data on which to design a management strategy.

  - Difficult to determine suitable reference points, especially for density

  - A contemporary baseline was suggested, met with some concern from the Project Team. Later met with opposition from modeling team because even as a lower limit, it was unclear whether such a limit may be too low to support a viable fishery.

Fishing zone-based fisheries

- Challenge #2: But the north may be ecologically ‘different’, calling for a unique management solution.

  - Currently difficult to separate Humboldt/Del Norte from Mendocino, although it is clearly desirable to do so

  - If sampling expands northward, it is advisable to separate these areas so that potentially naturally different density estimates are not inadvertently grouped with Mendocino, as this could prevent reliable functioning of the decision trees.

  - In other words, if a sampling program is developed for Humboldt/Del Norte, consider re-shaping fishing zones.

Fishing zone-based fisheries

- Some possible solutions:

1. Develop a sampling program for a separate fishing zone consisting of Humboldt and Del Norte counties.

2. Define Humboldt/Del Norte as a separate fishing zone, with a very limited catch equivalent to biological sampling needs for research or other management purposes. (*but this does not meet the criteria of data-driven fishery open/close*)

3. Define Mendocino/Del Norte/Humboldt as a single fishing zone, but as an interim approach, prior to the development of a northern sampling program.

Fishing zone-based fisheries

- What can be addressed using MSE:

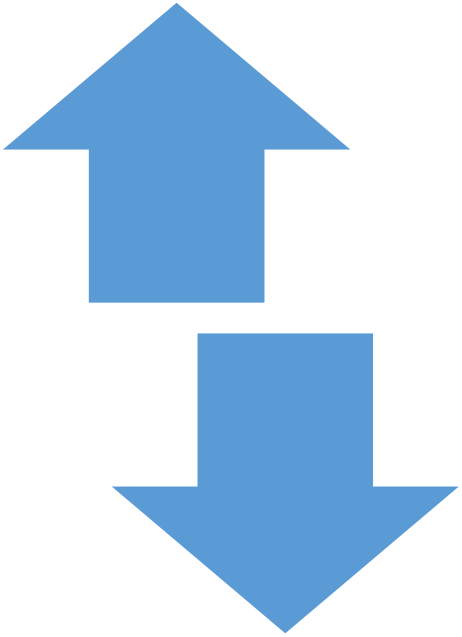
1. Develop a sampling program – Substantial multi-organization project, beyond current scope of work

2. Define Humboldt/Del Norte with a very limited catch – MSE is not sensitive enough to discriminate between options 2 & 3. MSE not used here.

3. Define Mendocino/Del Norte/Humboldt as a single fishing zone – MSE can be used to evaluate this option

What will the modeling team evaluate using MSE?

Fishing zone size



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Data-driven information triggers needed to ensure that the operation of a de minimis fishery

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Integration of multiple indicators

Decision-making based on existing sampling programs

Modeling team is proposing to evaluate the following management strategy:

- Fishing zones:
  - Zone 1: Mendocino, Humboldt and del Norte counties.
  - Zone 2: Marin and Sonoma counties.

- Decision-tree indicators:
  - Density and length frequency distribution (SPR)
  - Replicate existing sampling programs in MSE

- Exceptional circumstances provision:
  - Environment/Productivity indicators moved to this provision
  - Not explicitly tested using MSE, but remains a part of the strategy

Modeling team is proposing to evaluate the following management strategy:

- Please review the details of the management strategy available in the following document:
  - Technical Report on Revised Draft Management Strategy
  - Download from Ocean Protection Council website.