



Scallop Plan Team
REPORT

February 20, 2019
ADF&G Office Kodiak, AK

Plan Team Members in attendance:

Quinn Smith (Co-Chair, ADF&G Douglas)
Jim Armstrong (Co-Chair, Council Staff)
Ryan Burt (ADF&G Kodiak)
Mike Byerly (ADF&G Homer)

Scott Miller (NMFS Juneau)
Ben Williams (ADF&G Juneau)
Jie Zheng (ADF&G Juneau)

Members absent:

John Olson (NMFS/AKRO-Anchorage)

Others in attendance:

Alisha Falberg (NOAA GC Juneau)†
Bobbie Minio (F/V Provider)
Tom Minio (F/V Provider)
Nathaniel Nichols (ADF&G Kodiak)
Rory Psootka (ADF&G Kodiak)

Natura Richardson (ADF&G Kodiak)**
Bo Whiteside (ADF&G Kodiak)
Wyatt Rhea-Fournier (ADF&G Homer) †
Elisa Russ (ADF&G Homer) †, **
Jim Stone (Alaska Scallop Association)

** Presented to SPT

† Attended via phone connection

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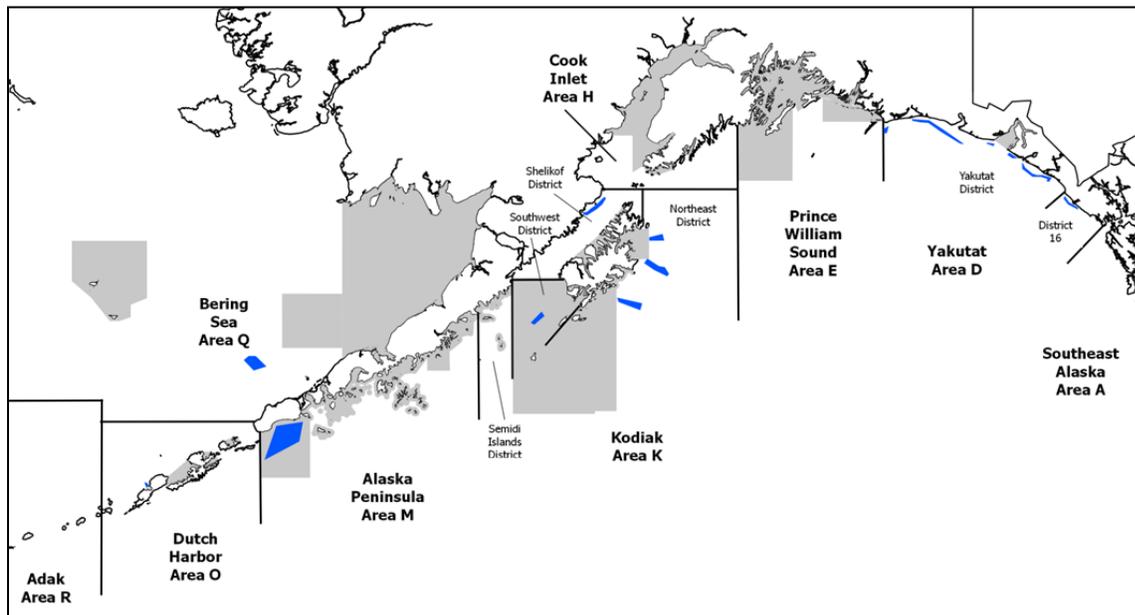
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Administrative

The Scallop Plan Team (SPT) meeting began at 9:00 a.m., and SPT members and others in attendance introduced themselves. WebEx / Teleconference broadcast of the meeting was made available, and was posted to the [SPT meeting agenda page](#) on the Council website. The posted meeting agenda was reviewed, and the Team confirmed that no changes were needed. All presentations were posted to the agenda, and the Team reviewed assignments and logistics for finalizing the SAFE and the SPT minutes.

At the close of the meeting, there was a discussion of the existing Chair/Vice-chair arrangement for Plan Team leadership. Jim Armstrong explained that all other Council Plan Teams are now led by Co-Chairs, and the Scallop Plan Team adjusted to that arrangement with no objection. Team Co-Chairs are Quinn Smith and Jim Armstrong.

Status of Scallop Stocks and SAFE Reports by Area



Alaska scallop fishery registration areas. Commercial scallop fishing areas in blue, and waters normally closed to scallop fishing in gray. Kodiak Southwest District and Alaska Peninsula Areas have been opened by ADF&G Commissioner's Permit in the past seasons.

Southeast Region

Quinn Smith presented an update on the Southeast Region weathervane scallop fishery. He briefly reviewed Southeast Region scallop fishery management districts/areas. Southeast Region scallop stocks occur in management Area D, which covers Yakutat and previous District 16. District 16 is not a district any more. A guideline harvest level (GHL) is set for Area D. There is no scallop fishery in Area A (Southeast).

Management of scallops in Area D mainly relies on fishery dependent data and information collected by scallop observers, but beds 1 and 2 had dredge survey in 2017 and 2018. The dredge survey will occur in beds 3, 4 and 5 in 2019. The survey data will be cumulated and become more useful in the future. The GHL is adjusted based on changes in commercial fishery catch per unit effort (CPUE), the CPUE by bed over time, the size and age structures of the scallop catch, changes in spatial distribution of effort over

time and dredge survey results. Since 2013/14, managers have begun evaluating fishery performance in-season using a minimum performance standard (MPS) to determine possible time and area of a fishery closure. The MPS in Area D is defined as the lowest, cumulative CPUE observed since 1997. The MPS is evaluated at the point in the fishing season when 50% of the GHL has been harvested. At that point, if cumulative CPUE falls below the MPS, then managers may take action to close the fishery. To date, the cumulative CPUEs of scallops in the Area D fisheries have not fallen below the MPS. Generally, GHLS are attempted to be kept in place for three years.

The Yakutat GHL increased to 140,000 pounds of meats for the 2017/18 season and 140,075 pounds were harvested. The GHL was also slightly increased for the 2018/19 season. The long term CPUE trend is decreasing slightly but has been increasing over the recent five fishing seasons. Graphs of raw and standardized CPUE show the same increasing trend during recent years. Estimated shell height distributions from Yakutat show lack of recruitment during recent three years.

Tanner crab bycatch remained relatively low in Area D with an estimated 2,600 crab caught during the 2017/18 season. The majority of Tanner crab measured by observers ranged from 20 mm to 50 mm carapace width. No crab bycatch cap has been established in Area D.

Central Region

Elisa Russ presented an update on the Cook Inlet and Prince William Sound (PWS) management area scallop surveys and commercial fisheries. She began by giving a brief overview of the PWS and Cook Inlet registration areas, fishing districts and general scallop fishery regulations.

In Cook Inlet, two scallop beds are located in Kamishak Bay, the north and south beds. The guideline harvest range (GHR) is from 10,000 to 20,000 pounds of meats. The most recent scallop assessment in the Kamishak Bay district was completed in 2018. Survey results showed a sharp decline in scallop abundance and biomass in both beds, the lowest survey abundance and biomass in history. The survey shows that the north bed has a small proportion of small scallops and a large proportion of large scallops while the south bed consists of mostly small scallops. Due to low survey abundance/biomass, the fishery was closed for both north and south beds for 2018. A GHL of 10,000 pounds has been established for the northern portion of the north bed since the 2015 season; however, there was no fishing effort during the 2017 season. The last fishery occurred in the north bed in 2016 with a very low meat weight of 3,982 pounds and a very low CPUE of 15 pounds per dredge hour. The entire southern bed has been closed since 2009. No scallop survey is planned for Kamishak Bay in the spring of 2019. The outlook for scallop stock abundance in both beds in near future is very depressed.

In PWS, scallop beds occur near Kayak Island and are identified as the West Kayak Subsection (WKS) and East Kayak Subsection (EKS). The most recent scallop survey was completed in Spring 2018 for EKS and 2016 for WKS. The results showed increased abundance and biomass in the WKS, a continued trend since 2014, and slightly increased biomass and decreased abundance in the EKS. In the EKS, there were hardly any small scallops in the 2018 survey. The WKS opened to commercial fishing for scallop during the 2016/17-2018/19 seasons with a GHL of 6,300 pounds; the CPUEs were relatively low during these three seasons. Due to low abundance/biomass, the EKS has been closed since 2012. The outlook for scallop stock abundance near Kayak Island in near future is also relatively depressed, especially in the EKS.

Westward Region

Natura Richardson presented an update on the Westward Region scallop fisheries. Westward Region includes four registration areas: Kodiak, Alaska Peninsula, Bering Sea, and Dutch Harbor. Managers use survey results, fishery dependent data (CPUE), and information from the scallop observer program (size and age structures) to establish GHLS and use in-season catch relative to GHL, crab bycatch relative to

crab bycatch limits (CBL), and MPS to manage harvests in-season, such as closing some beds or a whole district. Crab bycatch in Westward Region scallop fisheries is limited by CBL, which is based on historical bycatch rate in the fishery, survey estimated Tanner crab abundance, and for the Bering Sea district, the minimum stock size threshold of the Tanner crab stock. Scallops in the Westward Region have historically not been surveyed but, during 2016-2018, the main Shelikof scallop bed was surveyed.

In the Kodiak Northeast District, catches were substantially lower than the GH L of 55,000 pounds of meats with low CPUEs during 2016/2017 and 2017/2018 seasons. The GH L was greatly reduced for the 2018/2019 season, which result in a CPUE increasing to about historical average. Catches have been substantially smaller during recent three years than in the past.

Despite lowering the Kodiak Shelikof District GH L four times since the 2010/2011 season, the 2016/2017 cumulative CPUE was the 2nd lowest since the district was managed for a GH L. For the 2017/2018 and 2018/2019 seasons, the district opened with a GH L of 25,000 pounds. The 2017/2018 CPUE of 46 pounds per hour was comparable to the 2013/2014 CPUE of 43 pounds per hour and rebounded from the 2016/2017 CPUE of 30 pounds per hour. The CPUE in the 2018/2019 season further increased to about historical average. The reason for the decline in CPUE of the main Shelikof bed is unknown and worrisome but the annual surveys during 2017-2018 show increase in small scallop abundance. Estimated Tanner crab bycatch has been much lower than the CBL; for example, estimated Tanner crab bycatch in the 2017/2018 season was approximately 3,550 crab compared to the bycatch limit of 63,926 crab.

The Kodiak Southwest District opened in 2009/2010 with a GH L of 25,000 pounds. The fishery is allowed by ADF&G Commissioner's permit and managers are debating whether to continue exploratory fishing or implement management regulations. The GH L was reached in six out of the last eight years. The district was closed early during the 2015/16 season due to high Tanner crab bycatch rates when the bycatch cap was reached after approximately 44% of the scallop GH L was harvested. Recently, Tanner crab bycatch has been much lower than the 2015/16 season. The GH L was increased to 30,000 pounds for the 2018/2019 season. The CPUE has increased during the last three years and the 2018/2019 season has both the highest catch and CPUE. The area is very exposed to weather and dominated by large, old scallops but there are signs of younger year classes.

There was a new fishery opened for the Kodiak Southeast District in the 2018/2019 season with a GH L of 15,000 pounds, but the catch was only 455 pounds with a very low CPUE of 8 pounds per hour. There was no exploratory effort to harvest scallops in the Kodiak Semidi Islands District in 2017/2018.

The Alaska Peninsula Registration Area supported a scallop fishery in the mid- to late-1990s near the Shumagin Islands between 160° and 161° west longitude. In 2012/2013, the area between 160° and 161° west longitude was open with a GH L of 7,500 pounds but effort in the area was deterred because of the presence of Pacific cod pot gear. Annual catches were low and CPUEs have declined since the 2013/2014 season.

In 2012/2013, the Alaska Board of Fisheries authorized exploratory fishing in Unimak Bight under the authority of an ADF&G Commissioner's permit to harvest a GH L of 15,000 pounds. The GH L has been achieved each season since 2012/2013. Shell height and age distribution data for these years indicate the population has a broad range of age classes most represented by ages 7 to 12.

The Bering Sea Registration Area opened with a GH L of 50,000 pounds for the 2014/2015 season. Two vessels participated in the fishery and harvested 12,445 pounds with an overall fishery CPUE of 24 pounds per hour. The two participating vessels quit fishing voluntarily due to low CPUE and signs of high natural mortality throughout the scallop bed. Fishermen and observers both reported high numbers of scallops in which the meat slid off the shell or ripped in half when shucked. In January 2015, samples of

scallops were collected and sent to the ADF&G Anchorage Pathology Lab for analysis of any evidence of diseases and/or parasites. The results showed that the scallops were infected with an apicomplexan-like parasitic organism. In 2015/2016, the area opened with a GHl of just 7,500 pounds to allow the fleet to look around the bed to better gauge the extent of the problem. In 2017/2018, the area opened again with a GHl of 7,500 pounds to allow the fleet to further look around the bed to gauge the extent of the problem. One vessel has harvested the 7,500 pound GHl's for the last three seasons and there is some evidence that the parasite event may be subsiding (fewer meats sliding off the shell or ripping in half when shucked). Estimated crab bycatch during the 2017/2018 season was 9,148 Tanner crab (bycatch capped at 65,000 Tanner crab), 5,038 snow crab (bycatch capped at 300,000 snow crab), and 0 king crab (bycatch capped at 500 king crab). CPUEs were low and relatively stable during recent years.

The Dutch Harbor Registration Area reopened to fishing in 2008/2009 with a GHl of 10,000 pounds of meats, which was split between the Bering Sea and Pacific Ocean. Due to poor fishery performance on the Pacific side, the GHl was reduced to 5,000 pounds on the Bering Sea side from 2012/2013 through 2014/2015. The GHl during 2015/2016-2017/2018 was raised to 10,000 pounds, split between the Bering Sea and Pacific Ocean, to allow for exploration on the Pacific Ocean side. The 5,000 pound GHl on the Bering Sea has historically all come from one bed outside Inanudak Bay and had been reached each year until the 2017/2018 season when only 285 pounds were harvested. Fishermen indicated that there were simply less scallops in the area, but we don't have an indication as to why yet. Limited effort was put in on the Pacific Ocean side from the 2015/2016 through 2017/2018 but no scallops have been harvested during these three seasons. The GHl was lowered to 5,000 pounds for the 2018/2019 season but the catch was similar to the 2017/2018 season and much lower than the GHl. Annual CPUEs were extremely low in the 2017/2018 and 2018/2019 seasons.

Scallop Stock Assessment

Dr. Ben Williams presented a summary of the 2018 statewide scallop dredge surveys. Surveys were conducted in all three regions and included the following beds; Westward – Shelikof (KSH1); Central – Kamishak (KAMS and KAMN) and Kayak (EK1); Southeast (YAK1, YAK2, YAK3). Five of the seven beds surveyed had a CV < 20% which is a threshold identified in the operational plan. The EK1 CV was slightly above the threshold while the KAMS CV was >40% which was due the very low and variable number of scallops encountered there. Abundance and biomass estimates of large (SH ≥ 100mm) and small (SH < 100mm) were presented by bed. The abundance of small scallops relative to large was high in KSH1 and KAMS, while abundance of smalls was very low in KAMN and EK1. Plots of shell height data showed variation size structure among beds. KSH1 was dominated by two cohorts of smalls and a continued lack of large sizes. KAMN was composed of mostly very large sizes while KAMS had no large scallops but had two modes of small sizes. EK1 had no sign of small scallops and was dominated by one narrow mode of larges. All three Yakutat beds had a wide distribution of small and large sized scallops. Meat weight / shell height data were mostly linear for all districts as was meat weight / round weight except for KAM which was somewhat asymptotic.

Annual survey results for presented for those beds where more than one survey has been conducted over the three years of the statewide survey program. For Shelikof beds, the estimated abundance of large scallops in KSH1 has increased slightly over the three years surveyed and there was a large increase in small scallops in 2017 that continued into 2018. Estimated biomass of large scallops in KSH1 was similar between 2016 and 2017 but increased significantly in 2018. For Yakutat, the estimated abundance of large scallops in YAK1, YAK2 remained similar between 2017 and 2018. There was significant increase in small scallops in YAK1 in 2018 but abundance was similar in both years in YAK2. The relationship of meat weight / round weight and meat weight / shell height was similar among the years surveyed for both Shelikof and Yakutat beds. Plots of shell height data for KSH1 2016 to 2018 showed a recruitment pulse of the smallest sizes in the first two years but this was not evident in 2018. The data

show these cohorts progressing through subsequent years. A larger proportion of small sized scallops for YAK1 in 2018 than in 2017 can be seen in the shell height data. Overall, shell height distributions for YAK1 and YAK2 were similar to each other and between years (2017 and 2018).

2019 Survey Plan

Quinn Smith provided an update on the 2019 and beyond scallop survey plan. In May 2019 we are going to survey 3 scallop beds in the Yakutat Registration Area - YAK3, YAK4 and YAK5 and if there is time survey the YAKB bed. It is planned to also conduct more comparison tows between the commercial and survey dredges, we did a few in 2018 but need to do more and get more data. The larger overall survey plan for the next several years is to bounce surveys back and forth between the Kodiak/Cook Inlet areas and the Kayak Island/Yakutat areas. Jim Stone asked about funding - Quinn explained that since the Federal Government delegated fishery management authority to the State, they have been giving the State money through the Extended Jurisdiction grant - this is the money used to conduct the dredge surveys. This is currently a 5 year grant and funds will be able to be rolled forward if not spent in a particular fiscal year so depending on the year to year specifics, we may have funds to roll forward that may be able to be used for surveys.

Scallop Aging Program

Quinn Smith provided an update on the progress of the scallop shell ageing program. Recently, things were reorganized and now scallop ageing is being done by ADF&G staff with the Age Determination Unit at the Mark, Age and Tag Lab in Juneau. Quinn then briefly described how scallop shells are aged using the top shell and that age readers are trained using reference collections and then monitor the data produced for bias. He then described future work to develop area specific growth models and validating growth from isotope studies.

Data Limited Assessment

Dr. Ben Williams provided a presentation on potential analytical tools (web based) that could be used for scallop stock assessment in data limited situations. These tools could possibly help move from meat weight and numbers of animals based management to abundance based mgmt., which the SSC and Council may want the scallop stock assessments to consider. The numbers on a 30 year scallop differ from present SAFE applications.

Ben presented an example of the Barefoot Ecologists Toolbox and how it can estimate natural mortality. The natural mortality numbers on a 30 year scallop in that model differ, for example, from present SAFE applications. An issues with this approach is that data limited tools tend to be length based, which won't work directly for scallops so some modification may be necessary to apply these tools. However, these tools allow examination of management structure within the tool and allows for a management strategy evaluation using the toolkit, which could be utilized depending on the data that we have available.

The toolkits are populated with proxy data samples to allow learning the model structure. These tools aren't necessarily cohesive so some work would be necessary to do age structure modelling. We would have to assign staff to begin to look into these tools and their applicability to our scallop data. Then we could see what may work for us depending on interest.

Jim Armstrong asked whether the models would allow estimation of OFL based on tier 5. Ben indicated that there are tools that could be used to explore those issues using vetted model structure, or we could develop our own within the model toolboxes.

Scott Miller asked whether these toolkits have been used for scallop stock assessment elsewhere. Ben indicated that they haven't looked into these models and their applications extensively but would be

something to explore. There are issues with applicability of asymptotic grown structure for scallops as we found when applying it to black rockfish.

Jie Zheng asked whether the Gmac model for crab could be used for scallop stock assessment. Ben replied that it would depend on funding availability. It is an Alaska crab model but could possibly be adapted for use in scallop stock assessment. Ben also indicated that for scallops an age structured modeling approach seems appropriate instead of length but the parameters of the model can be changed in, for example, the Stock Synthesis 3 model so that could be used as well.

Scott Miller asked whether we have the time and resources to do this and what the decision process would be to implement a project. Ben indicated that if there is interest he would make the staff decision and the work would probably be done by the scallop biometrician; however, that position is unstaffed right now. We could also explore Stock Synthesis 3 and work on it with other species as well, but we have new harvesting areas that have opened and need to be coded. It all depends on time and interest of the plan team?

Scallop Parasite Studies

Ryan Burt presented an update on current studies of the Apicomplexan parasite that has been implicated in meat quality issues in weathervane scallops. He cited current research in both Georges Bank and Iceland showing that that whelks of the genus *Buccinum* may be vectors for the parasite where it is found in high quantities in the kidneys. In addition, areas with high densities of *Buccinum* snails had high prevalence of Apicomplexa in scallops, while scallops in areas without *Buccinum* snails showed low or no Apicomplexa infection.

The Observer program, in partnership with the ADF&G Pathology Lab. Is planning on collecting additional scallop meat samples during the 2019/20 season in order to expand on a statewide pilot study on Apicomplexa parasites in weathervane scallops conducted in 2015.

Historical Data Inventory

Dr. Jie Zheng presented an exploration of historical data available to inform current and future stock assessments and identified a few substantial data gaps. Age data is available from the early 1990s - present (a backlog of recent age samples is being processed) though catch data records pre-1993 need review and to be made easily accessible. He noted that age/weight relationships are challenging to recovery because of how historical data were collected. Further yield per bed has high annual variability, differences are also observed between the survey and fishery due, in part, to timing differences between the two. This variability in yield has been identified as a reason to explore abundance-based management. The question of whether these data could be reasonably pooled was raised in order to inform an age-structured assessment. A consensus was that some additional fishery-independent data would be necessary e.g., discard mortality rates, as such ancillary data are currently unavailable or limited in nature. There has been a preliminary examination of and age-structured assessment and it appears that there is enough historical data available to explore whether a age-structured assessment could be developed for the entire coastwide population.

Review/Response to SSC comments

Quinn Smith and Jim Armstrong led the Team through the SSC comments that were included in the April 2018 SSC report to the Council. Additionally, some of the 2017 SSC comments that were referenced in 2018 are addressed. The following reflects SPT discussion and response for each SSC recommendation indicated in bold font in their reports.

Comment 2018-1: The SSC requests a report and presentation on this model for SSC review when it is ready. Further, the SSC encourages attempts to develop age- or size-based models for data-poor areas to determine the general applicability of these methods for scallops throughout Alaska.

Response 2018-1: This will be completed as staffing and funding allow. Further work on the age-based model is scheduled in 2019.

Comment 2018-2: The SSC recommends examining catchability for different depths, bottom types, and other factors, which may affect catchability. Size selectivity needs to be considered so that fishery independent survey results can be accurately interpreted.

Response 2018-2: The SPT agrees with the need for further studies into catchability. Due to weather and equipment breakdown there were very few paired tows completed in the 2018 surveys. Paired tows are on the schedule for the 2019 surveys in Yakutat beds 3-5. Further studies will be designed and implemented as staffing and funding allow.

Comment 2018-3: The SSC requests the Scallop Plan Team explore the application of OFL calculations analogous to Tier 5 used for groundfish.

Response 2018-3: Advances on biomass and natural mortality estimates are dependent on model development, and accumulation of survey data. The majority of fished areas have 1-3 years of survey data which is insufficient for estimation for the large majority of the scallop stocks. Once sufficient survey data has been collected calculations will be completed as staffing and time allow.

Comment 2018-4: The ecosystem section would be enriched by considering the detailed spatio-temporal analysis of observed scallop bycatch reported by Glass and Kruse (2017; Spatiotemporal variability of benthic communities on weathervane scallop beds off Alaska. Marine and Coastal Fisheries, 9:1, 521-534, DOI: 10.1080/19425120.2017.1370041).

Response 2018-4: This suggestion has been followed and is reflected in the 2019 SAFE.

Comment 2018-5: The SSC appreciates the additional economic analyses in this year's SAFE and offers the following comments. Since for scallop, there is no stand-alone Economic Considerations chapter like those produced by for groundfish and crab, the Scallop SAFE would benefit from a series of tables tracking a time series of annual quantitative indicators of sustained community participation, per National Standard 8. These could include:

- LLPs by community of ownership address
- Active vessels by community of ownership address
- Active vessels by homeport (both as determined from vessel data and other sources)
- Active vessel diversity (fishing portfolio)
- Number of offloads by port
- Number of unique vessels making offloads by port
- Number of processors receiving deliveries by port

Additionally, brief narrative text qualitatively describing the major patterns of change tracked in these indicators (and, where possible, the drivers of those changes) would inform the nature, direction, and order of magnitude of community engagement in and dependency on the scallop fishery. Further, some of the information provided in the economic analysis in the 2017 SAFE (pgs. 59-60) that was not carried forward would be beneficial to incorporate in future SAFE documents, including:

- Crew size pre-co-op formation.

- **Attempted crew wage data collection effort in 2012/2013.**
- **Vessel maintenance and repair work done in Kodiak.**

This is particularly important in the absence of quantitative data on volume and value of landings by port, due to data confidentiality restrictions, or other information on the community context of the fishery. For example, the Scallop FMP (February 2014) provides data on the number of offloads by specific port, but only for the years 1990-2003 (Table 5).

The FMP is supplemented with community profiles (FMP Appendix F) for those communities that had landings of scallops in 1990-2003. However, while they were “intended to give an overview of the community, demographics, and involvement in North Pacific fisheries with particular emphasis placed on harvesting and processing of scallops,” data on engagement was limited to the year 2000 alone and 10 of the 13 community profiles contain no mention of scallops (Cordova, Ketchikan, Pelican, Petersburg, Sand Point, Seattle, Seldovia, Seward, Sitka, and Yakutat). Information on the scallop fishery presented for the other three communities was limited to the following: Homer, 1 permit; Kodiak, 1 permit, 2 vessels delivered scallops, and scallop processing occurred; and Unalaska/Dutch Harbor, 1 vessel delivered scallops. This lack of basic information on the human dimensions of the fishery highlights the need to incorporate updated time series for community engagement indicator tracking in annual SAFE documents going forward.

Response 2018-5:

The SSC has noted that there is not presently a stand-alone Economic Considerations chapter associated with the Scallop SAFE. While this is true, the combination of the short Economics chapter (chapter 5) and the much longer Appendix 2 provide much of the information presently available for this fishery. The SSC has identified a series of quantitative indicators it would like to see, and the analysts have reviewed available data to determine whether such information can be made available. Unfortunately, the Federal Government Shutdown prevented updates to Appendix 2. However, it is the analyst’s intent to combine chapter 5, Appendix 2 content, and any additional quantitative indicators or sustained community participation available into a combined Economic Considerations chapter in early 2020. Each of the indicators identified by the SSC are discussed briefly below.

LLPs by community of ownership address:

Scallop LLPs automatically renew annually. Thus, there is no annual tracking of owner addresses unless an LLP is transferred. The address NMFS has available in its permits database would be the original owner address and/or any address identified in an LLP transfer application. Further, LLP owner addresses are mostly corporate addresses. In most cases ownership of Scallop LLPs by corporations involve multiple individual owners of the corporation with varying shares of ownership. While these individual owners are identified in online corporate records their physical addresses are not generally provided. Thus, community of ownership is difficult to assess with available data. However, Table 3 of Appendix 2 does provide available information on corporate ownership and breaks out ownership of the corporations by individuals or other corporations. This is the best information regarding community of LLP ownership presently available to the analyst.

Active Vessels by Community of Ownership address and homeport:

Vessel ownership addresses have similar issues as LLP ownership addresses. Most of the vessels currently in use, or even those historically used if still documented, are owned by a corporation that is in turn owned by a number of individuals with varying ownership shares. As is the case with LLPs, the corporate filing data available does not generally list address of these individual owners. Thus, the corporate address is the address available and does not necessarily identify community of ownership. Homeport is available via vessel documentation records and, as indicated in Appendix 2 (page 13), all three of the vessels owned by currently participating corporate entities in the Alaska Scallop Association

are home-ported in Kodiak, Alaska. Note; however, that the searchable vessel documentation database maintained by NMFS utilizing data provided by the National Vessel Documentation Center will no longer receive these data and will maintain historical records only. Thus, our ability to identify homeport via vessel documentation in the future is unknown.

Active Vessel Diversity (fishing portfolio)

There are presently two active vessels in the scallop fishery. The involved participants have provided confidentiality waivers regarding their scallop landings and value; however, their participation in other fisheries would be considered confidential data and would only be available if they volunteered the information and signed confidentiality waivers. There is a third vessel that has fished scallops in recent years and that lacks onboard processing capacity and can only deliver fresh shucked meats or possibly live scallops. That vessel (f/v Kilkenny) is, thus, a catcher vessel and presently the only existing (see Table 3 in Appendix 2 for vessel status) catcher vessel that has historically participated in the Alaska scallop fishery, and its history of landings is confidential.

Number of offloads by port, number of unique vessels making deliveries, number of processors receiving deliveries by port:

The scallop fishery is presently being prosecuted by two catcher processor vessels that process the scallops into frozen packages. Table 5-1 in the Scallop SAFE identifies the annual number of participants in the fishery; however, port landings data is somewhat misleading for this fishery. As a first wholesale processed product, the finished product is offloaded in cases and either shipped to Seattle, held in cold storage in Kodiak for local sales, or shipped to clients of the Alaska Scallop Association. There is not presently any offload to a processing facility. Further, the fish tickets that are generated for offloads are often coded with an “undescribed port” code because the product is a first wholesale product and is sometimes offloaded directly to freezers on a shipping vessel. In the recent past, one catcher vessel has made deliveries to Homer and Kodiak; however, those deliveries were made to a single processor in each port making quantity and revenue data confidential.

Crew size and wages, vessel maintenance costs:

Beginning on page 12 of Appendix 2 there is a narrative describing the Effects of Fleet Consolidation. Each vessel operating in the Alaska scallop fishery is statutorily limited to 12 crew per vessel. As discussed in the Appendix, the 18 vessels that originally qualified under the moratorium would have provided 216 total crew positions and that number would have been cut to a maximum possible of 108 under the Federal LLP. With two catcher processors participating at present there are at most 24 crew positions. The Appendix also provides a narrative indicating that the catcher-processors may limit crew to 8 if fishing is slow, and the one catcher vessel with recent participation can fish with 3-4 crew, as they do not process frozen product. Since there is no economic data collection program for this fishery, crew wages are not available with presently collected data and industry is reluctant to provide that information. The communities of origin of crew are also not collected for the Alaska Scallop fishery, nor are any operational or maintenance cost information. It may be possible to informally interview a small sample of fishery participants to collect more information; however, ongoing data collection would likely require that the Council consider implementing a formal economic data collection program for this fishery.

Community engagement:

The SSC has pointed out that Scallop FMP was supplemented with community profile data from 2000 and that “10 of the 13 community profiles contain no mention of scallops (Cordova, Ketchikan, Pelican, Petersburg, Sand Point, Seattle, Seldovia, Seward, Sitka, and Yakutat). Information on the scallop fishery presented for the other three communities was limited to the following: Homer, 1 permit; Kodiak, 1 permit, 2 vessels delivered scallops, and scallop processing occurred; and Unalaska/Dutch Harbor, 1 vessel delivered scallops.” While this appears to be a shortcoming of the information included

in the community profiles, it is very consistent with current circumstances. LLP #4 was recently transferred within an estate and historically operated out of Homer. Kodiak does have two vessels presently delivering scallops, and there have been landings made by a catcher processor in Unalaska/Dutch Harbor in recent years. Given ownership structure, it is difficult to say what proportion of multiple permits are owned by Kodiak-based owners; however, at least one permit is likely owned by a Kodiak resident (see Table 3 in Appendix 2).

As indicated on page 13 of the Appendix, since formation of the cooperative and associated fleet consolidation, scallop landings have occurred in several ports and the location of landings has varied over the years. Cordova, Dutch Harbor, Homer, Kodiak, Sitka and Yakutat have all had landings in the past five years, while occasional past landings in Alaska ports of Juneau, Ketchikan, Pelican, Petersburg, Sand Point, Seldovia, Seward and Whittier are not presently occurring. Also, of note is that past landings made outside of Alaska to ports in Bellingham, and Seattle have not occurred since 2008 and not by any of the present members of the Alaska Scallop Association. In 2016, for example, landings were made in Dutch Harbor, Kodiak, and Homer. Thus, if community profiles are updated, they would not likely provide much more information than previously provided for a vast majority of the communities because there simply isn't scallop processing or landing of processed product in those communities.

Finally, the SSC states that *“This lack of basic information on the human dimensions of the fishery highlights the need to incorporate updated time series for community engagement indicator tracking in annual SAFE documents going forward.”* Remediating the fundamental lack of human dimensions information for this fishery would likely require an economic data collection program and/or voluntary submission of data by industry along with confidentiality waivers. However, at the present historical-low harvest and participation numbers, and with so few ports receiving deliveries, this information will continue to be limited primarily to that which is presently contained in Appendix 2.

Comment 2018-6: The SSC requests an update on the SSC’s seven comments from April 2017 in next year’s SAFE.

Response 2018-6: See below.

2017 SSC comments

Comment 2017-1: The SSC strongly supports the 2016 survey sampling and continued efforts to implement a statewide scallop survey. This will provide for fishery-independent GHs that do not rely on standardization of fishery CPUE, and may support a refinement of the OFL/ABC approach based only on historical landings and discard mortality. This will also require further consideration of dredge efficiency, and aggregate survey catchability.

Response 2017-1: The Team agrees that fishery survey-based estimates of scallop biomass and/or abundance is desirable. The State scallop survey is conducted according to the availability of funding, and efforts to compare survey and fishery dredges will continue, though difficulties in recent attempts are explained in Response 2018-2 (above). Survey-based estimation of OFL is addressed in Response 2018-3 (above).

Comment 2017-2: Progress on assessment modelling remains a priority for this species. With fishery-independent survey abundance estimates and associated age information available for some beds, this path appears promising. Efforts should first rely on bed-specific modelling, but could be extended to incorporate meta-population considerations (and possibly genetic information) in the

future. The SSC is encouraged that ADF&G is in the process of hiring a Biometrician II to tackle this modelling in the near future.

Response 2017-2: A biometrician has not yet been hired.

Comment 2017-3: The SSC reiterates the need to compare and evaluate survey-based scallop abundance estimates and fishery CPUE. This can be approached both through time-series, as well as calibrations for which fishery-independent information is only recently available. Fishery CPUE standardization efforts should be continued, including an effort to provide standardized values on a similar scale as those observed in the raw data (back-transformed).

Response 2017-3: Standardization of fishery CPUE is ongoing, and as fishery independent data become more available, these examinations can take place.

Comment 2017-4: The ageing protocol represents an important framework for future aging efforts. The SSC recommends using this protocol, but emphasizes that validation of some sort (perhaps O18-based methods) is still required to determine the relationship between age estimates and true age. Specifically, the methods in the ageing protocol should not be confused with actual bias or precision. There are existing methods (e.g., Punt, A.E.; Smith, D.C.; KrusicGolub, K.; Robertson, S. 2008. Quantifying age-reading error for use in fisheries stock assessments, with application to species in Australia's southern and eastern scalefish and shark fishery. *Can. J. Fish. Aquat. Sci.* 65:1991-2005) available to deal with precision correctly – naïve estimates of reader agreement disregard the joint probability that matching age estimates are both incorrect, and therefore tend to overstate precision.

Response 2017-4: See Response 2017-2

Comment 2017-5: The SSC reiterates its concern that a 'plus group' may be required for older ages at which reader agreement and/or relative bias may be unacceptable. The current protocol recommends that if ages cannot be resolved, the samples should be excluded (p.11, #3). However, this would bias the age distribution; it is preferable to aggregate these ages, rather than exclude them.

Response 2017-5: Preliminary age validation has been done and there is interest in building on that. There is a formal policy in place for addressing precision and accuracy, i.e., age reader error estimation. Once an age-structured assessment is developed, concerns about treatment of the plus group can be addressed. The use of a plus group adds efficiency to processing shells for age data.

Comment 2017-6: The SSC recommends continuing to consider collecting data (survey and fishery) and managing in numbers rather than shucked or round weight – both of which appear seasonally variable.

Response 2017-6: The Plan Team reviews catches expressed in meat weight and round weight, and is developing methods for interpreting data in terms of numbers of scallops

Comment 2017-7: The SSC continues to look forward to improved estimates of discard mortality rates, based on information provided in previous analyses.

Response 2017-7: This issue continues to be a high priority for the Plan Team and will be needed for development of an age-structured model.

Research Priorities

Jim Armstrong presented an overview of the Council's and SSC's recent discussions about the research priority process noting that a comprehensive review of research priorities has been moved from June 2019 to February 2020. The SPT will discuss research priorities in the fall through email, and discussion at the February meeting was limited to identifying new research priority recommendations. The SPT identified two new research priorities to add to the Council's list – "Develop Community Dependence Analysis for Scallop Fishery" and "Explore tools for improving management of data-limited stocks, e.g., scallops".

SPT meeting for 2020

The Scallop Plan team will meet at the ADF&G office in Kodiak on February 19, 2020.