Executive Summary

The California Department of Fish and Game (CDFG) convened a workshop titled "Marine Protected Areas and Fisheries Integration" in San Diego, California, on March 29-30, 2011. Twenty-two fishery scientists, ecologists, fishery modelers, resource managers, and support staff from government agencies and academic institutions attended. The purpose of this two-day workshop was to openly elicit input from the participants on these topics: the utility and practicality of using a redesigned network of marine protected areas (MPAs) to inform fisheries management; potential effects of the MPA network on California's marine fisheries; and how best to monitor for these effects and incorporate them into ecosystem management.

The workshop's core topics were organized into three sessions with each session building on the previous session(s). To facilitate discussions and maintain a common thread throughout the workshop, four nearshore species/fisheries were used to represent the wide range of life histories, scientific knowledge, and management approaches for fisheries that are expected to be impacted by MPAs: brown rockfish (*Sebastes auriculatus)*, cabezon (*Scorpaenichthys marmoratus)*, California spiny lobster (*Panulirus interruptus)*, and abalone (*Haliotis* spp.). This approach worked well and resulted in a considerable exchange of information between participants who represented a number of different disciplines and experiences. This information was captured in worksheets projected on a screen and populated real-time during each session. After the workshop, this information was supplemented with notes taken by CDFG staff. These compiled results were then sent to participants for their review and input prior to the completion of this report.

A summary of the primary discussion points for each session is provided below:

Session 1: What are the expected effects of the network of MPAs along the California coast on California's marine fisheries? What are the best ways to monitor for these effects?

Fishery Considerations:

- Workshop participants identified the expected effects of a statewide network of MPAs as effort shifts, localized and serial depletion, spillover (adult and larval), increased biomass, and changes in age and size structures.
- MPA effects will vary by species and fishery, accruing at different rates and time scales (e.g., almost immediate for localized effort displacement; more gradual for population and ecosystem responses).
- MPA monitoring metrics such as abundance, density, size, and sex ratios may provide useful information to inform stock assessments or specific fishery management strategies such as setting harvest limits by comparing density and size structure inside and outside of MPAs.
- Participants recommended monitoring fisheries that are expected to be significantly affected by effort shifts and spillover.

- Participants noted the importance of collecting data on compliance and MPA use as estimates of these will be needed when interpreting MPA monitoring data/results (e.g., size, density, abundance).

Session 2: Do our management strategies need to change in response to a network of MPAs? How should these strategies change?

Fishery Considerations:

- In general, the workshop participants felt no critical MPA-fishery management actions were necessary concerning the four focal species/fisheries.
- Participants recommended that management of the cabezon fishery be kept at the status quo until more information becomes available, although if most of the nesting areas are outside of MPAs, then managers could consider a winter spawning closure to protect nesting males.
- For spiny lobster, monitoring of fleet effort after MPA implementation is recommended.
- With implementation of the MPA network, there may be less risk of overfishing for the individual species within the nearshore rockfish complex.
- Participants recommended no initial management changes for the red abalone fishery given the current approach encompasses a solid range of traditional management tools (e.g., size and bag limits, harvest level triggers), ongoing monitoring of the northern California stock, and implemented/proposed MPAs as well as deep water refuges.

Session 3: Can we incorporate the presence of a network of MPAs into stock evaluation, designation of harvest control rules, and other processes related to defining fishery yields? When should we do so?

Fishery Considerations:

- Participants noted that logical arguments can be developed to alter the precautionary adjustment for data-poor stocks as a result of a coastwide network of MPAs, but the basis and magnitude for any such potential adjustment requires further investigation.
- Since the exact response of populations to MPAs is unknown and it may take some time for such a response to be measurable, participants did not indicate a need to modify traditional stock assessment methodologies until MPA effects become better understood.

The CDFG will use these workshop results to identify gaps in the scientific information needed to understand the effects of MPAs on fisheries; inform decisions related to management actions; and improve the CDFG's ability to integrate MPAs within the broader context of fishery science.