



North Pacific Fishery Management Council

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Scallop Plan Team

REPORT

February 17, 2021
Online Meeting

Plan Team Members in attendance:

Jim Armstrong (Co-Chair, Council Staff)	Scott Miller (NMFS Juneau)
Tyler Jackson (Co-Chair, ADF&G Kodiak)	Andrew Olson (ADF&G, Douglas)
Ryan Burt (ADF&G Kodiak)	John Olson (NMFS/AKRO-Anchorage)
Mike Byerly (ADF&G Homer)	Jie Zheng (ADF&G Juneau)

Others in attendance:

Ben Daly (ADF&G Kodiak)	Wyatt Rhea-Fournier (ADF&G Homer)
Alisha Falberg (NOAA GC Juneau)	Jan Rumble (ADF&G Homer)
Kendall Henry (ADF&G Juneau)	Elisa Russ (ADF&G Homer)
Alyssa Hopkins (ADF&G Kodiak)	Mark Stichert (ADF&G Kodiak)
Kevin McNeel (ADF&G Juneau)	Jim Stone (Alaska Scallop Association)
Nathaniel Nichols (ADF&G Kodiak)	Bo Whiteside (ADF&G Kodiak)
Katie Palof (ADF&G Juneau)	Cassie Whiteside (ADF&G Kodiak)

Administrative

The February 2021 Scallop Plan Team (SPT) meeting was held online via the Adobe Connect meeting platform, and connection information was posted to the SPT [eAgenda](#). The meeting began shortly after 9:00 a.m. on Wednesday, February 17, 2021 with technical set up and overview of the meeting application. The SPT briefly reviewed the agenda and report assignments and then addressed the need for a Co-Chair for the Team. The Scallop Plan Team elected Tyler Jackson (ADF&G Kodiak) as Co-Chair. Tyler joined the Team in 2020 and is leading development of a scallop population model. A Co-Chair is typically chosen from ADF&G because, according to the Scallop FMP, the State prepares the Scallop SAFE, and Co-Chair duties include active participation in finalizing and presenting the SAFE to the SSC and Council.

2020 Scallop dredge survey results

Tyler Jackson presented an overview of the 2020 ADF&G dredge survey results. The survey was conducted in the Kodiak region and included scallop beds in Kodiak Shelikof (KSH, 1 bed) and Kodiak Northeast (KNE, 6 beds). In KSH scallop CPUE and density increased from the prior survey (2018), with highest catches and densities skewed towards the north end of the bed. Abundance and biomass of large scallops (> 100mm shell height) increased from 2018 and evidence cohorts of scallops are being sustained and starting to recruit into the fishery. In KNE, abundance and biomass of scallops increased, however, scallop densities were much lower compared to KSH. Shell height compositions of scallops show evidence of increasing cohorts of small scallops (≤ 100 mm SH) and will be recruiting to commercial size in subsequent years. Meat weight to shell height (and round weight) ratios declined compared to the 2017 survey which is likely due to shifts in reproductive timing. The majority of the sampled scallops were in a 'filling' gonadal stage compared to being 'full' in prior years around the same time period.

Survey sampling design is being evaluated to determine if current sampling design is representative of scallop beds that may be more expansive under the current methods due to observations of higher CPUE

at the edges of survey grids. ADF&G researchers will also evaluate integrating oceanographic and environmental factors to improve survey design and the overall stock assessment.

A preliminary exploratory analysis on scallop size at maturity was presented to improve and standardize maturity definitions using gonadal condition scores (immature, empty, initial recovery, filling, and full). Gonadal condition is a subjective measurement in determining if a scallop mature and likely varies among years, districts, and beds. Additionally, it was noted that sex ratio fluctuates over size, age and survey year prompting further investigation to determine if there is a biological mechanism that explains these trends, or an artifact of survey sampling (i.e., timing, location, sex determination error).

2021 Survey plan

Ryan Burt presented the 2021 ADF&G dredge survey plan. The survey is tentatively scheduled to take place between April 12 - May 15, 2021. The survey will sample up to 8 beds in the Yakutat and Kayak Island districts (Yakutat and Prince William Sound registration areas). The total survey area includes 649 stations among 8 individual grids (corresponding to each bed). Sampling all eight grids within the current systematic sampling design (0.333 sample rate), would require 15.45 days assuming the average number of tows per day in previous surveys can be maintained. The final estimate of required survey days will have to be more conservative to allow for adverse weather, transit time, and vessel loading and off-loading. ADF&G staff will know if this survey plan is feasible or if the number of stations (or sampling rate) needs to be reduced when the RFQ process is complete.

ADF&G survey staff recently acquired a CTD and will be collecting vertical profiles of conductivity, temperature, and depth. A formal sampling plan for oceanographic data during the dredge survey is under development. Survey staff will also conduct a special project to investigate the impact of a potential shift in the definition of the biological measurement of scallop shell height. The current definition is:

“The scallop biological measurement is shell height (in mm). This is defined as the straight-line distance from the umbo to the outer shell margin, perpendicular to the hinge. The top valve of the animal is measured when determining shell height. The bottom valve is typically larger than the top valve and it protrudes beyond the top shell's margin. Care should be given when measuring shell height so not to include the bottom valve.”

A proposed new definition is:

“The scallop biological measurement is shell height (in mm). This is defined as the straight-line distance from the umbo to the outer shell margin, perpendicular to the hinge.”

The proposed change in shell height definition from the ‘top shell’ to ‘outer shell’ is being driven by a potential change in sampling technology. A digital measuring board has been designed specifically for measuring scallops that uses a push-button slider to log the location of the outer-most shell margin. Use of this instrument could significantly increase the efficiency of generating shell height data that is necessary to fulfill a number of survey objectives. This shift would also bring the definition of shell height into closer alignment with that used for Atlantic sea scallops (*Placopecten magellanicus*) by federal regulation:

“...Shell height is a straight-line measurement from the hinge to the part of the shell that is farthest away from the hinge” (50 CFR § 648.50).

ADF&G staff in Kodiak will coordinate survey equipment, staffing, training, safety measures, and data processing.

State trawl survey data

Tyler Jackson gave an overview of the ADF&G large-mesh bottom trawl survey that occurs in the Westward region (Kodiak and Aleutian Islands). The survey is primarily focused on crab and employs a fixed-grid design with standard stations that are sampled annually. The survey has the best overlap with scallop fishing grounds within the vicinity of Kodiak with particular focus on the Kodiak Shelikof district. The trawl gear utilizes a larger mesh size (4 in) than the scallop survey dredge and does not appear to select for smaller scallops (≤ 100 mm SH), though rigorous examination of size selectivity and catchability are needed. This process may not be straightforward without side-by-side experiments. The benefit of the trawl survey is that it provides a much longer fishery independent time series which includes size composition (20 scallops per haul) data. Utility of the data is still being evaluated for how it can best be integrated within the development of a scallop stock assessment.

Scallop data management

Ryan Burt gave an overview of current scallop data inventory, management and access, and presented a plan for future work to improve data management to provide inputs for scallop population models. There are currently two data streams: fishery dependent data from the observer program and fishery independent data from surveys. These data are managed by two ADF&G management area offices: Kodiak and Homer. For fishery dependent data, observer data opportunistically collected by ADF&G for the Kamishak scallop fishery during 1983-2015 are managed by the Homer staff, and the other area data (fishing log, catch sampling, shell height/meat weight, aging, shell height/age, and fish ticket data) from 1996-present are managed by the Kodiak staff. For fishery independent data, dredge survey data for Kamishak Bay and Kayak Island beds during 1984-2015 are managed by the Homer staff, and the dredge survey data in the other areas from 2016-present and the CamSled survey during 2011-2014 are managed by the Kodiak staff. The dredge survey of Kamishak Bay and Kayak Island beds during 1984-2015 employed different fishing and sampling methods from the current dredge survey and some data types are not comparable to the current survey.

Efforts are needed to standardize all data formats. For fishery dependent data managed by the Kodiak staff, only data after 2008 have been standardized. Some data conversion from hard copy to electronic format and format and code standardization are needed for the older data.

So far, only recent data are normalized and directly available for use in the database managed by the Kodiak staff. These include 2009-2021 fishery dependent data and 2019-2020 fishery independent data. The following data need to be normalized or error checking: 1996-2008 fishery dependent data (including harvested meat weight data housed in the fish ticket system), 2016-2018 fishery independent data, all age data, and fish ticket poundage by meat size.

Ryan Burt outlined a work plan and schedule to improve the scallop database soon. Three tasks are planned to be completed by March/April 2021:

1. Error checking of 2020/21 fishery dependent data and developing updated data dump queries,
2. Normalization and error checking of 2016-2018 fishery independent data,
3. Normalization and error checking of 2016-2020 fishery independent age data and development of data dump queries.

After completing the tasks above, work will continue the following items in order listed:

1. Normalization and error checking of 2009-2020 fishery dependent age data and development of data dump queries,
2. Normalization and error checking of 1996-2008 fishery dependent data (including harvested meat weight data housed in the fish ticket database),
3. Normalization and error checking of 1996-2008 fishery dependent age data,

4. Raw data rescue of 1996-2008 fishery dependent data (e.g., individual basket counts and weights of scallops are written on paper forms), and
5. Fish ticket poundage by meat size.

Statewide fishery performance in 2020/21

The total GHL for 2020/21 was 277,500 lbs of meats, up slightly from the 2019/20 season. Areas H, E, and R remained closed due to low abundance. GHLS in most other areas remained the same as in the previous season. The GHL for the Shelikof District was up (40,000 lbs) and was down slightly for Yakutat (145,000 lbs).

Since 2000 the statewide GHL has not been attained in most years. This has been due to a variety of factors including crab bycatch and scallop meat condition. Over the same period, harvest has been well below the ABC in all years. The percent of the ABC retained by the fishery has remained at a similarly low level as the previous three seasons (~ 22%). The Alaska weathervane scallop stock is not overfished.

Discards statewide have increased in recent years with Kodiak Shelikof and the Unimak Bight District of Area M having the highest discard rates. Shell height compositions by retained and discarded scallops were presented for the Northeast, Shelikof, and Southwest Kodiak Districts and for Area D, Yakutat. Increases in discard rates were attributed to the prevalence of small scallops from strong recent cohorts. This occurred in the Kodiak Districts starting in the 2015/16 season and has continued into the 2019/20 season though the strong cohort(s) are becoming a larger proportion of the retained catch. Statewide, the discard ratio (lb discarded per lb retained) decreased between the 2009/10 season and 2014/15, but has since risen into the 2019/20 season. Total removals have decreased over the long term, but have remained steady for the past four seasons.

Statewide fishery CPUE decreased slightly since the early 2000s, but has settled into a somewhat stationary trend in the past 10 yrs, with variation among individual beds. The largest increase in the 2020/21 fishery was observed in the Kodiak Shelikof beds. Tyler developed a “Fishery Extent Index” as a measure of the concentration of fishing effort within a scallop bed and provided results from Kodiak Shelikof as an example. The index is defined as the mean pairwise distance between dredge locations that account for the top 90% of retained catch. Indices across a time series are scaled so that they can be compared across districts. For the time series, the index value increased through 2013/14 and then decreased into 2019/20 as effort became more concentrated. Statewide, there is some evidence of a slight decline in the index from 2009/10 to 2019/20.

Tyler presented trends in the relationship of meat weight to round weight and to shell height from the fishery. Meat weight to round weight has been below 10% for most areas statewide for the fishing seasons 2009/10 to 2019/20. The biggest exception is Kodiak Shelikof where the ratio has fluctuated around 10%. Kodiak Northeast has been close to 10%, but slightly below in most years. The relationship between meat weight as a function of shell height over the past two seasons was presented. Meat weights at a given shell height were lower in the 2019/20 for most Gulf of Alaska scallops beds but remained constant for western beds (Area Q and Unimak Bight District). The cause of the decrease in meat weights is unclear, though shifts in the timing of fishing and gonad development are likely contributing factors. Shell height/meat weight relationships are known to fluctuate spatially and temporally in connection to the reproductive season in other commercially harvested scallops. Investigations of recent meat weight trends using both fishery and survey data are underway.

In the discussion following the presentation, Jim Stone mentioned that decreased CPUE in the Kodiak Southwest District was due to crab bycatch, and that the fleet did not fish out west due to uncertain markets and COVID-19 precautions on travel.

Scallop EFH

John Olson gave an overview of the scallop Essential Fish Habitat (EFH) and Fishing Effects (FE) models. He began by noting that the 5-year review of scallop EFH will be done in 2022. The Magnuson-Stevens Act defines EFH as “those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity”. NMFS and regional fishery management councils must describe and identify EFH in fishery management plans (FMPs), minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Basically, there are two components: the EFH descriptions and maps and the effects of fishing on habitat. There are four levels of species descriptions, based on data availability. Level one is the most basic distribution data; level two has habitat-related densities, usually interpreted as CPUE; level three means that growth, reproduction, or survival rates are available by habitat; and level four has production rates by habitat. Most of the species in Alaska are currently level one or level two.

Besides reviewing the scallop EFH descriptions and maps, John also briefly reviewed the methods to evaluate fishing effects on EFH, and examples in Alaska. For the Alaska scallop stock, catch data and some survey data were used to create an EFH map in 2005/2010, a non-model version, and stock assessment authors also filled out habitat assessment report tables. During the five-year review in 2016, the SSC gave the SPT a pass on updating scallop EFH. However, the SSC pointed out that there were some new, relevant data that could be used to improve the scallop EFH definitions. New information includes sediment information, new surveys, CamSled data processed at Alaska Pacific University by Victoria Batter et al., and the results of a multivariate analysis of community composition on weathervane scallop beds by Jessica Glass and Gordon Kruse. A NMFS drop camera survey is planned for July 2021 with the goal of validating coral and sponge distribution modeling in the Gulf of Alaska. This data may be useful in updating scallop EFH. Regarding the FE model, discussions have begun with Kodiak ADF&G staff about getting scallop fishery data access. Also, reviewing work done by the New England Fisheries Management Council on their fishing effects model will aid in development of estimates of habitat reduction in Alaska.

Socioeconomic Considerations

Dr. Scott Miller provided a review of scallop market conditions in 2020. Prices were \$10.43/lb which is down 7.7% from the previous year with total 2020 landings valued at \$2.3 million. Scott noted that Alaska Weathervane scallop landings occurred in Yakutat, Kodiak, and Washington in 2020.

Scott stated that the East Coast sea scallop fishery is a driving force in price trends in most years. Tariffs decreased exports of U.S. scallops and prices dropped from \$12/lb to \$9/lb. Additionally, the east coast sea scallop stock assessment is projecting reduced harvest in the next two years.

The scallop fishery was able to contend with the effects of COVID by actively testing vessel crew and following appropriate protocols onboard and for travel. Scott stated that his ability to gather information about fleet activity has decreased under stricter operating policies associated with PRA requirements.

Jim Stone, from industry, was in attendance and was able to provide some information verbally to the Team. He stated that the fleet minimized air travel in order to reduce infection risks during 2020 and that no crew tested positive for COVID. Although restaurant demand for sea scallops was reduced, retail demand for Weathervane scallops actually was strong and prices had to be increased to slow deliveries. Approximately 25,000 lb were not harvested in the westernmost beds because they did not want to fly crew out to fish there and risk infection.

Research Priorities

Jim Armstrong updated the SPT on Research Priorities for 2021. The SSC previously requested that each plan team examine the list of priorities relevant to their FMP species, which was done in 2020. Projects #553 (“Population structure of scallops”) and #571 (“Age validation for scallop shells”) were selected,

and emphasis on those research priorities was confirmed in 2021. The SPT understands the next SSC review of research priorities will be in April 2021. It was noted that Project #511 ("Computerized image analysis of current camera sled data for scallops") has been completed and the results of that project should be disseminated. Genetic samples from the survey were delivered to ABL for analysis in 2020, in addition to continuing work with live scallops related to timing of gonad development and age validation.

Review/Response to SSC comments

Scallop Plan Team discussion of SSC comments is provided in the SAFE report.

SPT meeting for 2022

The next Scallop Plan team meeting has been tentatively scheduled for February 16, 2022.