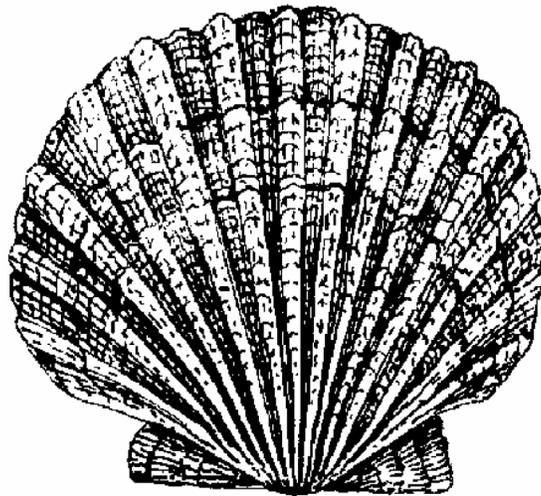


STOCK ASSESSMENT AND FISHERY EVALUATION REPORT FOR THE SCALLOP FISHERY OFF ALASKA

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Scallop Plan Team



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Executive Summary

An annual Scallop Stock Assessment Fishery Evaluation (SAFE) report is required by the North Pacific Fisheries Management Council's *Fishery Management Plan for the Scallop Fishery off Alaska* (FMP). Under the FMP, the report is prepared by the Alaska Department of Fish and Game (ADF&G) with input from the National Marine Fisheries Service (NMFS) and the Council's scallop plan team (SPT). The SAFE summarizes current biological and economic status of the fisheries, guideline harvest levels, and support for different management decisions or changes in harvest strategies. In the absence of annual estimates of stock size, optimum yield (OY) and maximum sustainable yield (MSY) remain at fixed values, as per the FMP. Following recommendations from the SSC, an expanded executive summary with updated information will be produced as the SAFE report every other year, beginning in 2021.

The Scallop Plan Team met on February 17th, 2021 to update the scallop SAFE executive summary with recent fishery independent survey information and fishery performance data. The Plan Team review was based on presentations by staff from the ADF&G, Council, and NMFS and included opportunities for public comment and input.

New Information in the 2021 SAFE:

- 2020 fishery-independent dredge survey results
- State management region – specific:
 - 2019/20 discard estimates
 - 2019/20 fishery CPUE
 - 2020/21 landings

Scallop Stock Status:

The FMP defines the minimum stock size threshold (MSST) for weathervane scallops as 4.93 million lbs (2,236 t) of shucked scallop meats, however, scallop abundance is estimated for only portions of two of nine registration areas. As such, an estimate of weathervane scallop spawning biomass is not available, and **the status of the scallop stock, relative to “overfished” is “unknown”**. This status determination is not considered to be a conservation concern since scallops are distributed in many areas that have been closed to fishing to protect crab populations and in areas not defined as commercial scallop beds.

Estimated total fishing removals (retained and discarded) for the 2019/20 season was 246,900 lb (112 t) of shucked meats (Table 1). This is approximately 21.4% of the ABC/ACL and 19.2% of OFL, therefore, **overfishing did not occur in 2019/20**.

During the 2019/20 season, scallop fisheries were open in Yakutat, Kodiak, AK Peninsula, Dutch Harbor, and Bering Seas Registration Areas. Area-specific guideline harvest levels (GHLs) were achieved in the Kodiak Northeast, Kodiak Shelikof, and Kodiak Southwest districts therein. Total *landed* catch for the 2019/20 season was 229,945 lb (104 t) shucked meats (88% of total GHL) (Table 4).

For the 2020/21 season, preliminary estimates of scallop removals consist only of retained catch at this time (Table 1). The addition of estimated discard mortality is not expected to substantially increase total removals relative to the ACL.

Scallop Plan Team Harvest Recommendations for 2021/22:

In the absence of a biomass estimate for applying the OFL control rule, the Scallop Plan Team recommends maintaining the overfishing limit (OFL) and acceptable biological catch (ABC) as established in the Scallop FMP. Specifically, the OFL in the 2021/22 season should be set equal to maximum OY (1.284 million lb; 582 t), and ABC should be set consistent with the maximum ABC control rule (90% of OFL), or 1.156 million lb (524 t).

Table 1. Alaska weathervane scallop removals (landings + discards) relative to specified OFL and ABC/ACL.

Season	Total Removals (lb meats)	OFL (lb meats)	ABC (lb meats)	%OY	%ACL
1993/94	984,583	1,800,000	1,620,000	54.7	60.8
1994/95	1,240,775	1,800,000	1,620,000	68.9	76.6
1995/96	410,743	1,800,000	1,620,000	22.8	25.4
1996/97	732,424	1,800,000	1,620,000	40.7	45.2
1997/98	818,913	1,800,000	1,620,000	45.5	50.6
1998/99	822,096	1,240,000	1,116,000	66.3	73.7
1999/00	837,971	1,240,000	1,116,000	67.6	75.1
2000/01	750,617	1,240,000	1,116,000	60.5	67.3
2001/02	572,838	1,240,000	1,116,000	46.2	51.3
2002/03	509,455	1,240,000	1,116,000	41.1	45.7
2003/04	492,000	1,240,000	1,116,000	39.7	44.1
2004/05	425,477	1,240,000	1,116,000	34.3	38.1
2005/06	525,357	1,240,000	1,116,000	42.4	47.1
2006/07	487,473	1,240,000	1,116,000	39.3	43.7
2007/08	458,313	1,240,000	1,116,000	37.0	41.1
2008/09	342,434	1,240,000	1,116,000	27.6	30.7
2009/10	512,958	1,240,000	1,116,000	41.4	46.0
2010/11	481,433	1,240,000	1,116,000	38.8	43.1
2011/12	461,924	1,284,000	1,156,000	36	40.0
2012/13	424,492	1,284,000	1,156,000	33.1	36.7
2013/14	408,088	1,284,000	1,156,000	31.8	35.3
2014/15	314,352	1,284,000	1,156,000	24.5	27.2
2015/16	261,939	1,284,000	1,156,000	20.4	22.7
2016/17	236,560	1,284,000	1,156,000	18.4	20.5
2017/18	250,632	1,284,000	1,156,000	19.5	21.7
2018/19	250,460	1,284,000	1,156,000	19.5	21.7
2019/20	246,900	1,284,000	1,156,000	19.2	21.4
2020/21	226,130 ^a	1,284,000	1,156,000	17.6 ^a	19.6 ^a

^a Preliminary estimates, discards not included.

Fishery Independent Survey

The 2020 survey sampled seven scallop beds in the Kodiak Northeast (KNE 1 – 6) and Kodiak Shelikof Districts (KSH1) (Figure 1). For details regarding station selection with beds, fishing gear and tow specifications, catch processing, biological sampling, and analytical methods, please refer to the most recent Operational Plan (Siddon et al., 2016) or survey Fishery Data Series report (Jackson et al., *in prep*).

The survey recorded 145 successful tows between 28 April and 14 May 2020 and, for KSH1, showed an increase compared to prior surveys in catch per unit effort (i.e., density), abundance, and round (i.e., whole animal) biomass of large (≥ 100 mm) scallops (147,096 scallops / nm²; 20,709,556 scallops; 8,058,849 lb), but not small (< 100 mm) scallops (102,936 scallops / nm²; 14,492,297 scallops; 868,231 lb). As with round biomass, meat biomass of large scallops increased over previous surveys (650,422 lb) (Table 2). Three Kodiak Northeast beds (KNE2, KNE3, KNE6) were previously surveyed in 2017, while others were surveyed for the first time in 2020. KNE5 had the highest catch per unit effort and abundance of large and small scallops (90,325 scallops / nm²; 1,991,581 scallops), while KNE6 had the greatest round biomass (764,549 lb) (Table 2). KNE6 increased in abundance and biomass of large and small scallops from the 2017 survey, while KNE substantially decreased in small scallops and increased in large

scallops (i.e., a large cohort transitioned between size classes). KNE2 increased abundance and biomass of small scallops, but decreased abundance and biomass of large scallops. Meat biomass followed similar trends as round biomass. The CV on abundance of large scallops in KSH1 was 0.2 and ranged from 0.32 (KNE1) to 0.85 (KNE4) among Kodiak Northeast beds (Table 2).

Shell height compositions included multiple distinct modes within the less than 100 mm class in several beds, notably KNE1, KNE3, and KNE6. Individual meat weights were smaller at a given shell height (or round weight) than in previous surveys, consistent with observations during the 2019 survey in Yakutat and West Kayak Island, as well as the 2019/20 fishery. Biological and environmental mechanisms leading to this decline are under investigation.

Table 3 is provided in response to SSC requests for a single summary table to the SAFE showing region-specific survey results next to region specific harvest totals and long-term averages

Table 2. 2020 dredge survey estimates of large (≥ 100 mm shell height) scallop abundance, round biomass (lb), and meat biomass (lb) with lognormal 95% confidence intervals, by bed.

Bed	CV	Abundance [95% ln CI]	Round Biomass [95% ln CI]	Meat Biomass [95% ln CI]
KSH1	0.20	20,709,556 [13,942,684, 30,760,626]	8,058,849 [5,656,251, 11,481,996]	650,422 [434,276, 974,146]
KNE1	0.32	1,383,443 [754,125, 2,537,930]	522,155 [284,981, 956,714]	33,821 [18,314, 62,461]
KNE2	0.48	429,515 [176,120, 1,047,486]	197,609 [80,544, 484,818]	14,990 [5,960, 37,697]
KNE3	0.49	1,445,085 [585,757, 3,565,084]	406,244 [172,000, 959,502]	29,204 [12,575, 67,824]
KNE4	0.80	16,623 [4,207, 65,685]	5,735 [1,355, 24,274]	362 [85, 1,539]
KNE5	0.42	1,991,581 [908,674, 4,365,040]	736,904 [333,539, 1,628,077]	60,502 [27,014, 135,506]
KNE6	0.35	1,785,611 [910,075, 3,503,455]	764,549 [373,410, 1,565,400]	55,064 [27,354, 110,846]

Table 3. 2020 dredge survey estimates of round weight biomass (lb) with a lognormal 95% confidence interval in comparison to 2020/21 season catch (round lb) and 10 year average (2010/11 – 2019/10).

District	Dredge Survey		Fishery	
	Biomass	95% ln CI	Catch ^a	10 yr avg
KSH	8,058,849	[6,381,958, 10,176,353]	400,600	717,385
KNE	2,633,194	[1,601,548, 4,329,381]	150,950	466,787

^aPreliminary estimate based on 10% meat recovery

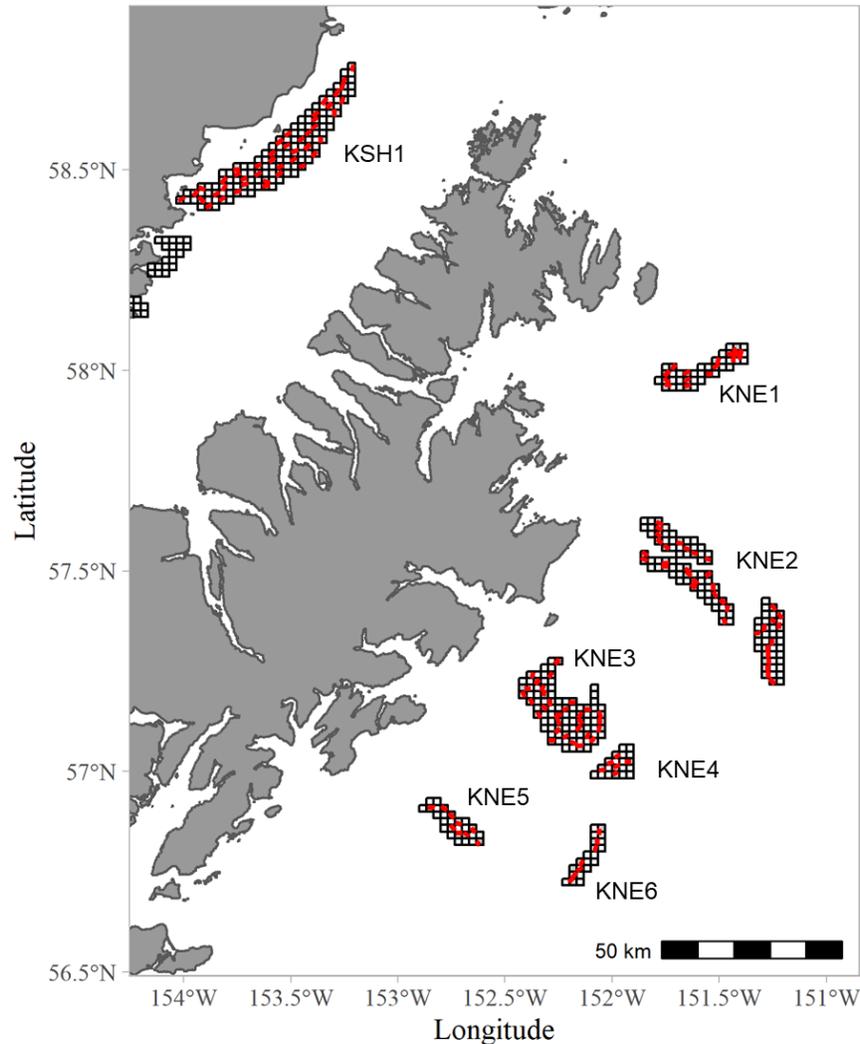


Figure 1. Map of Kodiak Northeast and Kodiak Shelikof scallop beds surveyed in 2020. Sampled stations are shaded (grey) and overlaid with vessel track lines (red).

Weathervane Scallop Fishery and Management

Scallop fisheries opened for the 2019/20 season in Yakutat (D), Kodiak (K), AK Peninsula (M), Dutch Harbor (O), and Bering Sea (Q) registration areas only with district-specific GHIs totaling 277,500 lb (126 t) shucked meats (Table 4). Prince William Sound (E) and Cook Inlet (H) registration areas were closed. GHIs were achieved in the Kodiak Northeast, Kodiak Shelikof, and Kodiak Southwest districts, and there was no fishing effort in the Kodiak Southeast and Central (area M) districts. Landed catch of all districts combined totaled 229,945 lb (104 t).

The spatial extent over which catch occurred during the 2019/20 season decreased following more constricted effort in all districts that were fished, except for the Dutch Harbor district. Of note, most of the retained catch in the Kodiak Northeast district came from a single bed. Nominal catch per unit effort (CPUE) in the 2019/20 continued increasing trends in Kodiak Northeast and Shelikof districts, while continued decreasing trends were observed in Kodiak Southwest and Bering Sea districts. Unimak Bight and Dutch Harbor districts both saw an increase in CPUE from the 2018/19 season. CPUE in Yakutat during the 2019/20 decreased from the 2018/19 season (Table 4).

Total discards increased from the previous season, following increases in discard ratio (round lb discarded per round lb retained) in Yakutat, Unimak Bight, Dutch Harbor, and Bering Sea districts. Totals discards and discard ratio decreased in all Kodiak registration area districts following the highest discard ratios in the timeseries (i.e., the 2018/19 season). Tanner crab (*Chionoecetes bairdi*) bycatch was high in the Unimak Bight district, and the exceeded the crab bycatch limit (3,750 crab) on the second day of fishing. The fishery was subsequently closed by emergency order, leaving approximately 25% of the GHL unharvested. Crab bycatch levels were similar to previous seasons in all other districts and did not warrant in-season management action.

The 2020/21 season opened in the same areas as the 2019/20 season, with district specific GHLs remaining the same, except for Kodiak Shelikof (increase to 40,000 lb, 18 t) and Yakutat (decrease to 145,000 lb, 66 t). Combined district specific GHLs totaled 277,500 lb (126 t) shucked meats. GHLs were met in Kodiak Northeast, Kodiak Shelikof, and Yakutat for a total preliminary landed catch of 226,130 (103 t) lb shucked meats (Table 5). There was no fishing effort in any other districts. Fishery discard estimates for the 2020/21 season are not yet available, and the Scallop Plan Team will evaluate total catch in the 2022 SAFE.

Table 4. GHLs and summary statistics from 2019/20 Alaska weathervane scallop fishery.

Registration Area	District/Subsection	GHR (lb meat)	GHL (lb meat)	Retained catch (lb meat)	CPUE (lb meat per dredge hr)	Est scallop discard mortality (lb meat) ^a
Yakutat		0-285,000	155,000	144,245	44	11,282
Kodiak	Northeast District		15,000	15,070	73	932
	Shelikof District	0-300,000 for whole Kodiak Area	20,000	20,125	53	2,296
	Southwest District		35,000	35,010	55	1,740
	Southeast District		15,000	0		
Alaska Peninsula	Central District	0-100,000 for whole Alaska Peninsula Area	7,500	0		
	Unimak Bight District ^b		7,500	5,740	49	518
Dutch Harbor		0-110,000	5,000	2,625	20	64
Bering Sea		0-300,000	7,500	7,130	20	123
Statewide Totals			267,500	229,945	53	16,955

^a Calculated from round weight discard estimates assuming 20% mortality (as previously used in scallop ACL analysis) for discarded scallops and 10% meat recovery.

^b Exploratory fishery prosecuted under ADF&G Commissioner's Permit.

Table 5. GHLS and preliminary catch from the 2020/21 Alaska weathervane scallop fishery.

Registration Area	District	GHL (lb scallop meats)	Retained catch (lb scallop meat)
Yakutat		145,000	145,025
	Northeast District	15,000	15,095
	Shelikof District	40,000	40,060
Kodiak	Southwest District	35,000	25,950
	Southeast District	15,000	0
	Central District	7,500	0
Alaska Peninsula	Unimak Bight District ^a	7,500	0
Dutch Harbor		5,000	0
Bering Sea		7,500	0
Statewide Totals		277,500	226,130

^a Exploratory fishery prosecuted under ADF&G Commissioner's Permit.

Socioeconomic Considerations:

During the 2020/21 Alaska Weathervane scallop fishery two vessels harvested 226,130 lb of shucked meats (preliminary) with an industry reported¹ first wholesale value of \$10.43 per pound (personal communication, Jim Stone via e-mail, February 17, 2021). Total first wholesale fleet revenue is estimated to be \$2,358,536 for the 2020/21 season. Assuming full utilization of 12 crew per vessel the average crew share, not accounting for differing share percentages was \$41,274.

Landings of scallops were made in Yakutat, Kodiak, and Seattle in 2020/21. Both vessels that participated fished within the Alaska Scallop Association cooperative and none of the independent LLPs were fished. There have been no changes in the ownership of LLPs in the past year.

Several Covid-19 mitigation measures were undertaken by the vessel operators in order to ensure they could successfully fish this year. Crews practiced recommended behavior before the season by isolating and everyone being tested before getting onboard. The Ocean Hunter came up to Alaska from Seattle with all crew onboard instead of flying to eliminate that risk of exposure, and only fished the Yakutat district. Observers had to have a negative test before they were deployed to the vessels. After the Yakutat fishery closed, the Ocean Hunter observer disembarked in Yakutat and flew back to Anchorage instead of riding the boat to Seattle to reduce the amount of travel.

Covid-19 mitigation efforts undertaken by the fleet allowed participating vessels to effectively prosecute the Alaska Weathervane scallop fishery. Harvest below GHL in the Western area was due to the need to change out crew and observers, which proved problematic due to Covid-19 restrictions. Approximately 25,000 lb of harvest was forgone, with an estimated first wholesale value of \$250,000 (pers. comm. Public testimony at the Scallop Plan Team Meeting). The fleet likely incurred increased operational costs due to Covid-19 mitigation and transit of the Ocean Hunter to Seattle.

World scallop markets have been undergoing considerable market shocks and price variability in the past several years. Trade tariff issues resulted in market volatility and disruption in the seafood supply chain starting in 2018 (Reuters, 2018). The onset of the Covid-19 pandemic shuttered restaurants that are a key market for Atlantic sea scallops causing steeper than normal seasonal price declines. However, prices firmed much more than normal through the end of 2020 due in part to reduced landings and continued consumer demand (Seafood News, 2020). Alaska Weathervane scallop average annual price has declined

¹ The Alaska Department of Revenue no longer publishes annual scallop prices due to confidentiality.

7.4% over the previous year; however, in recent months prices have strengthened as consumer demand for frozen seafood, such as crab and scallops, has dramatically increased. The strong retail demand that developed late in 2020 actually prompted the Alaska Scallop Association to raise prices in order to slow distribution (personal communication, Jim Stone, via e-mail, February 17, 2020).

References:

North Pacific Fishery Management Council (NPFMC). 2014. Fishery Management Plan for the Scallop Fishery off Alaska.

Reuters, 2018, U.S. China trade war triggers seafood supply chain shake-up. September 28, 2018.
<https://www.reuters.com/article/us-usa-trade-seafood/u-s-china-trade-war-triggers-seafood-supply-chain-shake-up-idUSKCN1M81DP>

Seafood News, 2020. Analysis: Scallop Market Firms Amid Tightening Restrictions. December 3, 2020.
<https://www.seafoodnews.com>