

Appendix B (to Agenda Item F.1.a, Attachment 1): Review of Fishery Research and Monitoring Activities within Sanctuary MPAs

Establishment of MPAs in Federal waters provides additional research opportunities to collect data from unfished reference sites for improving collecting information that will directly improve management of the fisheries. For example, the Council is aware of one research study proposing to utilize both nearshore and offshore MPAs at CINMS.

The California Wetfish Producers Association (CWPA) is proposing to undertake hydroacoustic abundance estimates at and near the current as well as Federally proposed MPAs at CINMS to complement quarterly collection of market squid (*Loligo opalescens*) paralarvae in proximity to nearshore squid spawning grounds.^a The proposal follows the results of a feasibility study conducted on January 10-11, 2006, aboard the fishing vessel Barbara H at Santa Catalina Island to assess hydroacoustic techniques for estimating market squid biomass.

The proposal includes two collaborative research projects identified and prioritized at the 2004 squid research workshop held at the NMFS Southwest Fisheries Science Center on April 16, 2004. The overall project goals of the proposed research are: 1) Coordinate with NMFS, CDFG, and CINMS to make biological observations relative to adult market squid abundance inside and outside existing CINMS MPAs; 2) Provide an indication of spawning area and spawning success in relation to market squid abundance in and near CINMS MPAs. These data will also provide enhanced information on market squid occurrence and abundance and baseline data for examination of El Niño-ENSO effects on market squid production; 3) Observe and quantify the occurrence of market squid in deeper water offshore of the spawning beds prior to movement onto the beds for spawning activities; 4) Compare offshore aggregation in MPA areas to aggregation offshore of spawning areas without MPA restrictions; and 5) Expand observational and data gathering tools to enhance technological and analytical procedures for state-of-the-art management protocols. It is believed that the proposed research could lead to a greater understanding of market squid population biology and assist in future management of the fishery.

The study requires water column sampling and this research proposes to include water column sites located above the recently closed bottom HAPC sites located in Federal waters at CINMS, with emphasis on the offshore bank at Santa Barbara Island, Gull Island at Santa Cruz Island, and the Santa Rosa Flats and Carrington Point areas at Santa Rosa Island. The CWPA is particularly interested in the aggregating activities of squid as they congregate in deep-water staging areas prior to moving onto the spawning beds. Fishermen and scientists have reported this activity by observing seabird activity and

^a Pleschner-Steele, D. and D. Hanan. 2006. Hydroacoustic abundance estimation and collection of market squid paralarvae at and near marine protected areas of the Channel Islands. Research proposal submitted September 15, 2006. pp.18

using their echo sounders (D. Brockman, pers. comm. (August 25, 2006); Hanan, pers. observation ((January 10-11, 2006)). They report these activities at varying depths of 100 fathoms or less.

CWPA proposes to map and quantify localized concentrations of aggregating squid offshore and then again after they have arrived on the spawning grounds both within and nearby the MPAs. This research will test the efficacy of MPAs for enhancing the spawning activities of market squid. This proposal expands the field research implemented in a pilot program^b to explore the predictive nature of squid paralarvae to adult CPUE and the relationship of paralarvae density to El Niño-ENSO events. The proposed project will also investigate any statistical differences in the presence of adult squid or paralarvae inside and outside of the existing State MPAs and in deeper proposed federal MPAs.

^b In 2004 CWPA was awarded a grant to implement a pilot project employing fishing vessels and training fishermen to perform bongo net tows close to shore and near the islands off southern California, as well as in the Monterey Bay area.