Chapter 2 – Prioritizing management efforts

Given the large number of fisheries under state jurisdiction and limited Department resources, prioritizing management efforts is essential. Section 7073(b) of the MLMA requires the Master Plan to include a priority list of fisheries for the preparation of FMPs. The highest priority is given to fisheries that have the greatest need for changes in management in order to comply with the objectives of the MLMA. The 2001 Master Plan included such a list, however, it proved difficult to focus work solely on priority fisheries. A variety of factors including new and competing mandates, unforeseen events, emergencies, and a changing regulatory landscape hampered the Department's ability to focus efforts exclusively on the priority species. Future prioritization efforts must be made in close coordination with the Commission, Tribes and tribal communities, and stakeholders to ensure there is a shared understanding of how priorities will be addressed and what resources will be required. It will also be important to establish a shared understanding of when it may be necessary, or desirable, to shift focus away from and/or reevaluate the existing list of priorities. Criteria for considering new priorities are provided below.

Potential approaches to prioritization vary in scope and intensity. The 2001 Master Plan used a method that focused on the **vulnerability** of specific stocks to fishing. However, the MLMA includes other objectives related to socioeconomics and the potential impacts of fisheries to habitat and bycatch species that should also be considered when identifying priorities. A prioritization approach that addresses the full range of MLMA objectives should be adopted by the Commission as part of the Master Plan before it is applied. As such, this Master Plan includes both an updated interim priority list to guide near-term Department efforts and to satisfy the requirements of Section §7073, and a framework to implement MLMA-based management to be conducted as the Master Plan is implemented.

To develop the initial priorities described below, the Department identified 36 **finfish** and invertebrate species that are the target of 45 distinct fisheries for initial prioritization. While these 36 species are only a small subset of the hundreds of species under state jurisdiction, the Department selected them for analysis because they represent the vast majority of commercial **landings** value, as well as commercial and recreational participation. These 45 fisheries include specific gear types targeting a single species. For example, the halibut trawl fishery is considered separately from the halibut **gill net** fishery. This is because different gear types are often deployed in different areas and with varying impacts. Note that to focus the initial analysis, not all gear types targeting the selected species were included. Once these initial fisheries have been addressed through the prioritization approach within the framework depicted in Figure 1, additional fisheries may be selected for analysis.

Interim priority list

The 45 fisheries were evaluated using a PSA, which identifies the relative risk fishing may pose to each fishery (Patrick et al. 2009). Relative risk was assessed first by a consultant (MRAG Americas) and then reviewed and adjusted by Department subject matter experts, using relative scaling scores ranging from 1 to 3 for two sets of attributes. The first set of attributes measures the **productivity** of the species, which is derived from life-history characteristics such as age at maturity and trophic level. The second set of attributes measures the **susceptibility** of the species, which includes, for example, overlap of a species' distribution with fishing effort. This second set is designed to assess the species' response to fishing pressure. The PSA metrics are combined to calculate the relative vulnerability of each fishery to other state-managed fisheries using a prescribed formula. The PSA also includes an index that scores the quality of information and the level of confidence in each attribute. A PSA does not provide information on the current status of a stock and does not specify harvest guidelines or management actions. Instead, the main purpose of the PSA is to identify fisheries that are likely to be more vulnerable to a particular method of fishing. It also identifies fisheries with more data gaps than others through the inclusion of a data quality factor.

The full results of the PSA and additional details on the methodology are available at http://www.oceansciencetrust.org/wp-content/uploads/2017/07/CDFW-PSA-Report-on-Select-CA-Fisheries_Final-.pdf. These relative PSA scores were used to bin the 45 fisheries into low, medium, and high priority and generate an interim list of priority fisheries (see Appendix E) that will be used to help guide Department efforts while the comprehensive prioritization approach described below is implemented.

Comprehensive prioritization approach

Prioritizing fisheries based on a fuller suite of MLMA objectives will require looking beyond an assessment of just risks to target stocks. To advance the objectives identified in the MLMA, the prioritization approach should:

- Provide a clear and systematic means of utilizing best available science and other relevant information to guide use of limited Department resources in managing the state's fisheries consistent with the MLMA.
- Identify target populations and/or ecosystem features at relatively greater risk from fishing.
- Identify where current management is inconsistent with the policies and requirements of the MLMA, and how those inconsistencies overlap with the ecological risks that have been identified.
- Advance socioeconomic and community objectives in a manner consistent with the MLMA's definition of sustainability.
- Be robust and clear enough for stakeholders to understand and for the Department to implement.
- Provide a strategic means of addressing emerging fisheries without unduly displacing existing priorities.
- Allow for re-evaluation when deemed necessary, or at least every five years.

In addition to the sustainability of the target stock, the MLMA is concerned with impacts to habitat and bycatch species. Section 7084 and 7085 are aimed at minimizing the impacts to habitat and bycatch, respectively. New tools have been developed in the years since the original Master Plan was adopted that can help to address these objectives.

Ecological Risk Assessment

A diversity of **Ecological Risk Assessment (ERA)** frameworks have been developed and used to prioritize management efforts across the globe. These frameworks consider a broader range of risks than a PSA. Specifically, they can examine the following:

- The impact from fishing activity to **target species** (similar to a PSA).
- The risk from fishing activity to bycatch species.
- The risk from fishing activity to habitats which it encounters.
- Aspects such as the potential benefits to the resource and the fishery from California's network of MPAs.

ERAs are similar to PSAs in concept but may use a broader range of attributes. The **California Ocean Science Trust (OST**) conducted a review of available ERA frameworks worldwide and considered certain approaches appropriate for California. Drawing from this experience, the Department will integrate the PSA and ERA tools into the prioritization approach in a way that capitalizes on their respective strengths. Specifically, the Department will use the PSA scores with the addition of four

attributes from the target species component of the ERA (estimated fishing **mortality** rate, population connectivity, temporal intensity of fishing, and potential benefits from MPAs) to assess potential risk to target fisheries. For habitat and bycatch, the Department will use the ERA as developed and piloted by OST, and as modified by Department and stakeholder input. The pilot ERA process scored 9 of the 45 fisheries that were previously analyzed using PSA. Once the four additional target attributes and bycatch and habitat ERAs are completed for the remaining 36 fisheries, scores will be presented as three groups (low, medium, and high relative risk). Additional details and considerations associated with the ERA can be found at http://www.oceansciencetrust.org/projects/era/.

Application of this approach should provide the opportunity for stakeholder input and the results should be used to categorize fisheries into low, medium, and high risk from a biological and ecological perspective. Low-risk fisheries will not require further evaluation or new conservation measures, and current management can simply be characterized through an ESR as described in Chapter 3. Medium and high-risk fisheries will be further prioritized based on socioeconomic opportunity as described below (see also Figure 1). If an FMP-managed species is identified as high risk, an FMP amendment may be necessary to address those risks.

Climate change

In California and elsewhere, efforts are underway to develop and evaluate tools that assess species' vulnerability and that incorporate risk from climate change into ERAs. Results from such assessments will provide valuable information for categorizing fisheries' level of risk. Until such results are available, the Department will consider augmenting the ERA results with information garnered through other efforts (e.g., federal climate vulnerability assessments of similar species).

Socioeconomics

Among the fisheries that are identified as high priority from an ecological and biological perspective, management efforts should first be directed towards those where ensuring sustainability has the highest economic value to the state. These will generally be fisheries with high commercial value and participation, and/or high recreational participation. However, an approach based on just value and participation could result in missed opportunities for the Department to achieve socioeconomic goals. Therefore, the Department will consider augmenting value and participation data with its own understanding of the socioeconomic goals of the fisheries. Additionally, consideration of community vulnerability indices and other human dimensions indicators such as those generated by the **National Oceanic and Atmospheric Administration (NOAA)** on the West Coast, can help identify vulnerable ports and regions and provide additional insight into where management action may have the most benefit (see: https://swfsc.noaa.gov/publications/CR/2014/2014Breslow.pdf).

Priority list

Provided that adequate resources and/or funding are available, the Department will apply the comprehensive prioritization approach described, generate a priority list of fisheries, and provide it to the Commission within one year of Mast Plan adoption. The priority list should be evaluated no less than every five years, and if necessary, the prioritization approach should be re-applied.

The information gathered through the PSA, ERA, and socioeconomic analyses described above can also help to inform management action for specific fisheries. Regardless of the form that management action takes, these analyses can help to provide background information, identify data gaps, and highlight aspects of a fishery that may need management attention. Therefore, as these analyses are conducted, information will be generated, structured, and retained with the additional goal of informing management action in mind.

Consideration of emerging and emergency issues when implementing priorities

The priorities that are established through the process described above will help guide implementation efforts. However, changes in fisheries may occur that require special attention and a departure from these priorities. For the priority list of fisheries to be meaningful, new or emerging issues should be considered in light of existing priorities, staffing, and other resources. Emergency issues (as defined by Government Code §11346.1(b) and Fish and Game Code §5523, §5654, and §7710) requiring immediate attention will inevitably arise. However, the Department and Commission should evaluate more discretionary efforts based on the following:

- Does the proposed new priority require immediate action in order to address sustainability or conservation concerns? If so, how?
- Does the proposed new priority require immediate action in order to address serious economic hardship to fishery **participants**? If so, how?
- Do current conditions create a unique or one-time opportunity to address the proposed new priority? If so, how?
- Does the fishery that is the subject of the proposed new priority appear on the current prioritization list? If so, where does it rank?
- Do available data allow for effective decision-making on the proposed new priority?
- How does the proposed new priority advance the goals of the MLMA?
- Are partnership opportunities available to help address the issue and reduce Department resource requirements?
- What is required to accomplish the proposed new priority (FMP, rule promulgation, research, etc.), and what are the requirements for staff, time, and other resources?
- What existing priorities on the Department's workplan would have to be eliminated or postponed in order to address the new priority?

Whether it is the Department, Commission, Tribes and tribal communities, or stakeholders that are proposing the new priority, the proposal or directive to address the new priority should be accompanied by responses to these inquiries. This will help to ensure that any deviations from the existing priority list are deliberate, strategic, and serve to advance the goals of the MLMA.