

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
ALTERNATIVES ANALYSIS FOR KRILL MANAGEMENT

Ms. Susan Smith and Mr. Svein Fougner met with the Scientific and Statistical Committee (SSC), and summarized the data and analyses used in the “Draft alternatives analysis for the management of krill fishing off the U.S. West Coast” (Agenda Item D.2.a., Attachment 1). Information in this document will be used in the Council’s process of determining how krill may be managed off the U.S. West Coast.

Two species of krill are included in the proposed action, *Euphausia pacifica* and *Thysanoessa spinifera*. Although both species may range throughout the Exclusive Economic Zone, the distribution is patchy and varies annually. Areas of high krill abundance with the presence of predators have been proposed as defining “hot spots” for the purposes of management. However, the underlying data for those area determinations was not presented. The SSC suggests that maps of krill abundance be included in the document so that an objective approach to the designation of “hot spots” can be better understood. Also, the geographic inter-annual variability of krill should be provided for the discussion of “hot spots”.

Abundance data were assembled for the document from several sources, based on different sample designs and survey methods. Issues such as avoidance of sample gear during daylight surveys, and the possibility that samples may not have been taken randomly may affect the interpretation of survey data, but the influence of these effects on the analyses was not clear. The question of abundance would benefit from standardized survey methods applied coast-wide, including hydroacoustic (multi-beam) and random survey design for plankton-net sampling.

Estimates of the krill standing stock that are provided in the document appear to be reasonable based on the available data, and may serve as a provisional range of values for B_0 . However, the range for B_0 provided in the document (Table 3-3) only captures the uncertainty associated with habitat assumptions used to derive the values. The SSC notes that the range would be considerably broader if the CVs from the underlying density estimates were brought into the calculations.

If the Council desires to develop a control rule for West Coast krill stocks, the concept of maximum sustainable yield (MSY) does not appear to be practical or appropriate. As in the case of market squid and sardine, the SSC suggests that explicit dependence on MSY be avoided in developing a krill control rule. The technical review for market squid (Amendment 10) determined that attempts to estimate MSY were not scientifically supportable, and it is reasonable to expect that a more thorough review for krill would reach the same conclusion. The SSC recommends that an F-based approach to developing a krill control rule be explored as an alternative, if the Council decides to manage the stock and provide for a fishery. This approach may not be dependent on unreliable estimates of biomass, and could provide an advisable level of precaution for a resource that is ecologically important as forage for other species that are managed by the Council. The approach of adding krill to the CPS FMP would appear to be a reasonable way to provide management oversight for the krill resource, while also providing an opportunity to support research into the significant

data gaps that exist. However, the SSC cautions that additional work on krill may divert or dilute research resources that are important for ongoing management of other Council-managed species.

Considerable research on krill populations and harvest rates has previously been done for Antarctic krill stocks, and existing literature could provide additional insights into modeling a possible West Coast krill fishery. Also, estimates of fishable krill harvest may be possible using existing ecosystem models.

PFMC
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