

COASTAL PELAGIC SPECIES MANAGEMENT TEAM RECOMMENDATION
SQUID RESEARCH AND MANAGEMENT OFF CALIFORNIA

Statement to the Pacific Fishery Management Council

November 1, 2001
Clarion Hotel - San Francisco Airport
Millbrae, CA

The Coastal Pelagic Species Management Team (Management Team) convened from August 14-15, 2001 to address management and research issues associated with the market squid (*Loligo opalescens*) resource off the California coast. The overall goal of this Management Team meeting was to review information generated from the recently conducted Stock Assessment Review (STAR) session for squid held in May 2001. Specifically, the Management Team focused on the following objectives during the two-day meeting: (1) develop consensus regarding important points concluded in the STAR Panel's Report; (2) determine if the suite of model configurations based on the *Egg Escapement* (EE) method could be further reduced into a tractable subset; (3) further evaluate important parameters of the Egg Escapement approach in efforts to establish maximum sustainable yield (MSY)-based management schemes; and (4) develop sampling, laboratory, and analysis schedules that support the Egg Escapement approach in particular, and also discuss the merits of gathering auxiliary data that would improve understanding of squid population dynamics. The following synopsis presents the Management Team's recommendations (for further details see *Recommendations for Market Squid Management and Research - Exhibit H.2.b, CPSMT Report, November 2001*).

First and foremost, the Management Team generally supports the findings of the STAR Panel and in particular, its conclusion that the Egg Escapement method can provide an effective framework for monitoring/managing the squid population in the future. That is, the current port sampling program implemented by the California Department of Fish and Game, along with newly developed laboratory and analysis procedures conducted by the National Marine Fisheries Service (Southwest Fisheries Science Center), will provide an objective method for establishing Maximum Sustainable Yield (MSY)-based management goals for the squid resource. In practical terms, the Egg Escapement approach can be used to evaluate the effects of fishing mortality on the spawning potential of the stock and in particular, to examine the relation between the stock's reproductive output and candidate proxies for the fishing mortality that results in Maximum Sustainable Yields. However, it is important to note that this approach does not provide estimates of historical or current total biomass and thus, a definitive yield (i.e., a quota or Acceptable Biological Catch) cannot be determined at this time. Ultimately, the Egg Escapement approach can be used to assess whether the fleet is fishing above or below an a priori-determined sustainable level of exploitation and in this context, can be used as an effective management tool.

The Management Team recommends that the squid resource be formally reviewed again in 2004. Thus, a research/management sequence should be started for completion by early 2004. Important areas of work include: (1) rigorous monitoring of the landed catch for the occurrence of immature squid; (2) collection of fishermen logbook data that will allow changes in fishing techniques and success to be accurately measured; and (3) initiating studies that shed light on areas of squid biology still unresolved.

Finally, the following discussion addresses pertinent decisions made by the Management Team to develop a workable monitoring/management plan for the squid fishery based on the Egg Escapement method, i.e., the STAR Panel provided general recommendations regarding analytical methods and left determination of specific model configurations and other management-related parameters to the Management Team. This discussion is partitioned into four general areas (see Additional Notes in *Exhibit H.2.b*): (1) selection of a 'preferred' model scenario; (2) selection of a 'threshold' level of egg escapement that can be considered a warning flag when tracking the status of the population; (3) fishery operations in (and after) ENSO events; and (4) necessary management-related constraints.

Preferred Model Scenario

The Management Team largely relied on researchers familiar with squid biology to identify a preferred model scenario from the suite proposed in the overall analysis. The Management Team recommends that *model version 1* (based on a scenario with natural mortality rate = 0.15 and egg laying rate = 0.45) be used to assess the status of the squid population.

Threshold Level of Egg Escapement

A 'threshold' level of egg escapement can be practically interpreted as a level of reproductive escapement that is believed to be at or near a minimum level that is considered necessary to allow the population to maintain its level of abundance into the future. The Management Team recommends that a threshold value of 0.3 (30%) be used to assess the status of the squid population.

ENSO Events

The Management Team deferred consideration of the effects of ENSO conditions on the squid population and ultimately, the fishery itself, until studies that focus on the influence of such oceanographic phenomena on squid abundance and distribution generate useful management advice.

Monitoring and Management Issues

The Management Team concurs with the STAR Panel that the present squid fishery needs to be closely monitored using the state-coordinated port sampling programs. Fishery monitoring should be especially attentive to the possible future development of a juvenile fishery. Further, it is recommended that regulatory-related issues applicable to the current squid fishery off California remain under the jurisdiction of the California Department of Fish and Game through consultation with the Management Team itself – keeping in mind the federal-based policies inherently in place for all U.S.-based fisheries. Finally, the newly adopted Egg Escapement method should be considered a joint effort between the California Department of Fish and Game and the National Marine Fisheries Service, with future involvement by the Oregon Department of Fish and Wildlife and the Washington Department of Fish and Wildlife if the fishery or monitoring programs observe northern expansion of the population.

PFMC
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