

BSFRF selectivity and recruitment study

Scott Goodman (BSFRF) presented an overview of the 2013–2015 cooperative trawl surveys for Bristol Bay red king crab (BBRKC). The BBRKC selectivity work utilizes methods developed for snow crab in 2009–2010 using side-by-side, paired tows (Nephrops trawl compared to 83-112 trawl) conducted across almost all stations that contain RKC during the summer survey. The sample design covered 60 of the total Bristol Bay district stations (136) and accounts for $\geq 95\%$ of stations where RKC are observed during the NMFS surveys (since the 83-112 trawl's use). The pre-recruit survey design attempted to cover all stations in the Bristol Bay district that showed positive samples of pre-recruit RKC. The pre-recruit sampling covers approximately the same set of stations as the side-by-side survey, except that the pre-recruit sampling is completed at a higher density by subdividing each NMFS survey block and towing once in each subdivision.

The survey in 2013 was completed in June during the same period that NMFS completed their Bristol Bay trawl survey (leg 1 NMFS survey) over a relatively cold bottom-water year. For 2014 and 2015, the same general schedule was followed but the Bering Sea cold pool had receded by the time of the survey. Therefore, towing was completed over much warmer water in 2014 and 2015. Results for side-by-side RKC net selectivity in year-3 (warm year) were more similar to year-1 (cold year) than year-2.

PIGKC – Data input update

Doug Pengilly provided the results of applying the program developed for groundfish stock assessments (a random effects approach) to the available slope survey area-swept biomass estimates of golden king crab in the Pribilof Islands area. Doug also discussed the stock delineation chosen for the preliminary assessment and prepared a Stock Structure Template for Pribilof Islands golden king crab. No OFLs or ABCs were computed in these results. Slope survey data from 2002, 2004, 2008, 2010 and 2012 were considered for use in the assessment; detailed information on carapace length, sex, and shell condition were collected during the last three surveys. The next survey is expected to occur in 2016.

Stock boundaries were based on the state's Pribilof district which encompasses subareas 2, 3, and 4 of the slope survey. A majority (83%) of the historic catch occurs in the Pribilof canyon (survey subarea 2); 68% of the historic total catch is reported from one statistical area. The team reviewed plots of estimated and projected total biomass, mature male biomass, and legal male biomass for the entire district and for only for the Pribilof canyon (Figures 13 and 14) and noted that more survey data is required. Information on mature and legal biomass from the surveys (size/sex measurements) is only available for the last 3 surveys. Random effect model runs did not appear to be able to estimate a process error term when only 3 years of data were used. **The CPT recommends the random effects model be re-evaluated after results from the 2016 slope survey are available.**

Bristol Bay Closure Area EFP request

John Gauvin provided an overview of the application to NOAA to allow for exploratory flatfish fishing in the Red King Crab (RKC) Savings Area from February 1-June 15, 2016 and January 20-June 15, 2017. The presentation was an update to a CPT presentation in May 2014. The Alaska Seafood Cooperative (AKSC) at-sea sampler will collect data on crab bycatch, if permitted, to trawl in the RKC Savings Area. Onboard samplers would be trained as fishery observers and the question was raised whether there was a need for additional training. The CPT suggested that information on crab shell condition, length, clutch fullness, and embryo clutches from females would be useful. The state has a December training program for crab observers that the at-sea samplers could perhaps attend. Water temperature data will be collected. Bob Foy suggested the CPT support the proposal. The crab industry supported the idea of collecting the data and questioned if the end timing could be shifted earlier.

The CPT discussed if the results would affect the survey, which occurs in June, and concluded that this would be very unlikely. The CPT suggested however that ending earlier would reduce the risk of

collecting reproductive or molting females, particularly in a warm year; May 15 would be preferable to June 15. The groundfish fleet plans to stay within the current bycatch caps and they propose that this plan would allow for lower bycatch of king crab. The application fits within Council priorities to re-examine the effectiveness of closure areas. When the CPT discussed whether information on habitat-forming structural invertebrates could be collected, Gauvin indicated that the trawl is designed to avoid these benthic invertebrates. Groundfish observers will be on board and can collect data on bycatch of non-crab invertebrates. The BSFRF research surveys may have video information that could address differences in benthic invertebrates inside and outside the RKC Savings Area.

Stock assessment prioritization

Rick Methot, NMFS Senior Scientist for stock assessment, provided an overview of the new national policy for prioritizing stock assessments. A NOAA tech memo was released in August 2014 and is available online. Prioritization involves a multiple-component weighted-factor decision analysis. This prioritization will be implemented for Pacific coast groundfish for next June. The MSEs are intended to be used for each FMP to better inform target assessment level and frequency.

Team members had a variety of questions on the intent and implications of the process:

- Why would annual assessments for crab in the North Pacific be done less frequently? Prioritization may look at variability in ABCs from one year to the next. The intent is not to reallocate effort between regions but rather, within regions, for staffing and necessity of annual assessments.
- What about importance of the survey when it's a multi-stock crab/groundfish survey? What collection of assessments may be produced simultaneously? Recruitment variability should also be factored into this. Suggestions include calculating the mean age of catch as a measure of inertia in the ACL. Target frequency should be weighted according to fishery importance. There could be a rationale for less frequency of assessments if there is an established protocol for decreasing the ABC in every year away from the assessment update. Team members noted that the assessment process in the North Pacific is more focused on refinements than on 'benchmarks' and is dissimilar to other regions.
- Team members questioned the necessity of national prioritization. It was explained that the return on this nationally is in national budget allocation. In order to better allocate resources and increase existing budgets for assessments by region we need to have a nationally consistent prioritization.
- How do survey-based assessments factor into prioritizations? Rick indicated that there could be an opportunity to look at signal-to-noise ratio in inter-annual fluctuations, i.e., smooth out measurement error but continue annual surveys. Year-to-year changes in quota may not accurately reflect changes in biomass.
- How are results weighted against each other nationally? Rick noted that they are not trying to develop a national list, but to prioritize by region. Regional processes can be compared nationally for identifying gaps on a national level. While investments in capacity by region are unlikely to erode, maintaining the program at its current level remains a priority.
- How does the push to Ecosystem Based Fishery Management and multi-species integrated stock assessment fit in? It would be identified as a gap and the priority would then be to move to a higher level. Gap analysis through SAIP may help to prioritize research plan but the goal is not to use this process for directly prioritizing either surveys or research gaps.

Economic Assessment

Brian Garber-Yonts presented a summary of key economic indicators for ex-vessel and wholesale sectors of BSAI crab fisheries and an overview of the status of information to be included in the 2015 BSAI Crab Economic Status Report (Economic SAFE). The summary report will be included as an appendix to the