North Pacific Fishery Management Council

Minutes of the Joint Plan Teams for the Groundfish Fisheries of the Gulf of Alaska (GOA) and Bering Sea Aleutian Islands (BSAI)

Alaska Fisheries Science Center, Seattle, WA
September 17-18, 2019

Groundfish Plan Team Membership:

BSAI Team		GOA Team	
Grant Thompson	AFSC REFM (co-chair)	Jim Ianelli	AFSC REFM (co-chair)
Steve Barbeaux	AFSC REFM (co-chair)	Chris Lunsford	AFSC ABL (co-chair)
Steve MacLean*	NPFMC (coordinator)	Sara Cleaver*	NPFMC (coordinator)
Mary Furuness	NMFS AKRO	Obren Davis	NMFS AKRO
Alan Haynie	AFSC REFM	Craig Faunce	AFSC FMA
Allan Hicks	IPHC	Lisa Hillier	WDFW
Lisa Hillier	WDFW	Pete Hulson	AFSC ABL
Kirstin Holsman	AFSC REFM	Sandra Lowe	AFSC REFM
Andy Kingham	AFSC FMA	Nat Nichols	ADF&G
Brenda Norcross	UAF	Jan Rumble	ADF&G
Kalei Shotwell	AFSC ABL	Paul Spencer	AFSC REFM
Chris Siddon	ADF&G	Marysia Szymkowiak*	AFSC REFM
Jane Sullivan	ADF&G	Ben Williams	ADF&G
Cindy Tribuzio	AFSC ABL	Kresimir Williams	AFSC RACE
Vacant	USFWS	Vacant	USFWS

*initial meeting

Administrative

Diana Stram (NPFMC) provided an overview of some of the topics that will be on the agenda at upcoming Council meetings. Brief summaries of each agenda item are available on the Council meetings website.

Previously, the SSC had asked assessment authors to make annual ecosystem and stock-specific "okay-ness" determinations and also to conduct annual evaluations of indicators of severe impending decline, with several iterations of clarification following. In June 2019, the SSC discussed this topic again, and highlighted that between the ESPs, risk table, and PEEC, multiple efforts that essentially satisfy the SSC's previous requests already exist. The SSC indicated that the okay-ness table and indicators of severe impending decline are no longer necessary, suspending their requests in deference to these additional efforts.

November Team meeting

The November Groundfish Plan Team meeting will be held November 12-15, 2019 at the Alaska Fisheries Science Center, Seattle. PLEASE NOTE: Beginning in October, US Driver's licenses will not be accepted for admittance to the NOAA facility if they are not Real ID compliant. Alternative identification, such as a passport, will be required if a license is non-compliant. For more information see http://www.dhs.gov/real-id-public-faqs.

Not all attendees signed the sign-in sheet. Attendees may have attended one or more meetings for crab or groundfish throughout the week. List of attendees included in Appendix A.

Remote participation via WebEx was available for all sessions. Webex attendees did not all register with their full name, so a complete attendance list is not possible. Some attendees included: Arne Fuglvog, Asia, CA, CFH, Chris, Dana H, Daniel Falvey, Dick Curran, DW, George, Jason, Jon Warrenchuk, Katy, Linda Behnken, Liz Dawson, MBT, Meaghan B., Megan Peterson, Mike, Miranda, natura, nlaman, Olav, Paul Clampitt, Sarah, Stan Kotwicki, Stephanie Madsen, Victoria Curran. Other attendees may have been present via WebEx but not noted by recorders.

All documents provided prior to or during the meeting as well as presentations given during the meeting were posted to the Council's electronic agenda.

Research priorities

Jim Armstrong presented an overview of the Council's research priority process and the methods used to review and update groundfish research priorities in preparation for the meeting. The database currently contains 157 projects of which 94 relate to groundfish research. Specific research topics are organized online through a publicly accessible database that can be queried for changes in research status and can also be downloaded completely for detailed information about all of the Council's research needs. Research topics are ranked through four priority categories: *Critical ongoing monitoring, Urgent, Important (near term), and Strategic (future needs)*. These priority categories have specific definitions that emphasize correspondence of research to the Council's time horizon of management concerns. Prior to the meeting, research priorities were organized by theme and team members were assigned to, theme-based research priority review subgroups. Each group identified the top priorities for the SSC to consider when developing its "top ten" list for the Council. Critical and Strategic priorities were not included for the Top Ten. The subgroups made recommendations and identified new projects, and a second round of review of top projects by Plan Team members, independent of subgroup assignment identified seven top scoring projects. The final list of top projects was generated by vote tally of participating Team members and reflected a range of research themes: assessment inputs, ecosystem process, assessment methods, survey methods, and fishery management.

The Teams recommended bringing forward the top 7 list and initiating a process for taking projects off the list.

Because one requirement for inclusion in the "urgent" category is an expectation that "a one or two year project would meet the information need," the Teams recommend that any project that has been ongoing for more than two years be removed from the "urgent" category.

It was noted that NPRB uses the Council research priorities list in developing its request for proposals and selecting projects to fund.

Several concerns were raised with the Council's research priority evaluation process: many of these are ideas versus proposals, no explicit proposal or PI is identified; does not consider cost (just value); no process for filtering, rewriting, or deleting priorities; proposals are usually not from people who intend to do the research, so they are often vague and poorly defined; and projects that would naturally qualify as priorities do not get entered into the system (for examples, see BS/RE rockfish and Pacific cod in the BSAI and GOA Team minutes, respectively).

The Teams recommended that these issues be raised in the report to the SSC in February.

Recruitment Processes Alliance and surveys: GOA, Bering Sea, Arctic

The goals and objectives of the presentation were to present observations from 2019 surveys: show where and when collection on physical and biological oceanography, zooplankton, jellyfish, and fish took place; provide a basis for how these data and indicators can be used in stock assessments, ESRs, and ESPs; and give an update on targeted efforts to integrate recruitment models and indicators into stock assessments.

The 2019 Western Gulf of Alaska (WGOA) update from surveys include beach seine, SECM, spring larval, and young of the year (YOY) groundfish. For the spring larval survey, a Bongo net with FastCat wash used to sample plankton. Information on sea surface temperature (SST) was collected. Results indicated that in 2019 the temperature was similar to 2017 but warmer in Shelikof Strait (average was 6.8 deg C). Temperature at depth (50-100 m) from the survey in 2019 was similar to 2015 (average was 6.1 deg C). The spring larval fish abundance or Rapid Larval Assessment showed few larval fish in spring 2019, with the second lowest Pacific cod catch and the third lowest pollock catch. Walleye pollock larvae levels were very low, similar to 2015, and almost no Pacific cod larvae in 2019. For rockfish species, there were low catches in 2019, unlike 2015, but their habitat is on the edges of the sampling grid so this may not be meaningful.

The WGOA late summer YOYgroundfish ecosystem survey took place in August and September of 2019 with Bongo net, FastCAT, and midwater trawls used for sampling. SST in this late summer survey indicated high temperatures (average of 13.3 deg C), similar to 2015 with bottom temperatures (at 200 m or bottom) following this trend (7.3 deg C average), the highest in this biennial survey since 2013. In 2019, the WGOA was warm throughout the water column, warmer than 2015 with few areas on the shelf below 6 deg C. In this survey, few age-0 walleye pollock were found but the ones that were found were in Shelikof Strait. indicating that 2019 will be a weak year class. Catch per unit effort (CPUE) in this survey was calculated for age-0 pollock, capelin, eulachon, jellies, and salmonids. CPUE for age-0 pollock was the second lowest on record and there were low catches of capelin and eulachon, with a lot of jellies caught and an above average amount of salmonids.

The Western GOA Rapid Zooplankton Assessment showed low numbers of large copepods in the spring survey, with concentrations on the west side of Kodiak Island. The heat wave is blamed for these low numbers. Large copepods appear to be more stable over time in the summer survey with less variation in abundance. Small copepod numbers have remained stable in the spring survey but were more variable in the summer survey.

The WGOA Beach Seine Survey has been conducted annually from 2006-2019. The focus of this survey is YOY gadids (Pacific cod, saffron cod, and pollock). Originally, the areas covered were on Kodiak, spread over 16 sites across 2 bays. The survey was expanded in 2018 and 2019 to 72 sites across 13 bays in the WGOA. Indicators are developed from the survey for abundance, size, genetics, diets, temperature, salinity, and oxygen. Results include near absence of age-0 Pacific cod in beach seines near Kodiak with the 3rd lowest catch (lower than 2015 and 2016) and total absence of age-0 pollock near Kodiak. Throughout the expanded WGOA beach seine survey, consistently low catches of age-0 Pacific cod and pollock were observed.

In summary, in the WGOA, warm water was observed throughout the water column, similar to the year of the warm blob; fewer large copepods were caught in the spring, but average amounts in the summer; few young euphausiids were caught in spring and summer; there was low larval fish abundance; and there were few YOY pollock and Pacific cod in late summer. Results from these surveys give an outlook for recruitment and for some species this is poor; the high metabolic demands because of high temperatures/low production and prey availability will have negative effects on predators.

The 2019 Bering Sea Ecosystem Surveys include moorings and the 70 m isobath along with the NBS Survey. The Rapid Zooplankton Assessment in the spring showed moderately low abundance of large copepods, high levels of small copepods, low levels of euphausiids. The NBS Survey is still underway, but sea surface temperatures collected show the warmest temperatures on record. The first leg of the survey had very low levels of large copepods along with euphausiids while small copepods were at high levels. Other observations include low levels of pollock, no age-0 saffron cod, a lot of herring, no capelin, low catches of Chinook salmon and high catches of juvenile pink and sockeye salmon.

The 2019 Arctic Ecosystem Surveys showed retraction of sea ice to 80 N in August and open water in all of the Chukchi shelf, with few copepods/euphausiids and no fish larvae. For the IERP, zooplankton

abundances were very low and age-0 Arctic cod were dominant in midwater trawls. More information will be available in the future.

The Teams discussed concerns about the limited predictive capabilities of the Rapid Zooplankton Assessments when compared with data representing direct abundance observations. The actual data were often outside of the confidence intervals of an index and there can be a significant lag in getting process-level data into an index. It was noted that trade-offs between costs and relative applicability/assessment utility be contrasted for index data versus direct abundance estimates of incoming year-classes.

Recruitment models will be explored for use in some stock assessments (not necessarily this year), including: EBS large copepod index for BS pollock, the Pacific cod spawning habitat index for GOA Pacific cod, recruitment forecasts for the BS Northern Rock Sole, and an indicator suite within the GOA Pollock ESP.

EBS/NBS shelf trawl survey

Lyle Britt summarized results from the 2019 trawl survey of the EBS, including extension into the NBS. Surface and bottom temperatures in the EBS continue to be warm, with 2019 showing the 2nd highest surface temperature and highest bottom temperature in the survey time series (dating back to 1982). The biomass estimate of walleye pollock in the EBS was 5.46 million tons, a 75% increase from the 2018 estimate, with a relatively large number of juvenile pollock. The inner shelf was very warm, exceeding 7 °C in some areas, and pollock appear to have moved offshore from these warm inshore areas. The biomass estimate of Pacific cod in the EBS was 517 kilotons, a 2% increase from the 2018 estimate, whereas the estimate in the NBS was 368 kt, a 30% increase from the 2017 estimate. The population in the EBS is composed mostly of smaller fish (less than 30 cm), and were mostly located in the EBS southern middle shelf.

Taina Honkalehto presented the AVO index of midwater pollock biomass, which is based on acoustic measurements from the bottom trawl survey vessels. The AVO index increased 1.3% from the 2018 estimate, and a relatively large amount of acoustic backscatter was observed along the U.S. – Russia border.

Numerous special projects were also conducted during the survey, including telemetry of Pacific cod in the NBS and placement of acoustic moorings along the US-Russia border to observe fish movement.

The Teams commend the Bering Sea survey group for their rapid and timely production of the survey estimates.

Longline survey

Kevin Siwicke presented preliminary results from the 2019 longline survey, which covered the Bering Sea and GOA shelf/slope break. This survey collects sablefish otoliths; tags sablefish, thornyhead rockfish, and Greenland turbot; collects temperatures at depth; and conducts many special projects. These preliminary results do not include corrections for whale depredation. Killer whale depredation in the Bering Sea was similar to previous year but was up overall due to increased depredation in the central and western GOAs. Sperm whale depredation increased in the Central GOA.

Preliminary 2019 Relative Population Numbers (RPNs) for the following species relative to 2018 are:

- Sablefish up 48% (Alaska-wide)
- Giant grenadiers up 14% (GOA)
- Pacific halibut up 5% (BSAI), up 23%
- Pacific cod down 18% (BSAI), down 37% (GOA)
- Rougheye and blackspotted rockfish up 29% (GOA)
- Shortraker rockfish up 6% (GOA)

- Thornyheads down 1% (GOA)
- Greenland turbot down 40% (BSAI)

The increases and decreases in the rockfish and grenadiers are within the normal variability of the species. With respect to sablefish, the survey data continue to suggest a strong 2014 year class, and 2019 survey lengths indicate more strong year classes. Other notable observations included increase of bottom temperatures comparable to 2016 levels and, in the GOA at 200 m and deeper, the temperature decrease levels off.

GOA trawl

Wayne Palsson updated the Teams on the 2019 bottom trawl survey. The same two vessels (F/V *Sea Storm* and F/V *Ocean Explorer*) that were used in 2017 were used again this year.

Standardization of the net is managed through mensuration, meaning sensors on the trawl send real-time feedback to the vessel so that adjustments can be made to keep the gear oriented correctly. Catch data processed at sea are entered into the Oracle database and a QA/QC routine is performed. Effort is currently being assessed by reviewing the amount of time the trawl net was in contact with the bottom. The next steps are to complete ageing, re-estimate survey biomass and split factor, and then make survey data available on the AFSC website and the Alaska Fisheries Information Network (AKFIN). Data from this year's survey will be finalized and are anticipated to be uploaded to AKFIN by September 27.

There were 541 successful stations, out of a target of 550 (target for a 3-vessel survey would have been 825). An algorithm was used to select dropped stations and maintain relative sampling distribution across all areas. Traditionally one vessel is assigned nearshore stations and the other is assigned offshore stations, but in 2019 an attempt was made to randomize the station assignments between the two vessels. This proved to be time consuming as it increased travel time between stations. As in 2017, the survey occupied stations in all depth strata except the 700–1000 m stratum. It was noted that stations in this depth strata are particularly time consuming due to the increased time required to set and retrieve the gear. Grenadier, thornyhead rockfish, Dover sole, and sablefish data are likely to be most affected by lack of depth strata greater than 700 m.

Catch composition was similar to past years with Pacific ocean perch (POP) being the dominant species, followed by arrowtooth flounder (ATF) and other flatfish. There was a notable lack of tows with large catch (>2 mt) during 2019. Over 11 thousand age structures were collected and otolith sample targets were achieved for all species except Dover sole, northern rock sole, Atka mackerel, walleye pollock, Pacific cod, and northern rockfish. Otolith samples were collected either randomly or via length/sex stratification. Over 178,000 fish lengths were collected and over 500 POP finclips were collected for genetic analysis. Estimated Pacific cod biomass increased from 2017; two particularly large catches south of Prince William Sounds were highlighted. Estimated sablefish biomass was higher than its been in the last 20 years, indicating that the strong 2014-2015 age class is persisting. Sea surface and bottom temperatures continue to be elevated. The 2019 mean bottom temperature was the highest in the survey time series, 0.2°C higher than the previous record high observed in 2015.

Halibut discard mortality rates

Jim Armstrong, NPFMC, presented an update on halibut Discard Mortality Rates (DMRs) along with recommendations for the 2020 and 2021 fisheries. Halibut DMRs are developed for in-season management of groundfish fisheries. A hierarchical sampling design is followed that relies on random sampling of halibut to produce DMR estimates for major gear types in the GOA and BSAI. No changes were recommended to the current methods.

DMRs are derived from at-sea observer-based data only and not EM data as there are no viability protocols established for EM. The proportion of vessels covered by EM has increased, resulting in fewer

viability assessments. Several new research projects were mentioned that are exploring alternative methods for estimating viability, including one that is developing model-based discard mortality rates as an alternative to using halibut condition data. However, no changes to the existing methods for estimating DMRs are recommended at this time.

The Teams concur with the working group recommendations to maintain current methods and to use the two-year reference period (2017-2018) for producing the 2020 and 2021 DMRs.

Sablefish discards

Joe Krieger (NMFS AKRO) provided an update on the development of a sablefish discarding discussion paper to be reviewed at the December Council meeting. Due to the large 2014 year class, the fixed gear IFQ fishery encountered numerous small, immature fish. Current regulations require full retention of all sablefish caught in the IFQ fishery. The intent of the discussion paper is to explore options related to allowing the IFQ fishery to discard small, immature fish to allow them to grow, increase in value, and contribute to population growth. Sablefish are thought to have low discard mortality rates following careful release.

The upcoming discussion paper has three components the authors wished to get Plan Team feedback on: 1) voluntary versus mandatory discard release; 2) area-wide versus area-specific size limits; 3) and, methods for estimating sablefish discards. Specific recommendations to each of these topics were not made but extensive discussion regarding discarding of sablefish occurred. The Teams look forward to the upcoming discussion paper and encourage the authors to more fully unpack the items mentioned above. Several caveats that came up during discussion that may be helpful for further exploration and development of this discussion paper are provided below:

1) Regardless of whether discarding is voluntary or mandatory, it is essential that accurate discard rates be applied for catch accounting purposes.

2) The implementation of Electronic Monitoring (EM) and resulting changes in observer coverage of the IFQ fleet likely will influence how well discard rates can be estimated and should be evaluated in the discussion paper. At present, available methods for accounting for discards of sablefish in the IFQ fishery do not appear to be adequate.

3) Concerns for both voluntary and mandatory requirements were discussed and the discussion paper should focus on presenting pros or cons for both options. Size grading and accurate reporting rates are valid concerns for voluntary discards whereas monitoring and enforceability issues were discussed as a concern for mandatory discards. Impacts on stock status may be concerns for both voluntary and mandatory discards.

4) The State of Alaska has a voluntary release regulation with mandatory reporting in the Southeast Inside sablefish fishery but has found getting accurate estimates from this system is challenging. In conversations with the State of Alaska sablefish stock assessment author, lack of biological data from the fishery and the practice of preferentially keeping only large fish (size-grading), have led to great uncertainty in the stock status of sablefish in the State of Alaska sablefish fishery. The Teams encourage further exploration of this existing program and what can be gleaned from those experiences for use in this discussion paper.

5) Sablefish value is size-based so voluntary release may result in size-grading for larger fish which would put additional pressure on the older more valuable portion of the population. The effects of this is something the discussion paper may wish to address.

6) An intent of the proponents of a discarding allowance is to minimize fishing mortality for current incoming year classes until they are larger and become mature, however, regulatory actions typically take a minimum of two years to enact. The discussion paper should consider evaluating

a mechanism to avoid unusually large year classes when they occur versus creating a permanent regulation.

7) Three options for estimating discards were presented: survey catch at length, observer/EM estimated discard rates, or logbooks. Using longline survey data as a proxy for the fishery will be challenging since there is a difference in selectivity between the survey and the fishery. At this time it is doubtful EM will be capable of accurately estimating discards which would require extensive extrapolations from at-sea observer data. The State of Alaska has had challenges using logbooks to estimate discard rates for their assessment as the logbooks often contain unquantifiable data (e.g., "Lots of small ones"). A fourth option was introduced which is to model retention rates to estimate discards, which the State currently does. However, this option may introduce considerable uncertainty to the stock assessment.

8) This topic has repercussions on multiple levels of management including observer coverage, enforcement, catch accounting, and stock assessment. The authors are encouraged to thoroughly explore these topics in relation to all management aspects and to consider Plan Team comments when developing potential action alternatives.

The Teams discussed the complexity of evaluating all of these topics without better data or information to guide informed decisions and look forward to the completed discussion paper in December. One option the Council could consider is an Exempted Fishing Permit (EFP) to address operational challenges associated with discarding in the sablefish fishery.

Economic SAFE

Ben Fissel of AFSC presented the September draft of the Economic SAFE Report. The Report updates available economic information for 2018; as always there is a one-year delay in most economic data. Ben will provide a full presentation of trends at the November Plan Team meeting.

Ben presented on some potential changes to the Econ SAFE. Ben is continuing to expand the price projections, which for the 2019 SAFE include ex-vessel prices (for Pacific cod, pollock, and sablefish), and he will expand into other species in the future. This year, the Econ SAFE will also include a summary of the GOA trawl Economic Data Report (EDR), a data collection program that has been around since 2015. Due to delays in getting finalized data, the catch share performance metrics and community section may not be ready in time for inclusion in the November SAFE (the Teams had no concerns with this). Ben is also continuing to work on the Economic Performance Reports (EPRs). These provide stock-specific economic information to assessment authors in summary format (2-5 pages), which are usually incorporated as an appendix to the stock assessment (EBS pollock is more integrated), and are being merged into ESPs. Ben aims to have the EPRs completed by early to mid-October.

Ben provided a brief summary of groundfish economic activity. In the aggregate for Alaska groundfish, there was an increase in ex-vessel values (up by 3% in 2018 from 2017), driven by price increases (specifically in pollock and Pacific cod) while volumes decreased slightly. However, values decreased in the Gulf of Alaska, where price increases in Pacific cod were not substantial enough to offset the large decrease in the volume of landings. Price decreases for sablefish have been driven by the stock composition and the dominance of small fish which are driving down average dockside prices.

Alan Haynie of AFSC presented on skipper surveys and other means of incorporating economic information into stock assessments. Broadly, these efforts can be used to explain long-term trends and anomalies in stock assessment data, and potentially raise awareness of real-time changes in conditions (e.g., red flags). Marysia Szymkowiak of AFSC presented an example of a tool that has been used in the Gulf of Mexico to incorporate fishermen's observations into stock assessments, using an online form that includes spatial area, sector (recreational or commercial), and a general observation of conditions. This tool could be adapted to the Alaska context based on stakeholder and stock assessment author input on what content is most relevant and valuable. The Teams were interested in the utilization of both historical

and real-time tools to get more input from stakeholders to apply to stock assessments. Concern was raised about the utility of the real-time observations from the fleet, given the data that are already available from the Observer Program and on fish tickets. Alan assuaged the concerns by explaining how such observations can inform scientists about aspects of the data that are normally not examined (but maybe should be), variations of the data that are not always available (e.g., price variability by size classes), and raising red flags about conditions that may otherwise have a time lag due to survey schedules. There will be a national NMFS workshop in February to address the stock assessment improvement plan recommendation to consider ways to better incorporate socioeconomic data in stock assessments; the results will be reported in 2020.

Sablefish assessment

Dana Hanselman presented an update of the 2019 stock assessment for sablefish. The update included the 2019 longline survey results, from which the RPN index increased by 48% from 2018 and is the largest in the time series since 1990. Much of this increase is attributed to the BS and AI, while the GOA is catching up and is above the long-term mean. In the GOA bottom trawl survey presentation, Wayne Palsson indicated that small sablefish were abundant and the bottom trawl survey biomass also increased. The 2018 longline survey and fishery age compositions were dominated by fish under age 5 (50-60%).

Dana reminded the Teams that the recommended 2018 ABC was set at the 2017 level while the OFL was set at the full value estimated in the 2018 assessment. He noted that, in the last month, BS catch has been rapidly approaching OFL, due to bycatch in trawl fleets. This then prompted discussion of why the stock assessment is Alaska-wide but OFL and ABC are apportioned by sub-regions. He then proposed that having combined OFLs for each FMP area might be worthwhile (i.e., a combined BS and AI OFL, and a GOA OFL).

Dana informed the Teams that no model changes were expected for the 2019 assessment. The 2014 year class will be around 50% mature, which will increase spawning biomass in the model. The only way to avoid a large increase in biomass in the model is to remove the age composition data. He noted that he will possibly recommend reduction from maxABC using the risk table. Sensitivity runs on the assessment, preliminary apportionment results from Kari Fenske's work, and the ESP will be presented in November.

A member of the public asked if Dana would clarify his idea of combining the OFL in the BS and AI. The Teams responded that splitting OFL in this way is unique compared to what other stocks do currently. Dana clarified that this way of apportioning OFL was a hold-over from the 1990s and was never changed even though the assessment went to Alaska-wide. The Teams also pointed out that this is the only stock that has an Alaska-wide assessment that apportions OFL and this was never discussed before because it was never an issue. It was also pointed out that in 1995 and 1996 BS and AI OFL were combined, that the current trawl bycatch is a big concern for management, and that the assessment authors could propose that the OFLs for these two regions be combined. The Teams agreed that, given current information, there is a good chance that the BS sablefish OFL in 2019 will be exceeded. The Teams discussed this and noted that this is an unusual case where the OFL should have been aggregated over areas to be consistent with the assessment. The Teams noted that exceeding the OFL for the BS alone was not a conservation concern and if possible, combining the OFL for the BS and AI would be acceptable.

Kari Fenske presented methods and preliminary results of work on apportionment strategies for sablefish. The motivation for this work is that apportionment has been fixed at 2013 apportionment proportions since 2014 because apportionment was changing in ways that didn't seem reasonable. Kari investigated 10 strategies for apportionment. The operating model (OM) for this investigation is a 6 area model that simulates a population that has spatial differences in parameters and includes movement between regions. The estimation model (EM) used for this investigation is a single area estimation model, similar to, but simplified from the current assessment. For each apportionment strategy the operating model simulates

100 replicated populations and was intentionally conditioned on the results of the current assessment. In November, Kari will present apportionment performance relative to sustainability, variability, and economic/yield metrics. Preliminary results suggest that the different apportionment methods have similar results in terms of depletion and resulting mean age, suggesting that how apportionment is done doesn't have a negative effect on the biology of the stock.

The Teams asked what the likelihood is of using a different apportionment scheme in the 2019 assessment in November. Dana said it will depend on what is needed. It was also noted the differing average age by region can change the SPR rate if taken into account in a spatially-explicit model compared to single area model, and it was requested that Kari investigate this further. Dana responded that the current model is a single area model with the differing mean ages across regions to note that while SPR rates in a spatially-explicit model may be different, it wouldn't change how the SPR rates are currently estimated. The Teams asked if adding back the big recruitment events changes results. Kari responded that it did not have a large impact on results, mostly on uncertainty and not the median due to the larger number of non-converging simulations. The Teams asked about the sigma R parameter in the OM and EM: whether they are the same and whether Kari would discuss that further. Kari responded that they aren't directly comparable, and that if sigma R in the OM is the same as in the EM then extreme recruitment events are more common and the OM doesn't match current assessment results. The Teams asked if it was OK to ask for a sensitivity analysis on sigma R in the assessment model for November. Dana responded that he's done a lot of profiling across sigma R when he first saw the 2014 year class and could present those results again. The Plan Teams pointed out that there are also socioeconomic concerns in addition to biological ones when it comes to apportionment. The Teams discussed that our focus is on biology and that socioeconomic considerations would be more appropriately discussed at the SSC/Council level. It was noted that if the biology is not impacted by apportionment, then apportionment could be based on socioeconomic concerns.

The Team recommends that the authors bring forward two alternatives to OFL in November: (1) combine the BS and AI and (2) combine OFL Alaska-wide.

A member of the public noted that we apportion ABC/OFL based on conservation concerns and asked if combining OFL takes away these precautions. The Teams responded that ABCs would still be apportioned, that sablefish are currently on PSC status (which is a protection), and that there isn't a biological concern for combining OFL. Kari pointed out that there may be some spatial source-sink dynamics for sablefish which could have implications for area harvest recommendations.

AFSC Genomics Activity Plan

Dr. Ingrid Spies (AFSC) presented a brief review of the Genomics Activity Plan to provide the groundfish Plan Teams with an update on the status of this project. This plan includes the goal that all AFSC managed stocks will have population genetics information by 2030. The plan is an integral part of the stock structure template process, and a vehicle for moving forward with guidelines for determining spatial management for exploited populations managed under the NPFMC's FMPs.

Ingrid provided a summary of the Stock Structure work plan and the prioritization schedule for completion of genetic stock structure work. Currently, work on the stock structure of Pacific cod and pollock is underway. Work on sleeper shark and blackspotted rockfish will begin in 2020, followed by various other species in following years. Establishing ongoing funding for this endeavor has been key to its success and continuation into the future: funding sources to date include LOCI, the Norton Sound Fund, and Saltonstall-Kennedy grants, among others.

Risk table

Martin Dorn presented an update to the Risk Table (RT), which is used to express extra-assessment model concerns that can impact the author's recommendation of the ABC. The RT was introduced last year and

represents a formalized, structured approach for presenting author concerns that impact recommendations for ABC. The RT approach was applied in 2018 to BSAI Atka Mackerel, EBS and GOA Pollock, Alaska Sablefish, and EBS and GOA P. Cod. The EBS P. Cod RT was added by the BSAI Team, which recommended a lowered ABC. This decision was reversed by the SSC, which endorsed the author's recommended ABC. Atka mackerel provided an example where the RT did not identify increased concern.

The RT approach was presented to the SSC and AP meetings in December 2018. In evaluating the completed RTs for the 6 stocks listed, the only adjustment recommended by the SSC, other than for EBS P. cod as noted above, was to downgrade the GOA P. Cod scoring in the Population Dynamics category from Extreme concern (4) to Substantially increased concern (2), as the population dynamics should already be largely captured by the assessment model. The SSC agreed with all author-recommended ABCs. SSC feedback also included the addition of a fourth column that addresses fishery behavior and performance.

SSC recommended that all authors include a RT for the 2019 reporting cycle. The SSC emphasized that the RT should be used to determine whether an ABC reduction is warranted, rather than to justify a decision already made by the author.

The AP agreed on the utility of the RT but listed a series of concerns, including a preference for reductions in ABC to be handled by the SSC directly. A secondary concern was that requiring an RT for all stocks could lead to a lot more ABC reductions. The tier system represents a built-in precautionary system and therefore ABC reductions should be infrequent. Despite these concerns, the AP endorsed the SSC recommendations on the RT. The Council in turn recommended RT for all assessments in 2019.

Team members noted the SSC's suggestion that, "The author and PT do not have to recommend a specific ABC reduction, but should provide a complete evaluation to allow for the SSC to come up with a recommendation if they should choose not to do so." However, the utility of this was questioned by several members.

Martin presented a flow diagram describing how the RT should incorporate information from other data sources, including the ESP (species/stock specific) and ESR (LME specific). This raised the question of requiring a 2019 RT when very few ESPs have been assembled to date, but Martin noted that environmental information relevant to individual stocks is included in the ecosystem status report.

A discussion followed on the added "fishery performance and behavior" column. Martin presented an example for GOA Pollock which looked at a comparison of fishable biomass from the stock assessment model and fishery CPUE – is CPUE tracking with fishable biomass or are there deviating trends?

Martin's presentation ended with a list of recommendations for SAFE authors on constructing an RT, including assignment of a POC for the ecosystem component of the RT for each stock. Martin suggested a collaborative approach in ecosystem concern scoring, with the authors having the final word.

Grant Thompson then presented a proposal for additional systematization of the RT, including specific metrics that could be used to assess levels of concern, and examples of each metric. The goal was to make the approach more systematic, and included some standardization of language in the current table to reduce potential ambiguity. Grant also suggested adopting "concern" as the common currency for the tableAdditional questions and discussion points brought up:

Should different standards be used for different tiers? The goal of the RT is to present a general platform, and low tier/low data stocks are less likely to have model based concerns, but the overall structure can still apply.

Should RT be required only for full assessments or also for partial assessments? The Teams were informed that the SSC is requesting RTs for full assessments only (SSC minutes, June 2019).

Doesn't the presentation of two RT formats raise future problems for the RT in standardizing the assessment review? The alternative formats still provide a single score, which should be sufficient for Team evaluation. The format is up to the author.

As this is the first year of assessing fishery behavior/performance concerns, this component may be preliminary in 2019 presentations. More involvement from the Econ group might be useful.

Grant was asked to provide a verbal example of how the scoring process would work for his systematization of the RT. He stressed that evaluations would continue to be qualitative only, just as in the current RT. Some questions were posed as to how many individual metrics needed to result in a level of concern other than "typical" in order for the respective overall category to qualify for that level of concern. Additional off-line discussion between Grant and Martin was proposed in order to present a final recommendation or set of recommendations, although it was noted that waiting until November to make recommendations on this issue would be too late.

Stephani emphasized the point that any data used to justify scoring in the RT has to be external to the assessment model in order to prevent double counting.

The Teams recommend that each author have discretion to use the proposed systematization presented here as a tool to assist them in filling out the risk table.

Marine mammal update

Jeremy Sterling (AFSC, Marine Mammal Laboratory) presented information about northern fur seals in the Bering Sea, including recent population estimates for the Pribilof Islands and Bogoslof Island and updates on recent research programs. Brian Fadely (AFSC, Marine Mammal Laboratory) presented updates on Steller sea lion population and studies.

- The northern fur seal population on St. Paul Island has declined at 4.1% annually since 1998; the 2018 assessment continues the decline.
- The fur seal population on St. George Island has shown no population trend since 1998.
- The Bogoslof Island population has grown at 10.1% annually since 1997. Preliminary results from the 2019 survey suggest the population is over 30,000 seals.
- A Lenfest-sponsored project is evaluating northern fur seal foraging on pollock in the Bering Sea, with the aim of incorporating those data into the CEATTLE model.
- The Saildrone Project tracks foraging trip and dive behavior of adult female fur seals coincident with acoustic backscatter information collected from autonomous saildrones operating in the same area. In 2018 and 2019. seals were instrumented with cameras to capture foraging attempts and successes. The video resolution and footage is of exceptional quality..
- Pups from the Pribilof Islands and Bogoslof Island were fitted with GPS tags to record winter dispersal patterns. There do not appear to be significant differences in winter dispersal for pups from the different islands. There do appear to be strong interannual differences in dispersal, related to wind speed and direction in the North Pacific.
- Steller sea lions in the Western Distinct Population Segment showed a decline in pup production in 2017, presumed to be related to the marine heat wave (The Blob). The decline reverses the increasing trend in pup production since 2002. Results from the 2019 survey are not yet available.
- Jeremy presented information about several feeding and habitat use studies. Publications from MML studies are available from Steve MacLean.