

C-4 Scallop SAFE

The SSC received a presentation on the scallop SAFE from the Scallop Plan Team co-chairs, Jim Armstrong (NPFMC) and Quinn Smith (ADF&G). No public testimony was provided.

The SSC greatly appreciates the efforts by the Scallop Plan Team and especially the authors of this year's scallop SAFE report. The report is very well done and contains valuable new information on recent fishery independent surveys, fishery performance metrics, and management activities.

The SSC supports the Scallop Plan Team's recommendation to set the OFL for the 2019/20 season equal to maximum OY (1.29 million lb; 585 t) as defined in the Scallop FMP, which applies a 20% mortality rate to discards. The SSC also supports the Team's recommendation to set ABC for scallops in 2019/20 consistent with the maximum ABC control rule (90% of OFL), which is equal to 1.161 million lb (527 t). These recommendations are unchanged in recent years.

The SSC suggests that the scallop SAFE could be considered for a change in assessment frequency similar to the exercise conducted for groundfish stock prioritization. Given that the ABC/OFL recommendations have not changed for some time and they are not near being fully utilized, **the SSC recommends that the authors consider presenting an "Executive Summary" format every other year.** This would save time for the analysts and Scallop Plan Team to focus on some of the recommended analyses and assessment improvements.

The SSC appreciates the responses to previous SSC comments from both 2018 and 2017, noting that many of these requests remain outstanding and should be addressed in subsequent analyses. As the SSC requests are numerous, and progress toward resolving some requests is dependent upon staffing and funding, the SSC looks forward to further progress on these SSC requests in upcoming SAFE reports. For instance, further actions on many of the SSC's comments are dependent on filling ADF&G's biometrician position. Therefore, refilling the vacant scallop biometrician position should be a high priority. The SSC appreciates the additional response to our request to include more annual quantitative indicators of community participation.

With respect to documenting communities substantially engaged in, or dependent on, the scallop fishery, the SSC acknowledges the data confidentiality constraints inherent in a fishery with few participants. The SSC recommends that the analysts explore ways to use qualitative information, potentially in combination with indices of relative change, to illustrate the changes that have resulted in this fishery that involved 13 communities (according to the FMP) from the 1990s through the early 2000s, but is now apparently concentrated in a single community. This represents an important case study of the sustained participation (or lack thereof) of fishing communities in a federally managed fishery, per National Standard 8. The analysts intended to include social and economic data in the main SAFE, but because of the furlough, were unable to complete that task this year. **The SSC recommends these data be integrated in the next full SAFE report.**

In recent years, the SSC has commented on CPUE declines in a number of fishing areas. In this year's assessment, fishery CPUE seems to be rapidly rebounding in many of the eastern beds, while some of the western areas appear to be depressed. These regional increases in CPUE coupled with the substantial estimates of area-swept biomass and survey indications of recruitment, discussed below, suggests that the stock may be able to sustain higher rates of exploitation in those areas.

The SAFE provides information on fishery independent surveys that were implemented during 2016-2018. The SSC greatly appreciates ADF&G's efforts to continue and refine these surveys. Over time, these surveys could lead to good estimation of scallop abundance and stock trends, facilitate the interpretation of long-term fishery CPUE trends, provide advance notice of recruitment strength, and allow development of biological reference points for management corresponding to a higher tier (at a minimum, something akin to tier 5 groundfish, $F = M*B$). The SAFE reports a substantial increase in the number of small scallops caught in this survey, continuing the trend seen in last year's SAFE report. This may indicate prospects for increased recruitment in some areas, which may result in improved stock status in the future. However, a time series of survey results will be needed to determine how well the survey estimates relative abundance trends in small scallops. **The SSC recommends that**

the analysts consider what the goal of the survey is when considering their future survey designs and the desired level of precision (current target is a CV of 20%). For example, it may be better to sample a broader spatial domain with fewer stations and lower levels of precision, if an Alaska-wide stock assessment model is the primary goal. The assessment would also benefit from additional detail on the bootstrap method, and the design-based method used to calculate the CV. **The SSC also recommends that the analysts explore the NMFS bottom trawl survey catches of scallops to see if they could be used to inform the sampling frame. Additionally, it would be useful to see fishery catches in the same table as survey results (and in the same units; e.g., round weight) to easily assess the potential range of exploitation rates by area.**

For many years the SSC has been requesting that an age-structured model be produced. However, challenges include validation of scallop aging and the short time series of fishery independent surveys. In addition, any Alaska-wide model would likely have to be some variety of a spatially-explicit metapopulation model to account for the sedentary nature of scallops and the likely larval drift that seeds different beds from upstream source beds. The SSC notes that recent papers on connectivity of groundfish populations derived from the GOA Integrated Ecosystem Research Program may be useful for informing drift trajectories for scallop larvae (see recent papers by Stockhausen and Gibson in Deep Sea Research Part II: Topical Studies in Oceanography). **The SSC recommends that the authors elucidate a framework for the data and steps needed to improve the assessment and potentially move to an age- or length-based assessment model in the future, even if staffing to implement the model remain pending.**

Given the reliance on fishery CPUE, **the SSC requests further documentation of the methods used to standardize the time series that are used to inform Minimum Performance Standards and to infer relative stock trends.** Consideration should be given to the fraction of the beds actually accessed by the fishery each year, including potential thresholds for when CPUE data may be informative about the abundance/density on that bed vs. simply reflecting fishery conditions and practices in light of current low levels of fishery participation

The analysts showed that the bycatch rates of crab are very low compared to the caps. However, scallop catches are also low in some regions (e.g., Bering Sea). Thus, in addition to the current presentation of crab bycatch, the SSC suggests that the authors calculate bycatch rates as crabs/ton of scallops or crabs per hours of dredge so that bycatch relative to target catch can be examined.