BSAI Pot Catcher Vessel ≥ 60 ft. and Pot Catcher Processor Cooperatives

September 2025[1]

1 Introduction

In June 2023, the North Pacific Fishery Management Council (Council) tasked staff[2] to prepare a discussion paper with information to help the Council address the numerous concerns being encountered by the BSAI pot catcher vessel ≥ 60 ft. (CV) and pot catcher/processor (CP) Pacific cod fisheries and to include data to support the development of a cooperative limited access privilege program (LAPP) for these pot sectors. The Council's focus is on a cooperative-based LAPP structure because of the Council's experiences with cooperative and individual fishing quota (IFQ)-style programs.

[1] Prepared by: Darrell Brannan (Brannan & Associates) and Anna Henry (NPFMC)
[2] https://meetings.npfmc.org/CommentReview/DownloadFile?p=3773f458-b562-4da4-93a1-78531c99ff38.pdf&fileName=E%20Motion%20Pot%20cod%20LAPP.pdf

The Council was particularly concerned with multiple issues that were simultaneously negatively impacting the sustained viability and rational prosecution of the fishery for all its participants. These factors include decreasing Pacific cod total allowable catch (TACs), an increase in the number of License Limitation Program (LLP) licenses participating in the CV sector, the potential for additional new participants in both the CV and the CP sectors, a race among existing participants (often in unsafe conditions), resulting in an inability to control bycatch of crab, and increasingly shortened seasons in recent years.

In the June 2023 motion, the Council established a control date of June 11, 2023, that may be used as a reference date for any future management action to address pot CPs of any length and ≥ 60 ft. pot CVs participation in the Bering Sea Aleutian Islands (BSAI) Pacific cod pot sector fisheries. However, the control date of August 1, 2023, was published in the Federal Register (FR).[3] As noted in the FR, the control date "informs interested parties that the Council is considering a future action that may affect or limit the number of participants in this fishery and that participants should locate and preserve all fishing-related documents. This provides notice to the public that any person participating in the applicable sector after the control date may not receive continued access to this fishery under a future management action. This document is intended to discourage speculative entry or fishing activity in this fishery while the Council considers whether and how access to the fishery may be further limited under a future management action. However, the Council is not obligated to use this control date in any future management action. And the control date does not obligate the Council to take any action and does not prevent the Council from selecting another control date."

The discussion paper4 based on the 2023 motion was presented at the June 2024 Council meeting (referenced in this paper as the "2024 discussion paper") and included information on the following topics: 1) History of relevant Council actions related to Bering Sea/Aleutian Islands (BSAI) pot CV ≥ 60 ft. and pot CP Pacific cod fisheries, 2) Summary of Federal BSAI Pacific Cod Management, 3) MSA Elements of a LAPP, 4) Program Design, 5) Cooperative Structure- including information on Allocations, Processor and community considerations, Ownership and Use Caps, and Sideboard limits, 6) Bycatch and PSC Management, 7) Vessel Crew Considerations, 8) Interaction with other Pacific Cod Sectors, 9) Monitoring Requirements and 10) Safety Considerations.

After reviewing the 2024 discussion paper, the Council did not define elements and options of a LAPP to proceed to analysis. Rather, the Council requested that staff develop a subsequent discussion paper that focuses on seven topics in greater detail.[5] The outline and content of this discussion paper are directly responsive to the specific elements outlined in this Council motion plus an additional section on specific NMFS Management Considerations that the agency wanted to highlight at this point in the process.

2 How the distribution of QS area endorsements across eligible LLP licenses may impact harvest opportunities.

2.1 Pacific Cod TACs, Catch, and Utilization by harvest area (BS, AI, or BSAI)

BSAI Pacific cod harvest specifications establish separate TACs for the BS and AI subareas that are not further divided by gear or sector. Once the individual BS and AI TACs are established, a portion of the

[3] https://www.federalregister.gov/documents/2023/08/01/2023-16230/control-date-for-Pacific-cod-by-catcher-vessels-greater-than-or-equal-to-60-feet-length-overall-and
[4] https://meetings.npfmc.org/CommentReview/DownloadFile?p=f1eeebdf-f7c1-461a-babc-0d32aa8df7ad.pdf&fileName=D4%20BSAI%20Pot%20Cod%20LAPP%20Discussion%20Paper.pdf
[5] https://meetings.npfmc.org/CommentReview/DownloadFile?p=d5289b89-89a0-4d16-8a20-2500800248c9.pdf&fileName=D4%20Council%20Motion%20FINAL.pdf

BS and AI Pacific cod TACs are allocated to the CDQ Program. Table 2-1 shows the 2014 through 2025 TAC by area and the amount harvested by all sectors, excluding CDQ. The catch data for 2025 is through April 29th. After subtracting the CDQ allocation from each subarea TAC, NMFS combines the remaining BS and AI TACs into one BSAI non-CDQ TAC, which is further allocated to nine non-CDQ fishery sectors defined by a combination of gear type (e.g., trawl, hook-and-line), operation type (i.e., CV or CP), and vessel size categories (e.g., vessels ≥ 60 ft. in length overall). Through the annual harvest specifications process, NMFS allocates an amount of the combined BSAI non-CDQ TAC to each of these nine non-CDQ fishery sectors[6]. Two of the sectors are the CP pot sector, which includes vessels of any size, and the CV≥ 60 ft pot sector. Each of these sectors has its own separate allocation. Seasonal allowances for the CP and CV ≥ 60 ft are divided between an A season that occurs from January 1–June 10 and a B season from September 1–December 31.

Because there are no gear or sector divisions of the BS and AI TACs, if other gears/sectors harvest their BSAI allocation and fully utilize the TAC in a subarea before the pot gear fishermen harvest their allocation, the pot gear fishermen would be required to harvest any uncaught quota in the remaining open subarea for which they may not have an area endorsement. As shown in Table 2-2, three CVs[7] have a pot cod LLP endorsement for the AI. This circumstance could lead to the trading quota within a cooperative or allowing some pot cod quota to go unharvested.

Since 2020 the BS Pacific Cod TAC has been fully harvested, except in 2024. The fishery has been closed to directed fishing in four of the five years, November 18, September 17, October 7, and October 16 from 2020 through 2023, respectively. It was not closed to directed fishing in 2024 when only 86 percent of the TAC was harvested. If the BS closes to all directed fishing, harvesters would be forced to fish any remaining quota in the AI. The lack of processors in the AI region, the potentially higher cost of fishing in the area, and the limited number of vessels with an AI endorsement on their LLP license could make harvesting quota in a pot LAPP problematic. This issue was considered in the BSAI Pacific cod trawl cooperative (PCTC) Program Regulatory Impact Review (RIR)/Environmental Assessment (EA) where it was also a concern (NMFS 2023). Fishery conditions were different during those discussions since the Adak plant was open to accept deliveries of AI cod. There has not been an operational shoreside processor in the AI for pot caught Pacific cod since 2020. A primary concern in the trawl fishery was how the cooperative structure could facilitate harvest in the AI by stacking the remaining quota on fewer vessels after the BS closed to directed cod. Given the current operational conditions in the AI, where floating processors or tendering would be the primary options for CVs to deliver AI catch, this paper addresses those issues in more detail in later sections.

[6] A more complete summary of Federal BSAI Pacific Cod Management is included in section 1.2 of the June 2024 discussion paper

[7] CP LLP licenses may be used on CVs, which is relatively rare.

Table 2-1 Pacific cod allocation and catch by TAC area, 2014 through April 2025

	BS			AI			Total		
Year	Total Catch	TAC	% Taken	Total Catch	TAC	% Taken	Total Catch	TAC	% Taken
2025	61,925	119,307	52%	1,514	7,764	19%	63,439	127,071	50%
2024	112,935	131,943	86%	3,469	7,215	48%	116,404	139,158	84%
2023	113,473	113,776	100%	2,997	7,524	40%	116,470	121,300	96%
2022	120,465	121,864	99%	5,288	12,320	43%	125,753	134,184	94%
2021	97,892	99,464	98%	6,396	12,320	52%	104,288	111,784	93%
2020	126,533	126,627	100%	6,376	12,320	52%	132,909	138,947	96%
2019	146,773	166,475	88%	11,799	12,693	93%	158,572	179,168	89%
2018	167,188	168,005	100%	13,319	14,016	95%	180,507	182,021	99%
2017	198,955	199,768	100%	10,726	14,016	77%	209,681	213,784	98%
2016	206,315	213,141	97%	11,293	11,465	98%	217,608	224,606	97%
2015	201,276	220,479	91%	8,205	8,414	98%	209,481	228,893	92%
2014	206,099	220,479	93%	5,695	6,248	91%	211,794	226,727	93%

Source: Annual NMFS files e.g., https://www.fisheries.noaa.gov/sites/default/files/akro/car130_bsai_non_cdq_secondary2025.html

2.2 Concerns relating to the timing or logistics of harvesting allocations

In the June 2024 discussion paper (NPFMC 2024b), staff noted that depending on how the area allocations of QS are defined, it could impact the timing and logistics of harvesting the allocations. If the quota was issued as a BSAI quota, harvesters may want to ensure their quota is harvested before the BS is closed to directed Pacific cod fishing, especially since there are currently limited market opportunities in the AI region (see Section 6 for more information). Staff asked the Council if they wished to provide direction on whether quota shares would be issued as separate AI and BS or as combined BSAI quota. The Council requested additional information on harvests and LLP licenses with Pacific cod pot endorsements that have been allocated. Because LLP licenses have a BS and/or AI endorsement (not a BSAI endorsement for pot gear), staff noted that there could be different impacts on LLP license holders who only have a BS or AI endorsement. If an LLP license holder did not have the option to fish both areas, the vessel assigned that LLP license may need to harvest their allocation before a subarea's TAC is harvested and that subarea is closed to directed fishing for the remainder of the year.

2.3 LLP licenses

Beginning January 1, 2003, persons wishing to participate in the directed fishery for Pacific cod in the BS and/or AI with pot gear were required to have a gear, area, and operation-type Pacific cod endorsement on the LLP license that names their vessel. CP LLP licenses can be used on CV vessels if they have the proper endorsements.

Table 2-2 summarizes the LLP licenses issued with a Pacific cod endorsement to fish with pot gear in the Bering Sea (BS) and/or Aleutian Islands (AI) management areas for CV ≥ 60 ft. LOA and all CPs. A total of 58 LLP licenses have those endorsements, 51 CV LLP licenses and seven CP LLP licenses. Rules developed under the LLP Program allow CP licenses to be used on CVs since it was not expected to increase fishing power. A CV LLP license may not be used on CPs. The table shows that 48 of the CV and two of the CP LLP licenses may only be used to fish for Pacific cod when using pot gear in the BS. Two CV and five CP LLP licenses may be used to fish for Pacific cod with pot gear in either area. These LLP licenses provided the greatest flexibility to fish, especially for CP, since markets for unprocessed fish are not a constraint. One CV license is only endorsed to fish the AI. This LLP license has the most significant constraints under current conditions.

Table 2-2 LLP Licenses with a Pacific cod pot gear endorsement for the BS/AI

LLP Area Endorsement	Catcher Vessel	Catcher Processor
Bering Sea Only	48	2
Aleutian Islands Only	1	
Bering Sea and Aleutian Islands	2	5
Total	51	7

Source: NOAA Fisheries LLP License Files 2025

2.3.1 Catcher Vessels

From 2008 through 2024, there were three CVs ≥ 60 ft. LOA that harvested Pacific cod from the directed open-access fishery in the AI. The three CV LLP licenses endorsed to fish Pacific cod with pot gear were used on those vessels. Those vessels accounted for 1.79 percent of the total BSAI Pacific cod harvested by that class of vessel in the open access fishery. If separate allocations were made for the BS and AI to CVs, approximately 1.79 percent of the quota would have an AI designation, and 98.21 percent would have a BS designation. The exact percentage would depend on the quota allocation formula developed by the Council and implemented by NOAA Fisheries. The three LLP licenses that were used to fish the AI were also assigned to a vessel that also fished the BS at some point from 2008 through 2025. The LLP license with only an AI endorsement was stacked on a vessel with an LLP license that had a BS endorsement to allow the vessel to fish in the BS. One of the LLP licenses was only used to fish in the BS in 2025. As a group, the three LLP licenses took 68.2 percent of their catch in the AI. None of the three vessels fished in the AI in 2024 or during the A season of 2025. Limited delivery markets were likely one of the primary factors in that decision.

2.3.2 Catcher Processors

From 2008 through 2023, the period discussed as a potential qualifying period to earn catch history in the pot CP sector, initially in the 2023 motion, vessels must be named on a valid LLP license with all necessary endorsements to fish Pacific cod with pot gear in the BS and/or AI.

The allocation of BSAI Pacific cod to the pot CP sector is for harvest by a CP of any length. The seven LLP licenses with a Pacific cod pot endorsement for use on a catcher processor in the BS and or BSAI, limit the maximum size of the vessel from 124 ft. Length Overall (LOA) to 180 ft. LOA. These LLP licenses could be used on a pot CP of any length less than the maximum LOA listed on the LLP license. This means that, unlike the catcher vessel sector allocation, the catcher processor quota could be fished by CPs of any length, as long as it is less than the maximum LOA endorsement on the LLP license.

3 Improved Retention/Improved Utilization implications of extended seasons and any potential additional avenues to address those concerns

The Improved Retention/Improved Utilization (IR/IU) program requires that vessels retain IR/IU species when the directed fishery for those species is open, with very limited exceptions. An MRA (maximum retainable amount) is the maximum amount of a species that is closed to directed fishing that may be retained onboard a vessel. MRAs are calculated as a percentage of the weight of catch of each species or species group open to directed fishing (basis species) that is retained onboard the vessel. The percentage of a species or species group closed to directed fishing retained in relation to the basis species must not exceed the MRA.

The owner or operator of a vessel that is required to obtain a Federal fisheries or processor permit under § 679.4 must comply with the improved retention (IR)/improved utilization (IU) program while fishing for

groundfish in the GOA or BSAI, fishing for groundfish in waters of the State of Alaska that are shoreward of the GOA or BSAI, or when processing groundfish harvested in the GOA or BSAI. Pacific cod is an IR/IU species for CVs and CPs. The table provided in the regulations that summarizes those regulations is provided below.

If you own or operate a ...	**and ...**	**you must retain on board until lawful transfer ...**
(i) Catcher vessel	(A) Directed fishing for an IR/IU species is open	all fish of that species brought on board the vessel.
	(B) Directed fishing for an IR/IU species is prohibited	all fish of that species brought on board the vessel up to the MRA for that species.
	(C) Retention of an IR/ IU species is prohibited	no fish of that species.
(ii) Catcher/processor	(A) Directed fishing for an IR/IU species is open	a primary product from all fish of that species brought on board the vessel.
	(B) Directed fishing for an IR/IU species is prohibited	a primary product from all fish of that species brought on board the vessel up to the point that the round-weight equivalent of primary products on board equals the MRA for that species.
	(C) Retention of an IR/IU species is prohibited	no fish or product of that species.
(iii) Mothership	(A) Directed fishing for an IR/IU species is open	a primary product from all fish of that species brought on board the vessel
	(B) Directed fishing for an IR/IU species is prohibited	a primary product from all fish of that species brought on board the vessel up to the point that the round-weight equivalent of primary products on board equals the MRA for that species.
	(C) Retention of an IR/IU species is prohibited	no fish or product of that species.

In addition to the retention requirements, CPs and motherships are required to retain or lawfully transfer products produced from that IR/IU species during a fishing trip. When the fishery is open to directed fishing, they must utilize an amount that equals or exceeds 15 percent of the round weight of that species (caught or delivered to the vessel) in product weight. When the IR/IU species is closed to directed fishing, 15 percent of the round weight or 15 percent of the MRA for that species, whichever is lower, must be delivered in product weight. If Pacific cod were placed on PSC status, processing of that species would not be allowed.

3.1 IR/IU Implications

Under a LAPP program, the season duration is expected to increase as harvesters utilize the flexibility of the program. With increased operational flexibility, harvesters would likely opt to harvest Pacific cod when fish quality is better and when harvesting efficiency can be improved because of higher catch per

unit effort or timing the fishery so it better fits within the annual fishing cycle. The flexibility that allows harvesters to determine when to fish means that the Pacific cod pot fishery will be open to directed fishing for more of the year.

A primary issue is knowing how much gear to set to harvest the allocation without exceeding the limit. Trawl gear harvesters can often gauge the amount of catch in a tow. Pot gear harvesters typically set many pots and then retrieve them without knowing the catch rates. If too many Pacific cod are caught in the pots set, the vessel operator would have a conflict between complying with the IR/IU regulations or exceeding their harvest limit.

Vessels that fish with pot gear for Pacific cod typically have limited participation in other groundfish fisheries that take Pacific cod incidentally. These incidental catches of Pacific cod are counted against the incidental catch allowance established in the annual BSAI harvest specifications for the hook and line and pot vessels.

3.2 Potential Remedies

Quota share transfers allowed through the fishing year's end to cover any overage without penalty can help mitigate overages. Programs that calculate overages in real-time and potentially impose penalties for those overages could create incentives to discard, contrary to IR/IU regulations. Providing quota holders with additional time to acquire sufficient quota to cover an overage could lessen the incentives to discard.

Under a cooperative structure, NMFS would only manage the quota at the cooperative level. NMFS would only consider overage when the aggregate catch of the cooperative members exceeded the cooperative's allocation. Transfers between members of the same cooperative would be implemented through private contracts. Transfers between cooperatives would require NMFS approval. However, allowing the formation of larger cooperatives and not imposing strict limits on the amount of quota a cooperative could use could limit the incentives to discard Pacific cod.

Overage and underage provisions could also help to mitigate small overages in a person's annual harvest. The halibut and sablefish IFQ program and the West Coast groundfish catch share program include an overage and underage provision. These provisions allow quota share holders who do not fully harvest their allocation to carry over the remaining allocation into the next year. If they overharvest their allocation, the overage is deducted from their allocation the following year. Often, a limit of 10 percent of the person's allocation is imposed on the over- or underage in a given year.

Because vessels that fish Pacific cod using pot gear have limited participation in other groundfish fisheries and there is an ICA of Pacific cod that is used to cover incidental catches of Pacific cod by hook and line and pot vessels when participating in non-Pacific cod directed fisheries, catches of Pacific cod could be covered by the ICA and not deducted from the annual allocation. In this case, the Council could only consider allocating the Pacific cod quota based on the directed Pacific cod harvest. Any Pacific cod harvested under the directed Pacific cod pot fishery would be deducted from their annual allocation. Any Pacific cod harvested as incidental catch in other directed fisheries would be deducted from the Pacific cod ICA established for vessels deploying hook and line or pot gear on the trip.

4 Monitoring issues

The North Pacific Observer Program (Observer Program) deploys observers and electronic monitoring (EM) systems to collect data necessary for the conservation, management, and scientific understanding of the commercial groundfish and Pacific halibut fisheries of the BSAI and GOA management areas. Data collection through the Observer Program provides a reliable and verifiable method for NMFS to obtain fishery discard and biological information on fish, discard on non-commercial species (for ecosystem

management) and data concerning seabird and marine mammal interactions with fisheries. Observers and EM systems provide fishery-dependent information that is used to estimate total catch and interactions with protected species. Managers use these data to manage groundfish and prohibited species catch within established limits and to document and reduce fishery interactions with protected species. Scientists also use fishery-dependent data to assess fish stocks, evaluate marine mammal interactions with fishing gear, characterize fishing impacts on habitat, and provide data for fisheries and ecosystem research and fishing fleet behavior.

All vessels and processors that participate in federally managed groundfish and Pacific halibut fisheries off Alaska are assigned to one of two categories: (1) the full observer coverage category; or (2) the partial observer coverage category. Vessels and processors in the full coverage category have at least one observer present during all fishing or processing activity. All vessels and processors that are not in full coverage are in the partial coverage category and are assigned observer coverage according to the scientific sampling plan described in the Annual Deployment Plan (ADP). The ADP outlines the scientific justification for deployment of observers and EM systems using established random sampling methods to collect data on a statistically reliable sample of fishing vessels in the partial coverage category. Each year, the ADP describes the deployment strata and how vessels are assigned to specific partial coverage selection pools.

The pot CP sector is in the full coverage category and 100 percent of trips are observed. Table 4-1 shows the number of trips, days and metric tons of groundfish that were observed in the pot CP sector since 2015. The fast pace of fishing with single pot gear, high sampling workload, and the need for close communication between the captain and observer make the pot CP sector one of the most difficult fisheries for observers to sample. The challenging nature of observing this sector and a relatively high rate of observer data deletions led to a requirement for participants to carry a Level 2 observer effective December 11, 2023 (88 FR 77228). A Level 2 endorsement is one step below a Lead Level 2 endorsement and can be obtained by an observer after they complete the initial observer certification, sample 60 data collection days, and successfully meet expectations on their most recent cruise (50 CFR 679.53(a)(5)(iv) and (v)). Analysts assume that the pot CP sector would continue to operate under the full coverage model with at least one Level 2 observer regardless of the cooperative structure implemented. There are additional voluntary monitoring options that vessels in the pot CP sector may choose, including: (1) allow a certified observer sampling station with a motion-compensated platform (MCP) scale for the observer's use; (2) allow a motion-compensated, NMFS-Approved Scale to measure total catch in conjunction with an MCP scale for testing, electronic logbook, and video monitoring; and (3) allow vessels to carry additional onboard observers.

Table 4-1 Observed trips, days, and groundfish metric tons in the BSAI Pacific cod pot CP sector

	trips	days	metric tons
2015	88	1204	8,116
2016	52	662	6,803
2017	36	612	5,411
2018	36	439	4,435
2019	30	356	3,865
2020	35	532	3,539
2021	42	462	2,342
2022	35	424	2,802
2023	34	404	2,419
2024	5	101	*

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

The pot CV ≥ 60 ft sector is in the partial coverage category, with observer coverage rates determined in the annual deployment plan. From 2015-2025, the annual selection rates have ranged from 4%-44% of trips, and realized coverage rates have ranged from 7.7%-47.6% of trips from 2014-2024 (Table 4-2). Since 2019, vessels in the partial coverage category that use fixed gear (hook and line or pot) have had the option to use EM instead of carrying an onboard observer (some trips were covered by EM prior to 2019 as part of pre-implementation, but EM data were not used in catch accounting until 2019) (AFSC 2024). Selection rates for fixed gear EM have been set at 30% through 2023. In 2024 the fixed gear EM strata was split by FMP area with the BSAI trip selection rate set at 74% and then bumped back to 48% in 2025. Realized EM rates are not included as EM review is usually ongoing at the time of publication of the annual report. Table 4-3 shows the number of vessels, trips, days and metric tons of groundfish that were observed by at sea observers, EM, not monitored, and total, in the pot CV ≥ 60 ft sector 2015-2024.

Table 4-2 Expected and realized coverage rates as a percentage of the total number of trips taken for observer and EM in the pot CV and Fixed-gear EM strata (through 2023) and Fixed-gear BSAI or Fixed-gear EM BSAI strata (in 2024).

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Observer Expected	24	15	4	16	15	15	18	17.5	17.1	44	20
Observer Realized	23.4	14.7	7.7	15.5	14	15.5	20.5	18.1	17.8	47.6	NA
EM Expected	NA	NA	NA	NA	30	30	30	30	30	74	48

Source: Alaska Fisheries Science Center and Alaska Regional Office 2025. North Pacific Observer Program 2024 Annual Report.

Table 4-3 Vessels, trips, days and metric tons of groundfish observed by at sea observers (Obs), electronic monitoring (EM), not monitored (NM) and total, in the pot CV ≥ 60 ft sector 2015-2024. Note vessels with both unobserved and observed trips appear in both categories so the vessel columns do not sum to the total.

Year	Vessels				Trips				Days				Metric Tons			
	Obs	EM	NM	total	Obs	EM	NM	total	Obs	EM	NM	total	Obs	EM	NM	total
2015	15	0	22	23	39	0	107	146	130	0	387	517	2,539	0	8,014	10,553
2016	14	0	24	25	28	0	139	167	100	0	581	681	1,774	0	9,509	11,282
2017	12	1	34	34	17	2	210	229	58	20	865	943	1,002	*	12,647	*
2018	18	0	33	34	39	0	164	203	146	0	670	816	3,443	0	12,243	15,686
2019	17	4	35	35	26	9	112	147	88	26	652	766	1,756	641	11,394	13,791
2020	6	6	39	39	8	15	103	126	23	77	561	661	314	1184	9,924	11,421
2021	6	4	23	23	19	16	54	89	65	49	379	493	1,143	688	5,524	7,355
2022	11	5	29	30	29	17	67	113	105	77	620	802	2,150	859	9,238	12,248
2023	7	2	22	22	15	2	44	61	46	14	428	488	874	*	8,718	*
2024	6	1	7	8	18	10	35	63	54	41	134	229	966	*	3,005	*

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

4.1 Crab PSC estimation methods[8]

Crab prohibited species catch (PSC) estimation is like other types of catch and bycatch estimation where extrapolation of observed catch records onto unobserved effort is required for total catch accounting. Catch estimation methods are vetted often through the SSC and Council process and are designed to provide the best estimates with the information that is gathered under the operational and financial constraints of the Observer Program. Catch on full coverage vessels (pot CPs) involves extrapolation between hauls on the same vessel. Catch on partial coverage vessels (≥60 pot CVs) involves extrapolation

[8] This information was originally presented in Appendix 1.2 of the Bristol Bay Red King Crab Expanded Information discussion paper at the October 2022 Council meeting (NPFMC 2022) but has been updated here.

between observed and unobserved vessels and trips[9]. The variability of bycatch estimates is higher for fleets that have less total observer coverage.

NMFS estimates PSC in the groundfish fisheries using at-sea data from observers, EM and eLandings (Cahalan et al., 2014). NMFS manages the harvest of crab PSC by number, not weight, therefore the Catch Accounting System (CAS) produces estimates of crab PSC in numbers only. Observer data are used to create crab bycatch rates (a ratio of the estimated number of crab to the estimated total catch in sampled hauls). Observer data from the at-sea samples is used to create bycatch rates that are applied to unobserved vessels. For trips that are unobserved, the bycatch rates are applied to industry supplied landings of retained catch. Expanding on the observer data that are available, the extrapolation from observed vessels to unobserved vessels is based on varying levels of aggregated data (post-stratification). Within each sampling strata defined in the ADP, data are matched based on processing sector (e.g., catcher/processor or catcher vessel), week, target fishery, gear, and Federal reporting area. Note that this does not include separation of vessels under 60ft from those over 60ft; bycatch rates for CVs include data from the full range of vessel sizes.

In some situations, CAS is unable to match an unobserved trip with sampled hauls (either from observers or EM) within the strata. In that scenario, an estimate is generated using data within the FMP area (BSAI or GOA) from trips with the same gear and trip target code. For example, in the fall of 2020, there was reduced observer coverage in the partial coverage pot stratum due to COVID. During that time, PSC estimates were generated for the partial coverage pot stratum using information NMFS received from EM vessels fishing with pot gear and pot CPs.

All the estimated crab PSC caught in any gear type is deducted from the PSC limit. In other words, CAS does not apply mortality rates to crab PSC. Further detail on the estimation procedure is available in Cahalan et al. (2014).

4.2 Electronic monitoring

EM consists of an on-board system that includes a sensor to capture hydraulic pressure activity, a GPS to capture locations, and 3-5 cameras. EM can be a useful tool for monitoring fixed gear fisheries. However, there are some challenges associated with EM in the pot cod fishery that may create difficulties for monitoring and managing crab PSC limits in a LAPP. These challenges are primarily related to identifying bycatch at a species level and the timeliness of data review.

4.2.1 Unidentified crab

Reviewers for the fixed gear EM program cannot currently identify crab to species during review of the video. As a result, they often record crab as "crab unidentified", or identified to genus group codes (e.g., "king crab unidentified" and "Tanner crab unidentified"). Table 4-4 shows the number of crab observed during EM review that were identified to genus group (king crab or Tanner crab) or unidentified. Unidentified crab are not included in estimates of crab PSC and create a data gap for crab estimates in the EM pool. It should be noted however that this is a small amount of crab compared to the total PSC estimates.

Crew catch handling is impacted in pot fisheries using EM, as crew must clear each pot and process catch prior to the next pot coming onboard. Organisms must be handled in such a way that allows a view and/or count by the video reviewer. These catch handling requirements may slow fishing efforts but must be done to comply with vessel monitoring plans (VMPs). There may be some changes to catch handling that

[9] Extrapolation to unobserved vessels includes information from all pot CVs directed fishing for Pacific cod. This means that the < 60 fleet crab PSC information also is included in the PSC rate for ≥ 60 ft.pot CV sector.

could improve the ability of EM reviewers to identify crab to species, such as holding each individual animal up close enough to the camera, long enough for improved identification. However, participants in catch handling experiments have concluded that this is prohibitively time consuming, particularly on hauls with larger amounts of bycatch and is thus not feasible on a large scale.

Other conditions such as rough weather, water spots on cameras, lighting issues, and/or vessel set ups where camera views are farther from the sorting table can make it challenging to identify crab to species even when individual animals are held up to the camera. Additionally, while some characteristics described in the NMFS FMA species identification guide are relatively easy to identify with quality EM video (such as the number of walking legs- four pairs for Tanner crab and three pairs for king crab, and carapace characteristics of Tanner crab), other characteristics are more challenging to identify during EM review (such as spine counts, eye color, and the epistome region). Updated identification guides targeted towards reviewing EM footage may help increase the number of crab identified to species with high quality footage.

Catch handling requirements in other EM programs such as maximized retention and shoreside accounting of PSC in the trawl EM program are not recommended for crab species in pot fisheries which have high survivability when discarded at sea. Discard chutes, which have been tested in other fisheries and shown to improve the accuracy of EM species identification are also not likely to be feasible in this fishery given space constraints on smaller vessels.

Table 4-4 Number of crab observed in EM video review for pot CV ≥ 60 ft targeting Pacific cod 2019-2024 (2022-2024 are combined for confidentiality concerns).

Year	Crab unidentified	King Crab unidentified	Tanner Crab unidentified	Total
2019	32	26	581	639
2020	692	39	4541	5272
2021	635	1388	4811	6834
2022-2024	18	2	2706	2726

Source: NMFS AFSC Observer Program sourced through NMFS AKR, data compiled by AKFIN in Comprehensive_OBS_EM

Unidentified crab can occur on at-sea observed trips as well, however this is less frequent than for EM. When this happens, the unidentified king and Tanner crab recorded by observers are speciated and extrapolated to the haul by using information on other PSC species crabs that observers were able to identify to species in that haul. NMFS uses the proportion of crab that were identified to species and applies that to the unidentified PSC species crab. If there are no PSC crab within the haul and species group that the observer was able to identify to species, then the PSC crab remains unidentified. When PSC crab is recorded as unidentified, it does not accrue towards any PSC limit. Similar extrapolation methods could potentially be applied to EM data, however the underlying proportion of PSC crab that would be applied to the unidentified PSC crab would have to be derived from observer data or survey data and would thus be less similar in time and area to the EM haul or trip. Other parameters such as depth and area could be used to help identify PSC crab to species and may be more accurate especially for king crab (e.g. shallow water targets such as Pacific cod or spatial criteria in the Bristol Bay area down south to the Peninsula are often red king crab while deep water targets are likely golden king crab). NMFS has not fully investigated applying these types of methods to speciate the unidentified crab.

4.2.2 Timeliness of data

The coverage rate set in the ADP for fixed gear EM is a trip selection rate. If a trip is selected for EM coverage the EM systems must be turned on and at the end of the trip, the hard drive with EM video is sent in for EM review. During EM review, species identification and counts of catch are recorded for a subset of hauls for pot gear. For single pot gear, catch is reviewed for every third haul (each pot is a haul for single pots). The average time between video receipt and completion of review for EM pot trips was

184 days in 2023 and 213 days in 2022. Despite a 30% selection rate for fixed gear EM in 2023, by April 1, 2024, only 18.7% of 2023 trips had been reviewed (AFSC 2024). The average review time for pot gear is similar to the actual time it takes to retrieve gear and sort catch, such that one hour of catch handling can be reviewed in just under or over an hour (AFSC 2024). There are five full-time review staff available for the AK EM programs.

Additional resources should further improve EM data turnaround time; however, it is still significantly slower compared to data from at sea observers. Observers enter the data they have collected onboard vessels and processors using the NMFS-supplied data entry software, ATLAS. The ATLAS software is used by observers to electronically transmit their data to NMFS at the completion of CV trips and daily on CPs.

Observers deployed on vessels in the full coverage category have access to a computer provided by the vessel and are also required to provide data transmission capabilities so that observers can transmit their data throughout a trip. Vessels participating in the pot CP sector already have ATLAS and data transmission capabilities as required by regulation (50 CFR 679.51(e)(1)(iii)(B)). Data transmission that occurs daily during the trip while the vessel is still at sea allows NMFS to generate catch and bycatch estimates in near-real time. Timely transmission also enables observer data to be available to vessel owners and cooperative managers within two hours after an observer transmits data to NMFS.

Observers deployed on vessels in the partial coverage category are equipped by their observer provider company with a laptop that has ATLAS installed. Observers transmit data to NMFS from these computers at the completion of a trip by utilizing electronic communications available while at port. Vessels in the partial coverage category generally do not provide a computer for observers to enter or transmit observer data electronically while they are at sea. Therefore, PSC data from the partial coverage fleet is not available until after the end of the trip and after an observer has been able to obtain communication capabilities such as a cell phone service, wi-fi at the processing plant, or wi-fi at a hotel or other housing. In addition, it is common for vessels to deliver to tenders, which further delays an observer returning to port where they are able to transmit their data to NMFS.

4.3 Level of monitoring

Monitoring requirements in LAPPs were outlined in Section 7 of the 2024 discussion paper, including explanations of the following factors: 1) NMFS must be able to ensure compliance with monitoring regulations governing the fishery; 2) there must be a reliable, authoritative record of quota harvested; and 3) harvest and PSC data must be timely and accessible. Portions of section 7 of the 2024 discussion paper are repeated here and expanded upon for emphasis.

Management programs with transferable PSC allocations to cooperatives require additional monitoring and PSC accounting: PSC monitoring requirements depend on whether NMFS manages PSC limits (caps) for a group of vessels or whether these PSC limits are allocated among specific entities, like cooperatives, within a fishery. Fishery or sector-level PSC limits are managed by NMFS through directed fishing closures in the Federal Register. These closures apply to all vessels participating in the relevant directed fisheries. Any vessel fishing after the closure is in violation of regulations. Whereas PSC allocations that are made to a specific entity, like a cooperative, are enforced through regulatory provisions that prohibit the entity from exceeding its allocation. These entities monitor their PSC allocation and are prohibited from exceeding that allocation. NMFS does not issue fishery closures once these allocations are reached.

In fishery or sector-level PSC limits that are managed by NMFS, estimates of PSC are based on data collected by observers that are placed on a random selection of trips across the fishery. Bycatch rates from

observed vessels are used to estimate the bycatch on unobserved vessels. However, **from a legal perspective when PSC is allocated to a cooperative, calculated bycatch rates (based on other vessel fishing activities) cannot be used as a basis for enforcing a prohibition against exceeding a PSC allocation.** Furthermore, cooperative-based programs could create an opportunity for vessels within a cooperative to collude and could allow them to manipulate their bycatch rates to the degree that NMFS would be prevented from collecting and estimating accurate PSC information. For these reasons, transferable PSC allocations require observer coverage to estimate PSC accurately on all trips. Therefore, **if a PSC limit that functions as a hard cap is established in a catch share fishery, 100% observer coverage is required in that fishery**. This would require increased observer coverage for the ≥ 60 ft pot CV sector that is currently in the partial coverage observer category. Other fisheries that have hard cap PSC limits and less than full observer coverage (e.g. GOA pollock) are not catch share fisheries. For those fisheries, if the fishery is closed due to a PSC overage it is not affecting participants differentially based on their directed fishery allocations. Other catch share fisheries that have less than full observer coverage (e.g. halibut and sablefish IFQ) do not have hard cap PSC limits.

If there are no PSC limits established with the LAPP or the limits do not function as a hard cap, full monitoring coverage may not be required. However, reducing bycatch is one of the management goals outlined in NMFS Catch Share Policy (2017) and less than full observer coverage in the pot sectors poses a significant management challenge in the context of crab bycatch. Crab are characterized by an over-dispersed data distribution that has a high frequency of low values and, on occasion, has a large estimated value. This is due to patchy distribution or aggregation of crabs. When there are large differences in the amount of crab PSC between trips and there are very few monitored trips, then the total crab PSC estimate will be highly variable (as demonstrated in section 5.1). The nature of how crab behave, aggregate, and encounter pot gear might mean that estimation methods that give one signal for a species like halibut give a different signal for different crab species. Over the last 10 years, an average of 7% of the annual estimated crab PSC in the ≥ 60 ft pot CV sector was from monitored trips, although this percentage increased substantially to 41% in 2024.

4.4 Monitoring Costs

Observer coverage in the full coverage category is industry-funded through a pay-as-you-go system whereby fishing vessels procure observer services through NMFS-permitted observer service providers. Observer coverage in the partial coverage category is funded through a system of fees collected under the authority of Section 313 of the Magnuson-Stevens Act. As of 2019, the funds from this fee have also been used to deploy EM in the fixed gear fleet. The fee is based on the ex-vessel value of groundfish and Pacific halibut and is assessed on landings by vessels not included in the full coverage category. The system of fees fairly and equitably distributes the cost of observer coverage among all vessels and processors in the partial coverage category and does not change with the level of coverage each vessel incurs under the Annual Deployment Plan.

Through 2020, landings accruing against an IFQ allocation or a Federal TAC for groundfish from vessels in the partial coverage category were assessed a 1.25 percent fee using standard ex-vessels prices multiplied by the landed catch weight of groundfish and halibut. Since 2021, landings have been assessed a 1.65 percent fee. The fee is split between the processor or Registered Buyer and the vessel owner or operator. The processor or Registered Buyer collects the vessel operator's share of the fee at the time of landing and remits the fee to NOAA Fisheries each year.

Moving the BSAI Pacific cod pot CV ≥ 60 ft. sector into full observer coverage would remove these trips from the partial coverage fee collection and require the industry to directly fund full observer coverage through a pay-as-you-go system. The removal of these fees from the partial coverage would represent a reduction in overall funding available from the partial coverage sector. In 2023, $854,779 in total

observer fees were collected from the BSAI. Of those, $223,789 were from Pacific cod pot gear on vessels greater than 57.5 feet (Table 2-4, AFSC 2024). This represents over 26% of the partial coverage fees collected in the BSAI that would no longer be available for the overall partial coverage observer program.

Vessels moving into the full coverage sector would no longer be subject to partial coverage fees, however these vessels would procure observer services by contracting directly with a permitted observer provider as required at 50 CFR §679.51(d)(1) and would pay the full cost of observer coverage. The average annual fully loaded costs for full coverage observers in 2023 was $404 per sea day (Table 2-7 AFSC 2024). This likely represents a low estimate as fully loaded sea day observer costs reported in the annual report are averaged across sectors and deployments. The costs of paying an observer for a day and maintaining an observer provider infrastructure are constant, while the incidental costs are dominated by travel and temporary housing. These incidental costs as a proportion of the total cost for an observer deployment decline with increased deployment duration. Therefore, the fully loaded rate of an observer day declines with an increase in the number of invoiced days (Figure 2-1 AFSC 2024). Total costs for full coverage observers are dominated by long deployments which are relatively less expensive per day (due to limited travel and other variable costs) and therefore reduces the average sea day costs to those reported in the annual report. The average trip length in the BSAI Pacific cod pot CV ≥ 60 ft. sector over the last five years (2020-2024) was 6 days with a low of 3.6 days per trip in 2024 and a high of 8 days per trip in 2023. These shorter trips would represent higher per day observer costs than the averages reported in the annual report. When looking at the relationship between the fully loaded cost per invoiced day for full observer coverage, it appears median per-day costs are around $500 for an eight-day trip and over $600 for a 3-day trip (Figure 2-1 AFSC 2024). Under full coverage, these daily costs would apply to the total sea days in the cod pot CV ≥ 60 ft sector which ranged from a high of 943 days in 2017 to a low of 229 days in 2024 (Table 4-3). The timing and pace of the fishery could also affect the costs of observer coverage. The fishery under the current management program is characterized by a relatively short, pulse fishery and this may change under a LAPP, however the fishery will still be constrained by the timing of shoreside processing demand/capacity and the typical desire of pot cod vessels to move into time-adjacent crab fisheries.

The costs of EM include both ongoing costs (EM Service Provider Fees and Overhead; Equipment Maintenance and Upkeep; Data Transmission; Data Review and Storage) and one-time costs (Equipment Purchases and Installation). For vessels in the partial coverage fishery, these costs are covered through the partial coverage fee. If these vessels were to move to full coverage, they would no longer be subject to the partial coverage observer fee and monitoring costs would be borne directly by the industry. The specific process for this would be determined during program development however the NMFS Procedural Directive 04-115-02, Cost Allocation in Electronic Monitoring Programs for Federally Managed U.S. Fisheries states that "NOAA Fisheries is specifically authorized and required by the MSA to collect fees to cover the actual costs of certain activities, including data collection and analysis, associated with Limited Access Privilege Programs (LAPPs)." If this were structured similar to other full coverage EM programs (Trawl EM), the owner or operator of a vessel would be responsible for contracting with a permitted EM hardware service provider, to procure, install, and maintain EM equipment on their vessel. Payment for video review services is more complicated and would require these vessels to pay an EM review fee. This fee would be assessed to each vessel based on the Pacific cod catch history to cover the annual cost of EM review, data storage, and transmission (the actual cost of video review services would be divided equitably among participating vessels based on actual harvest amount).

5 Prohibited Species Catch (PSC)

5.1 PSC encounter

Information presented in the 2024 discussion paper (Tables 4-1 and 4-2) show that bycatch in the BSAI Pacific cod pot fisheries occur in relatively small amounts with high variability from year-to-year. Crab species represent the most prevalent amounts of PSC usage and are likely of greatest concern in the pot cod fisheries, therefore this section focuses on PSC crab bycatch at the species level. Table 5-1 and Table 5-2 show the crab PSC as the count of the estimated number of crab that were taken as bycatch and the bycatch rate as the number of crab per ton of groundfish caught for both the pot CV ≥ 60 ft sector and the pot CP sectors (note 2024 is not included in the CP data due to confidentiality restrictions). Annual crab PSC and rates are highly variable for these sectors. Wide variation in PSC estimates could be an artifact of lower observer coverage rates in the pot sectors. As noted in section 4, PSC estimates that rely on a high ratio of unobserved to observed effort are prone to fluctuate by chance if the observed vessels are clustered in low or high PSC encounter time/areas.

Golden king crab and blue king crab have been caught in some years but have low PSC rates, particularly in recent years. *Chionoecetes bairdi* (C. bairdi), red king crab and C. opilio are the species encountered most frequently in the Pacific cod pot fisheries therefore finer scale information on spatial and temporal aspects of PSC encounters focus on these species.

Table 5-1 Crab PSC (number of animals) and bycatch rate (number per ton of groundfish) for the pot CP sector

	C. bairdi		Golden King		Red King		C. opilio		Blue King	
	PSC	Rate	PSC	Rate	PSC	Rate	PSC	Rate	PSC	Rate
2015	229,286	31.101	7	0.001	95,261	12.921	40,422	5.483	975	0.132
2016	113,374	15.498	0	0.000	21,539	2.944	15,988	2.186	3,486	0.477
2017	18,700	3.591	1,276	0.245	3,968	0.762	41,936	8.053	16,197	3.110
2018	23,135	5.518	4	0.001	12,883	3.073	36,460	8.696	3,810	0.909
2019	3,723	0.918	45	0.011	1,814	0.447	57,864	14.265	2,967	0.731
2020	5,043	1.672	14	0.005	282	0.094	52,940	17.556	0	0.000
2021	12,187	5.707	0	0.000	108	0.051	17,067	7.993	0	0.000
2022	14,927	6.037	3	0.001	47	0.019	26,917	10.886	0	0.000
2023	16,473	7.015	0	0.000	10	0.004	9,311	3.965	0	0.000
avg	48,539	11.461	150	0.035	15,101	3.566	33,212	7.842	3,048	0.720

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC

Table 5-2 Crab PSC (number of animals) and bycatch rate (number per ton of groundfish) for the pot CV ≥ 60 ft sector

	C. bairdi		Golden King		Red King		C. opilio		Blue King	
Year	PSC	Rate	PSC	Rate	PSC	Rate	PSC	Rate	PSC	Rate
2015	148,698	15.067	2	0.000	19,882	2.015	35,718	3.619	139	0.014
2016	48,697	4.347	0	0.000	308	0.028	1,334	0.119	0	0.000
2017	133,234	9.822	531	0.039	8,715	0.642	29,223	2.154	479	0.035
2018	153,437	9.850	0	0.000	240,132	15.415	2,755	0.177	799	0.051
2019	26,752	1.945	33	0.002	35,019	2.546	1,373	0.100	4	0.000
2020	16,556	1.465	85	0.008	11,327	1.002	8,662	0.766	0	0.000

	C. bairdi		Golden King		Red King		C. opilio		Blue King	
Year	PSC	Rate	PSC	Rate	PSC	Rate	PSC	Rate	PSC	Rate
2021	2,801	0.385	0	0.000	205,383	28.243	5,983	0.823	0	0.000
2022	25,205	2.092	9	0.001	90,720	7.530	986	0.082	0	0.000
2023	12,749	1.301	0	0.000	65,444	6.679	188	0.019	0	0.000
2024	5,898	1.243	0	0.000	20,822	4.388	44	0.009	0	0.000
avg	57,403	4.752	66	0.005	69,775	6.849	8,627	0.787	142	0.010

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC

Both the overall PSC and the NMFS Statistical Area in which crab were caught is highly variable over the last 10 years for both sectors. Figure 5-2 shows the PSC encounter in number of crab for C. bairdi (BTCR), C. opilio (OTCR) and red king crab (RKCR) for statistical areas 509, 512, 516, 517 and 519. The CP and ≥60 CV sectors are combined, and Area 512 is not shown in 2016 and 2017 due to data confidentiality constraints. These statistical areas were selected based on overall effort and correspond to the areas mapped in Figure 5-1. C. bairdi and C. opilio PSC are encountered more evenly among areas. A majority of red king crab is encountered in area 512[10], particularly in more recent years.

Figure 5-3 shows crab PSC (number of crab) and tons of groundfish caught by month in the CP and ≥60 CV sector combined. Generally higher PSC amounts correspond to higher groundfish catch with spikes in January and September corresponding with the beginning of the A and B seasons. Red king crab bycatch is more prevalent in the B season. Table 5-3 shows season opening and closing dates for reference. Note that, as mentioned in section 2.1, even in years when the season doesn't close early, if the BS TAC is met and the BS is closed, the sector may not be able to prosecute the entire fishery.

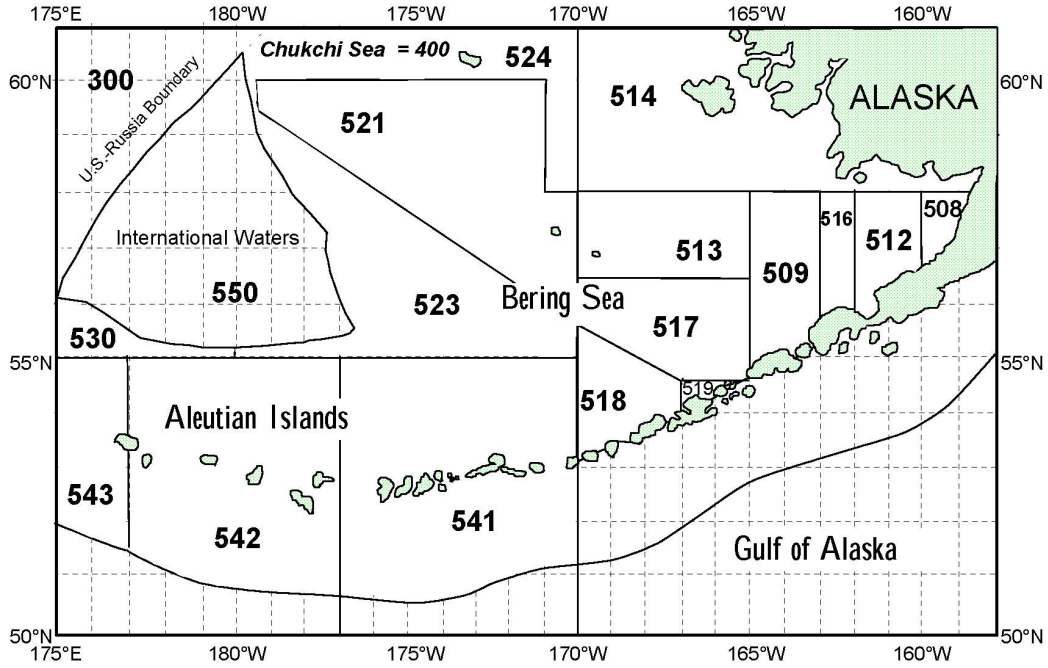


Figure 5-1 NMFS Statistical Areas

[10] The Council considered an annual closure of NMFS Area 512 to Pacific cod fishing with pot gear in an action to address Bristol Bay Red King Crab savings but took no action (NPFMC 2024).

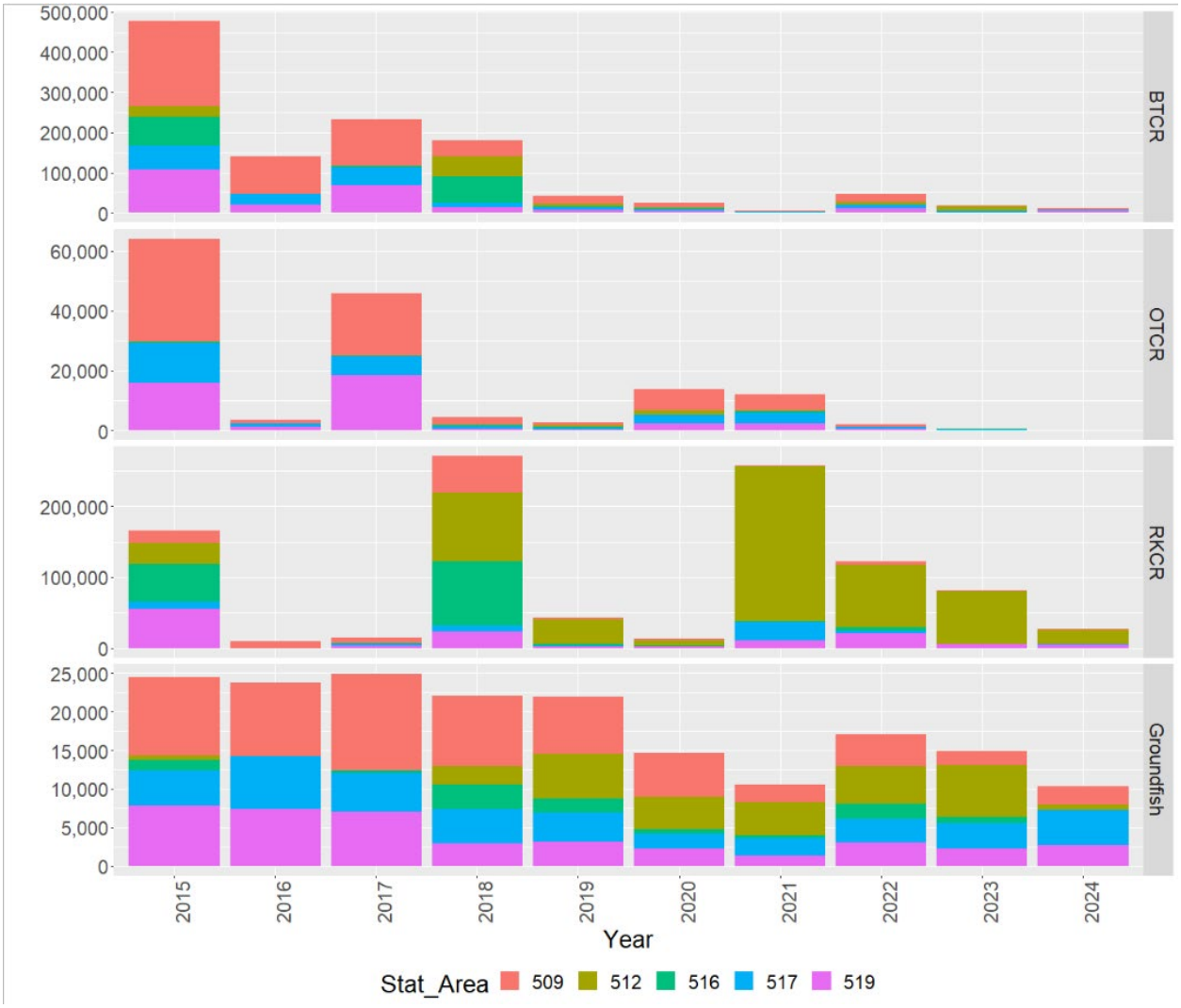


Figure 5-2 Crab PSC (number) and Groundfish catch (in tons) in the pot CP and pot ≥60 CV sectora combined, by NMFS Statistical Areas for 2015-2024 (BTCR=Bairdi Tanner crab or C. bairdi, OTCR=Opilio Tanner crab or C. opilio, and RKCR=Red king crab). Note Area 512 is not shown in 2016 and 2017 due to confidentiality restrictions. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC

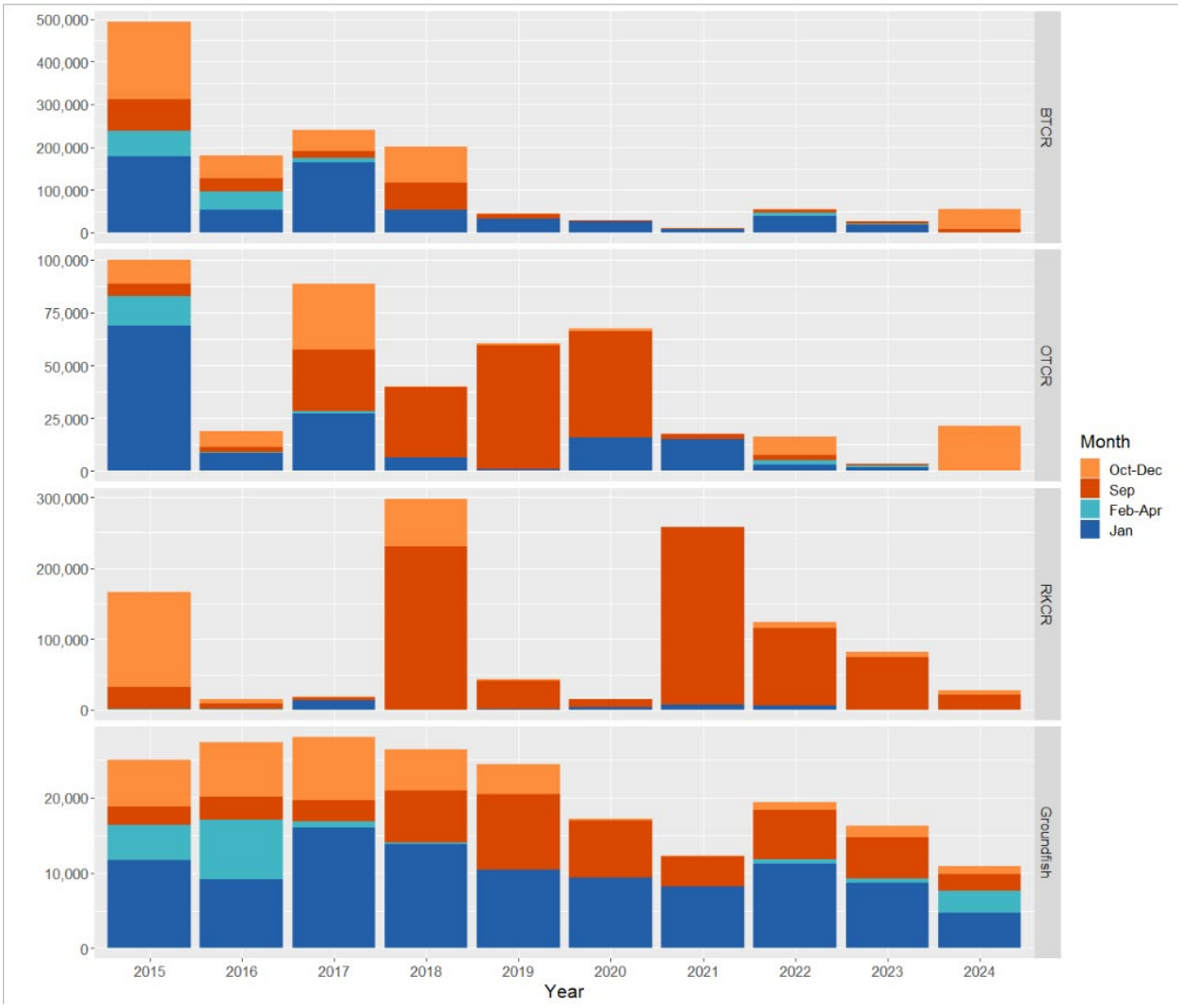


Figure 5-3 Crab PSC (number) and Groundfish catch (in tons) for the pot CP and pot ≥60 CV sectors combined, by month 2015-2024 (Blue shades=A season, Red shades=B season, BTCR=Bairdi Tanner crab or C. bairdi, OTCR=Opilio Tanner crab or C. opilio, and RKCR=Red king crab).
Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC

Table 5-3 Season opening and closing dates, by sector (2015-2024)

	A season	Pot CP	Pot CV ≥ 60	B Season	Pot CP	Pot CV ≥ 60
Year	open	close	close	open	close	Close
2015	1-Jan	4-Feb	10-Jun	1-Sep	31-Dec	31-Dec
2016	1-Jan	29-Jan	10-Jun	1-Sep	18-Oct	31-Dec
				15-Nov	31-Dec	
2017	1-Jan	25-Jan	25-Jan	1-Sep	31-Dec	31-Dec
2018	1-Jan	20-Jan	19-Jan	1-Sep	20-Sep	30-Oct
2019	1-Jan	15-Jan	15-Jan	1-Sep	15-Sep	21-Sep
2020	1-Jan	12-Jan	15-Jan	1-Sep	12-Sep	16-Sep
2021	1-Jan	16-Jan	21-Jan	1-Sep	31-Dec	31-Dec
2022	1-Jan	15-Mar	23-Jan	1-Sep	31-Dec	31-Dec

Year	A season open	Pot CP close	Pot CV ≥ 60 close	B Season open	Pot CP close	Pot CV ≥ 60 Close
2023	1-Jan	22-Mar	12-Jan	1-Sep	31-Dec	31-Dec
2024	1-Jan	10-Jun	10-Jun	1-Sep	31-Dec	31-Dec

5.2 PSC limits and allocation

BSAI crab PSC hard caps are currently only established for the trawl sectors (50 CFR 679.21(e)). Should the Council wish to recommend crab PSC limits as part of the proposed pot LAPP, they would need to be established in regulation. The Council has considered many changes to crab PSC management in recent years (e.g. NPFMC 2021, NPFMC 2022, NPFMC 2024). More specifically related to the Pacific cod pot fishery, the Council considered both Area closures and "hard Cap" PSC limits for red king crab.[11] The Council did not take any action related to these measures, but many of the challenges and potential impacts associated with these proposals would apply to establishing PSC limits by species and Area for the pot sector as part of a LAPP and are described below.

5.2.1 Establishing a PSC limit

The annual and monthly variability of crab PSC catch in these fisheries could make it difficult to establish meaningful limits that are not overly constraining. As shown in the section above, PSC is highly variable across years (Table 5-1 and Table 5-2) and months (Figure 5-3). Over the past 10 years, annual C. bairdi PSC has ranged from 3,723 crab to over 229,000 animals for the CP sector and from 2,801 to 153,000 animals for the CV sector. Red king crab is equally variable, ranging from ten to over 95,000 for the CPs and from 308 to over 240,000 crab for the CV sector. Other crab PSC species also vary annually but not to the same extent. With this amount of variability, basing a hard cap threshold on recent average use – or even on percentages bands above/below recent average use – may feel arbitrary and may not provide the desired behavioral incentives if annual variation can sometimes be measured in orders of magnitude. Assuming a hypothetical limit based on the 10-year averages provided in Table 5-1 and Table 5-2, it is clear that in some years the sectors would have far exceeded these limits and other years would have remained well below such that the limit would have little if any effect.

Wide variation in PSC estimates could be due to uncertainty associated with lower observer coverage rates in the ≥60CV sector (high variance estimates). PSC estimates that rely on a high ratio of unobserved to observed effort are prone to fluctuate if the observed vessels are clustered in low or high PSC encounter time/areas (NPFMC 2022b). Relatively low observer coverage levels in the ≥60CV sector may impact the historical PSC estimates relative to future usage if monitoring levels are increased under a LAPP. While observer coverage levels may explain some of the variability in the ≥60 CV sector, there is also large variability in PSC in the CP sector which is subject to full observer coverage.

Given the variability in PSC use, rather than starting with historical PSC use to set a PSC limit, the limit could be based on the level of PSC deemed acceptable for each relevant stock. This approach could be more tailored to the impacts on each crab stock, however it would involve assumptions regarding the relationship between PSC and crab stock success. These limits (or any PSC limits) could be applied to specific geographical areas which may be deemed more important for specific crab stocks. Defining the PSC limit threshold that has a meaningful impact on the stock would still be challenging. Defining the

[11] The Council considered changes in PSC management affecting the Pacific pot cod fishery including alternatives for annual closures of the Red King Crab Savings Area or NMFS Area 512 to Pacific cod fishing with pot gear (when either the Bristol Bay Red King Crab fishery was closed in the preceding year or the total area-swept biomass estimate of BBRKC was <50,000mt) (NPFMC 2024). Earlier versions of that analysis included discussion of PSC hard caps of red king crab for pot fisheries (NPFMC 2022).

relevant spatial area may be somewhat easier but is not without unresolved biological questions. The Zone 1 trawl PSC limit is an example of how this approach has been applied: an area was defined, and PSC limit "steps" were established; annual PSC limits are applied based on indicators of the relevant crab stock status. A PSC limit tied to crab stock abundance could help avoid overly constraining fisheries in years of high crab abundance. If specific areas prove challenging to identify, more targeted PSC limits could be applied to specific seasons. While historic PSC use is highly variable temporally, separate caps for separate seasons could help protect crab during particularly vulnerable times.

Consideration could also be given to whether the limit would be based on mortality or total catch. NMFS CAS does not apply discard mortality rates to crab PSC. However, a 50% discard mortality rate is applied to crab taken with groundfish pot gear for the purpose of estimating total fishing mortality for crab stock assessments since 2008. The non-trawl mortality rate of 50% is not based on direct research studies of bycatch in the longline or pot groundfish fisheries; the rate is a combination of approximations based on the work of Stevens (1990). Implementing a discard mortality rate with a PSC limit may seem like an unnecessary arithmetic exercise that, in effect, raises the limit (e.g. if only 50% of PSC are considered dead, the PSC count can be double the limit). However, if estimates of discard mortality improve, the discard mortality rate could be adjusted to incorporate more accurate information regarding mortality. It should also be noted that all crab encountered with trawl gear also accrues towards the trawl PSC limit. However, an 80% discard mortality rate is applied to crab taken with trawl gear for the purpose of estimating total fishing mortality for crab stock assessments. If a discard mortality rate is applied to pot gear for purposes of PSC accounting that would be different from how trawl PSC is calculated.

5.2.2 Allocating a PSC limit

Typically, in other Council developed catch share programs, PSC limits along with target species are apportioned at the cooperative level. If the Council chooses to apportion Pacific cod at the individual entity level, PSC apportionment would likely occur and be managed and enforced at an individual entity level as well. This section is written assuming allocation at the cooperative level. In these programs, each cooperative would receive annual apportionments of PSC limits based on members' qualifying percent of total quota for use by each cooperative while harvesting their Pacific cod quota in accordance with the harvest cooperative agreement. A cooperative would be prohibited to use more PSC than was assigned as the cooperative PSC limit. Each member of the cooperative would be jointly and severally liable for exceeding Program cooperative PSC limits. If a hard cap PSC limit was implemented and a cooperative reaches that limit, the cooperative would be responsible for prohibiting its members from directed fishing for Pacific cod in the BSAI. If the PSC limit were area based, the cooperative would be responsible for preventing its members from directed fishing for Pacific cod inside the crab savings area associated with the crab PSC limit that was reached. Any remaining Pacific cod quota would be fished outside of that crab savings area. Any PSC limit overage would be referred to the NMFS Office of Law Enforcement (OLE).

With each cooperative getting their own portion of the PSC limit, the cooperatives would not be limited by the PSC usage of vessels outside the cooperatives closing their fishery prematurely or requiring cooperative vessels to leave a specific crab savings area. In addition, this approach may create incentives to keep PSC rates low, as this would allow cooperatives to continue harvesting Pacific cod when other cooperatives reach their limit. Depending on the program's structure, it would also allow cooperative members to transfer PSC limits, and individuals could be compensated for low PSC usage.

The program could also allow inter-cooperative transfers of additional PSC. If PSC limits were transferable between cooperatives this would likely be based on the same rules established for Pacific cod transfers. PSC limits may be constraining at the sector level, so allowing transfers of PSC limits between cooperatives could help improve flexibility for cooperatives to harvest their cod allocations.

Additionally, the Council should consider whether these sectors (CP and ≥60 CVs) would be grouped under a single PSC limit or if each sector would receive their own PSC limit and if so, how the sector limits will be apportioned. One option is to apportion PSC based on historical PSC usage. This option may be problematic given high variability in PSC history, varying levels of observer coverage, and the potential to reward a sector with higher PSC rates. A more palatable apportionment may be based on the proportion of Pacific cod allocated.

5.2.3 Managing a PSC limit

Management programs that allocate catch and PSC to entities (such as cooperatives) give recipients more specific control over their fisheries. Cooperatives that receive allocations generally are prohibited from exceeding their allocations and if they exceed an allocation, NOAA may initiate an enforcement action against the cooperative. This requires active catch monitoring on the part of cooperatives and increases their need for timely access to information. As such, all concerned parties (NMFS, OLE, and quota holders) must have timely access to data that clearly details the amount of harvested quota, including PSC.

Managing a hard cap PSC limit in-season would require full observer coverage and more timely data transmission for the ≥60 CV sector. Current data transmission requirements are described in section 4. If a hard cap PSC limit were implemented, this would require participating vessels to provide at-sea data transmission to enable observer data to be transmitted during the trip and enable observer communication with NMFS. This would be a new requirement for vessels participating in the pot CV ≥ 60 ft sector. Vessels participating in the pot CP sector already have ATLAS and data transmission capabilities as required by regulation (50 CFR 679.51(e)(1)(iii)(B)). A description of ATLAS software and observer data transmission was included in section 7 of the 2024 discussion paper.

The result of reaching a PSC limit would differ depending on the structure of the PSC limit that the Council might design – i.e. the locations and timing to which the limit and any subsequent closure might apply. If the PSC limit is a hard cap, vessels will be prohibited from fishing once the PSC limit is met. If the PSC limit was area/location based, reaching the PSC limit would result in vessels moving out of the designated area and fishing elsewhere. Regardless, the Council should consider how to address situations when a vessel has met a PSC limit but still has pots set.

Presumably, retention of PSC will be prohibited, however, another possibility that the Council may wish to consider is the retention of crab while pot fishing for Pacific cod in cases where the vessel operator has available crab IFQ/CDQ and the directed fishery for those incidental species is open. That approach would face regulatory and logistical challenges such as separate tank space available on vessels, gear specifications for each crab fishery, issues with processing capabilities, and State catch accounting. The State only allows males of a certain size to be retained so there would still be crab discard under this structure, but it might ultimately reduce crab discard mortality. All BS rationalized crab fisheries have the same opening date (October 15) but have different regulatory closure dates set by the State for biological reasons.

5.2.4 Effects on other sectors

Establishing a PSC allocation in this fishery is not expected to affect other sectors unless this allocation were to be subtracted from other sectors existing PSC limits.

6 Processing sector

6.1 Information describing the current state of the cod processing sector and recent consolidation

Processors of BSAI Pacific cod harvested with pot gear have faced operational challenges in recent years due to the poor economic conditions in many Alaska fisheries. Alaska's fishing industry has faced rising costs due to inflation. Changing ocean conditions have impacted fish stocks differently. Small TACs for some historically valuable fisheries (e.g., snow crab and red king crab stocks) have decreased revenue. Finally, processors face competition from producers outside the United States that have realized increased catches of crab (e.g., snow crab) and groundfish and may operate under less stringent regulations.

A recent NOAA Fisheries' publication stated that the state's fishing industry suffered a $1.8 billion loss between 2022 and 2023, a 26 percent decline in overall industry performance. These declines were realized in terms of harvester revenues declining by $632 million, or nearly one-third of total income, between 2022 and 2023, and first wholesale value decreasing by $1.2 billion (NOAA Fisheries, 2024).

Declines in revenue and profitability have contributed to plant sales, consolidation, and exit from Alaska's shorebased seafood processing industry. The number of shorebased processors of ≥ 60 ft. pot-caught Pacific cod has declined from eight in 2019 to seven in 2022 and four in 2024. Not only has the number of processors declined, but they are operating in fewer Alaska communities. Plants that had operated in Adak, Port Moller, or King Cove are currently not processing pot-caught Pacific cod in those ports. A plant in False Pass was sold[12] in 2020 but is operated by the new owner and is expected to process pot-caught Pacific cod. The False Pass plant does not show up in the table below because of the years included in that table. The future of the King Cove plant remains uncertain. One of the three investors that originally purchased the firm that operated the plant in 2020 had the winning bid for Peter Pan Seafood's assets in 2024, including the King Cove plant. Whether that plant will operate in the future is not known at this time. The St. Paul plant has not processed pot-caught Pacific cod since 2010 because of economic and wastewater permitting issues; that plant has not been open for deliveries of any species since 2022. Finally, two large seafood processors operating in Dutch Harbor with the same parent company that have been taking deliveries of pot-caught Pacific cod announced they would merge to establish a more efficient operating, production, and management system and improve profitability. These changes in the processing sector limit the locations where a vessel operator can deliver the catch, which make deliveries of fish caught in the AI especially challenging under the current conditions.

[12] https://live.laborstats.alaska.gov/sites/default/files/trends/apr24art2.pdf

Table 6-1 Changes in processor status in the BSAI Pacific cod pot fishery

Community/Plant	2014	2022	2024
Anchorage*			
Bering Fisheries	Active	closed	closed
Akutan/Dutch Harbor			
Trident Seafood Corp & Subs	Active	Active	Active
Alyeska Seafoods Inc	Active	Active	Active
Sealaska Seafoods LLC	Active	Inactive	Inactive
Unisea Inc	Active	Active	Active
Western/Westward	Active	Active	Active
King Cove			
Peter Pan Seafoods Inc	Active	Active	closed
Kodiak			
Obi Seafoods-Kodiak	Active	Inactive	Active (sold)
North Pacific Seafoods Inc & Subs	Inactive	Inactive	Active
Port Moller			
Peter Pan Seafoods LLC	Inactive	Active	Closed
Seattle (floating processors)			
Icicle Seafoods Inc	Active	Sold	Sold
Trident Seafood Corp & Subs	Active	Active	Active
Total Active (including floaters)	10	7	7

Note: Excludes Intent to Operate codes that start with a "C" (buyers)
*Plant was physically located in Dutch Harbor but sent fish to Anchorage retail stores.

In 2024, all active shorebased processors with plants adjacent to the BSAI were in Dutch Harbor/Unalaska or Akutan. Two Kodiak plants took deliveries of small amounts of Pacific cod, likely from vessels making their last trip of the year, since running from the BSAI to Kodiak to make several deliveries yearly would be economically inefficient.

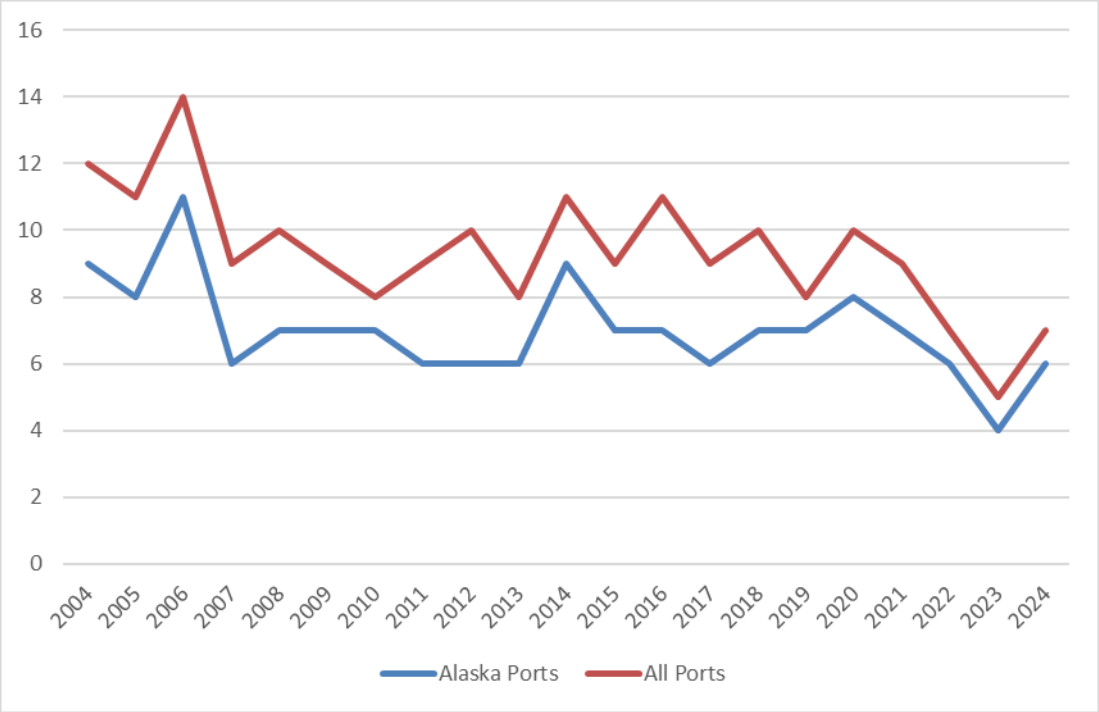
6.2 Number of current active cod processors compared to 10-year average

The Council requested that the number of active processors be compared to the past 10-year average. This section addresses that request, as well as taking a more detailed look at the processing sector that has taken deliveries of pot-caught Pacific cod from the BSAI open access fishery.

The number of shorebased processors, as represented by a count of Intent to Operate numbers with an Alaska port code and an aggregation of all non-blank Intent to Operate codes that processed pot caught BSAI Pacific cod in the open access fishery from 2004 through 2024 are shown in Figure 6-1. By selecting only Intent to Operate codes with an Alaska port in the Intent to Operate codes associated with the cities of Poulsbo, Seahurst, Seattle, and Tacoma are excluded. These ports are associated with buyers or floating processors.

Comparing the average of the last 10-years (2015 through 2024) to 2024 shows that Alaska ports were home to six processors in 2024, including two Kodiak processors, lower than the 10-year average of 6.5 processors. The same calculations for all ports indicate there were seven processors in 2024, lower than the 10-year average of 8.5 processors.

Figure 6-1 Shorebased and floating processor counts when Alaska ports and all ports are included.



Source: AKFIN summary of CAS data

Processing employment has also declined, with an estimated loss of 1 out of 4 processing jobs being lost from 2015 (10,250 seafood processing jobs statewide) through 2024 (7,400 seafood processing jobs statewide)[13]. These numbers indicate that the jobs lost by processors exiting the fisheries, processors with reduced production, or processors utilizing less labor-intensive technology were not made up by the active processors.

6.3 Consideration of allowing for additional mothershipping opportunities

There are currently no prohibitions that prevent a vessel with the necessary mothership permits from participating as a mothership in the BSAI Pacific cod pot fishery. The only fisheries with limitations applied to motherships are the AFA pollock fishery and the BSAI Pacific cod trawl fishery. There are limitations on the vessels that may deliver to a mothership in BSAI TLAS yellowfin sole fishery, but not the motherships that may accept deliveries for processing.

Mothershipping for pot vessels is different from trawl vessels. First, when pot gear is used the catch is brought onboard the vessel and sorted. Trawl vessels transfer unsorted codends from the harvesting vessel to the mothership without bringing the net onboard the harvesting vessel. Pot vessels would need to use a system brailer or totes to transfer catch to the mothership. Second, because catch is brought onboard the CV, it is sorted before it is transferred to the mothership. Third, because catch is sorted on the CV there are different monitoring requirements for the CV using the two gear types. For example, CVs that deliver unsorted codends to a mothership are not required to have an observer onboard the CV, because there is no catch brought on to the vessel to observe. Pot gear vessels sorting catch on the vessel would require a monitoring system to estimate at-sea discards.

[13] https://live.laborstats.alaska.gov/labforce/000000/01/ces.html#y2023

The vessels that process catch from CVs have different observer requirements. Inshore floating processors could be in partial or full coverage (AFA) depending on how they are operating 50 CFR 679.51(b)(2). Motherships require 200 percent coverage. Additional information on the monitoring aspects of the program are presented in Section 4.

6.4 How tendering might help or complicate a program if implemented.

Tendering vessels have often been used in the BSAI Pacific cod pot gear fishery. Tendering vessels have delivered catch harvested by CVs under and over 60 ft. LOA to shorebased plants and inshore floating processors from 2008 to 2024. From 2008 through 2023, about 70% of the tender deliveries were associated with CVs over 60 ft. LOA. The vast majority of harvest was from the BS. Tendering vessel were used in the AI from 2020 through 2022 and most of the deliveries were to Dutch Harbor plants. Tender vessels used to deliver BS catch of pot caught Pacific cod, took about 25 percent of the tendered Pacific cod to Dutch Harbor or Akutan. About 75 percent of the tendered deliveries were to other shorebased plants or other stationary floating processors.

Table 6-2 Tender vessel deliveries by location and CV size, 2008 through 2023.

CVs ≥60 ft. LOA	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
AI													264	344	237		844
Adak/King Cove/Other Shorebased															124		124
Dutch Harbor/Akutan													264	245	27		535
Floating Processor														99	86		185
BS	556	616	496	2,492	1,251	1,639	1,468	910	341	1,660	4,225	6,180	6,541	4,189	8,314	7,484	48,362
Adak/King Cove/Other Shorebased	556	616	496	902	426	526	357			870	3,501	2,726	2,554	1,847	6,710	6,794	28,879
Dutch Harbor/Akutan				1,590	825	75	1,111	793	236	613		684	3,597	877	1,528	691	12,619
Floating Processor						1,038		117	105	177	724	2,771	390	1,466	76		6,864
CVs ≥60 ft. LOA Total	556	616	496	2,492	1,251	1,639	1,468	910	341	1,660	4,225	6,180	6,805	4,533	8,551	7,484	49,206
CVs <60 ft. LOA																	
AI														298	584	181	1,064
Adak/King Cove/Other Shorebased															251	181	432
Dutch Harbor/Akutan														139	97		236
Floating Processor														159	236		395
BS		30		508	640	1,447	1,609	1,454	802	1,344	698	1,228	1,606	1,602	3,106	3,119	19,193
Adak/King Cove/Other Shorebased		30												95	1,165	1,895	3,185
Dutch Harbor/Akutan				508	576		1,609	1,382	217	1,266		11	683	100	1,803	1,214	9,369
Floating Processor					64	1,447		72	584	78	698	1,217	923	1,407	138	9	6,639
CVs <60 ft. LOA Total		30		508	640	1,447	1,609	1,454	802	1,344	698	1,228	1,606	1,900	3,690	3,300	20,256
Total	556	645	496	3,000	1,891	3,086	3,077	2,363	1,143	3,004	4,923	7,408	8,411	6,433	12,241	10,784	69,463

Source: AKFIN summary of CAS data

Ports with processors taking the most tender vessel deliveries include Dutch Harbor and King Cove. Tender deliveries to Akutan were from 2019 and later. False Pass, Port Moller, and Kodiak took deliveries from tender vessels less frequently than the other ports listed. Because the King Cove plant is currently not operating and there are no known plans to reopen the plant, the Dutch Harbor plants and Akutan plant are the primary shorebased delivery locations.

The use of tender vessels could increase CPUE because fishing is often better at locations farther from the plants' locations. Tender vessels are often more efficient at transporting Pacific cod to the processor than individual vessels, which could reduce the fuel cost and total fishing time.

The use of tender vessels could result in improved raw fish quality. Tenders allow the fish to be delivered to the plant sooner than if the vessel had to wait to have a full load and then run to the processor. The delivery time can be reduced by up to two days. Less time before the processing occurs helps to improve

product quality. Product quality could also increase if slurry equipment is available on the tenders and the CVs did not have that equipment to keep fish colder.

On the other hand, additional handling of the fish may cause bruising or, in other ways, reduce fish quality. Because tender vessels have been utilized extensively in these fisheries, it is anticipated that the tradeoff in quality and costs associated with delivering the fish and the amount of fish that a vessel could harvest resulted in positive benefits to the harvester and processors in the open-access fisheries.

Fishing under a LAPP would remove some time pressures to deliver catch and return to fishing to maximize catch. Yet, vessel operators may prefer to continue utilizing tender vessels for efficiency and fish quality reasons.

Catch accounting for deliveries to tender vessels could be an issue that could limit who may deliver to a tender vessel on a trip. Fishing under a LAPP requires that the catch be deducted from the correct quota account. Tenders do not sort catch or weigh species separately. Tenders weigh all catch together, and a total of all fish from all vessels is reported on the Fishticket generated by the tender operator. The data recorded is not species-specific, so the plants would not know which vessels delivered the species or the quantity of Pacific cod delivered. This is more of an issue under an IFQ-style LAPP than a cooperative based LAPP. If all vessels delivering to a tender are in the same cooperative, the catch can be deducted from that cooperative's allocation. If the catch must be accounted for at the vessel level or divided between cooperative allocations, the accounting would be less accurate.

Monitoring PSC would be problematic if the program required full retention of crab to account for at-sea discards. Currently, vessels must discard crab taken as bycatch. Discard mortality is relatively low, especially in warmer months, and retaining crab would increase mortality. If crab is discarded, and observers do not transmit data until they return to port, then crab discard data would be further delayed if a vessel continuously delivers to a tender instead of returning to a port to offload.

This section provides an overview of the tendering component (tLandings) of the eLandings system. The eLandings system includes a Tender Workstation (TWS) for entering landing reports and generating Fishtickets aboard tenders. Once the tender arrives at the processing plant, the landing report files must be uploaded to the eLandings database. The Processor/Tender interface provides processors with the tool to quickly and easily upload those reports.

The tLandings system consists of two parts:

1. Processor Tender Interface (PTI) - A desktop application used by processors to prepare files and TWS for tenders. PTI processes landing reports generated by tenders on TWS. PTI requires an internet connection.
2. Tender Workstation (TWS) - A stand-alone application used by tenders to prepare landing reports/fish tickets and create simple reports while on the fishing ground. TWS does not require an internet connection.

6.5 Tools to recognize current processor participants that also allow for new entrants

Few limited access fisheries include limits on the participation of processors via issuance of processor quota shares. The only current example in Alaska is the BSAI Crab Rationalization program, which creates a unit of IPQ for each unit of IFQ. That program has been fraught with controversy over how well those allocations and the associated regulations for matching harvesting and processing quotas have worked. Many of the processing quota shareholders have indicated that a different system might have

served them better. The Council has also not been granted the authority to recommend actions prohibiting shorebased processors from entering a fishery. Shorebased processors are required to meet established permitting requirements, but there is not a regulatory limit on the number of shorebased processors that may participate. The Council has implemented limits on mothership and CP vessels processing CV deliveries as community protection measures.

Under the Pacific Cod Trawl Cooperative (PCTC) Program, the Council recommended allocating 22.5 percent of the harvest shares to processors with a qualifying processing history. Qualifying processing history was defined by active participation in the BSAI Pacific cod fishery in the recent years leading up to the program's implementation. A similar structure was used in the IFQ portion of the West Coast Trawl Catch Share Program. That program allocated 20 percent of the IFQ species harvest shares to the qualifying processors. A similar structure could be used for the program that is being considered. The Council would need to determine the share of the fishery allocated to processors to balance bargaining power appropriately. New processors were allowed to enter the fishery without holding harvest quota. Processors who do not hold harvest quota would need to attract landings without having harvest quota that could be used to increase the amount of fish CVs could harvest. Processors with quota could utilize their allocations to provide additional quota to CVs or other beneficial terms to attract landings. Under the PCTC program it was described so a processor could assign quota to independent harvesters to increase the amount of fish they could catch to an amount equal to what they would have been allocated if there were no allocations of harvest shares to processors.

Other options that have been used in fisheries to protect processors and communities are the regionalization of harvest shares. Quota was designated for delivery to specific geographic areas. For example, in the crab fisheries quota for some fisheries was designated North or South, or East or West. This limited the communities where this crab could be delivered, but was less effective in protecting processors in the communities. Typically, there was only one processor in the community and the economics of delivering to some locations have been challenging. Because of these challenges there have been agreements to deliver the quota outside of the designated region. Under these agreements, the community that lost the deliveries was compensated.

The implementation of processing limits also prevents the consolidation of processing. Establishing limits that provide economic efficiency for processors while preventing excessive consolidation is challenging, especially as economic conditions in the fisheries change. For example, processing limits in the Central Gulf of Alaska Rockfish Program have increased in recent years because of consolidation in the Kodiak processing sector. That consolidation was driven by broader economic changes in the fishery and not just the structure of the Rockfish Program. Increases in the Crab Rationalization processing limits were implemented for similar reasons. For these limits to entice new processor entry, processors would need to benefit from participating in this fishery.

7 Additional information on active or inactive LLP license holders with only a BS or AI pot cod endorsement (entity type, location of owner, and recent transfers) for the years 2008-2023

7.1 LLP License Transfers

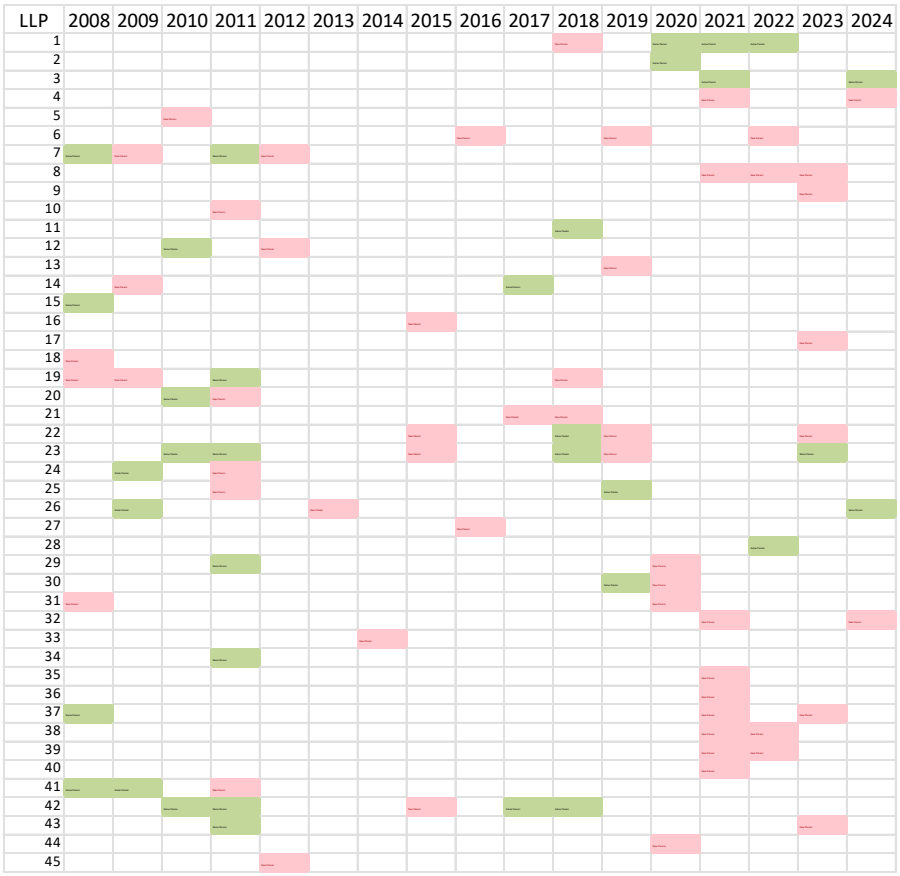
LLP license transfer information is shown in Table 7-1. Green shaded cells indicate the person ID number assigned by NMFS that did not change as part of the transfer. This occurs primarily when the LLP license is transferred to a new vessel. Red cells indicate the NMFS person IDs changed as part of the transfer. These transfers include the sale of the LLP license and the restructuring of the business' ownership. Blank cells indicate that there was no reported transfer of the LLP license that year.

A total of 46 LLP licenses with a BS/AI pot cod endorsement were transferred from 2008 through 2024. Thirty-nine of those LLP licenses were transferred to a new owner at least once during that period. Seven of the LLP licenses were never transferred through NMFS.

Six of the seven CP LLP licenses were transferred over the 2008 through 2024 period. Five of the six LLP licenses that were transferred were transferred to a person with a different NMFS person ID.

If an LLP license was transferred more than once during a year and at least one of these transfers was to a different person's ID, the cell shows it was transferred to a different person that year.

Table 7-1 Transfers of LLP licenses



LLP	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
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43																	
44																	
45																	

Source: AKFIN summary of LLP transfer data.
Note: The text in the cell is only included to mask the actual ownership transfer information.

7.1.1 Active LLP licenses

All but two LLP licenses with a BSAI Pacific cod pot endorsement were active in that fishery at some level from 2008 through 2023. Table 7-2 summarizes the amount of open access BSAI Pacific cod pot gear catch by vessels greater than 60 ft. LOA. All CP catch reported in the data were by vessels greater than 60 ft. LOA. The groupings do not separate CP from CV catch, because only the Anchorage and Dillingham AK grouping and the Washington groupings had CP vessels reporting catch. The Anchorage and Dillingham AK grouping had too few CPs to report the catch by individual group. The Washington grouping was about 66 percent CV catch and 34 percent CP catch.

Table 7-2 Active LLP licenses by LLP license owner location in terms of BSAI pot Pacific cod catch in the open access directed fishery, 2008 through 2023

Area Grouping	LLP Licenses	Catch CV and CP Total	
		Metric Tons	%
Anchorage and Dillingham AK	11	33,745	15%
Homer, Kenai, and Kodiak, AK	7	29,269	13%
Oregon and California	11	35,241	15%
Washington	27	131,541	57%
Total	56	229,796	100%

Source: CAS data for catch amounts, RAM LLP license file (April 2025) for owner location

Table 7-3 shows each LLP license used on a CV ≥ 60 ft. LOA in the BSAI directed Pacific cod pot gear fishery from 2004 through April 2025. The information provided does not include any level of catch. Information is provided to show the number of years individual LLP licenses have been used on CVs in the fishery.

Table 7-3 LLP licenses used on CVs ≥ 60 ft. LOA in the BSAI open access Pacific cod pot fishery.

LLP	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Years
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	21
4	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	21
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1		20
7		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	20
8	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	20
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			20
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			20
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			1	1		19
12	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1			19
13	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1			18
14	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1		1	1			18
15	1	1	1	1	1	1	1	1		1			1	1	1	1	1		1	1	1	1	18
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1				18
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						17
18		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					17
19	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1		1				17
20		1		1	1			1	1	1	1	1	1	1	1	1	1	1	1	1		1	17
21	1	1	1	1	1			1	1	1	1	1		1	1	1	1	1	1			1	17
22	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1						16
23	1	1	1	1	1	1	1		1		1			1	1		1	1	1	1		1	16
24	1	1	1	1	1		1					1	1	1	1	1	1	1	1	1			15
25	1	1	1	1	1	1	1	1					1	1	1	1	1	1	1				15
26	1	1			1				1	1	1	1	1	1	1	1	1	1		1			14
27	1	1	1	1	1	1		1	1	1					1	1	1		1	1			14
28	1	1	1	1	1	1	1	1						1	1	1	1	1	1				14
29	1		1	1	1			1	1		1		1	1	1	1	1		1				13
30	1	1	1	1	1			1	1	1	1							1	1	1	1		13
31	1	1	1	1	1		1	1	1	1		1				1	1						12
32	1	1	1	1	1			1		1	1		1			1	1	1					12
33		1	1	1	1		1	1	1	1	1			1			1						11
34	1		1	1	1	1		1							1	1	1	1				1	11
35			1	1	1	1		1		1	1	1	1	1					1				11
36	1	1		1	1			1	1	1	1	1									1		10
37	1	1	1	1	1	1	1	1	1	1													10
38	1	1	1	1	1					1	1			1	1	1							10
39				1					1	1	1		1	1	1	1	1		1				10
40			1	1	1			1	1						1	1	1	1					9
41	1	1	1	1	1												1	1	1				8
42															1	1	1	1	1	1		1	7
43			1	1	1	1	1	1															6
44								1	1	1	1			1	1								6
45	1	1	1	1	1																		5
46	1						1													1		1	4
47									1		1			1			1						4
48		1															1		1	1			4
49	1		1				1																3
50			1			1	1																3
51														1	1		1						3
52																			1	1			2
53	1																						1

Source: AKFIN summary of CAS data
Note: The "1" in the highlighted cells does not have a meaning other than that the LLP license was active that year.

The Alaska area groupings account for 28 percent of the catch. The CDQ ownership of the LLP licenses are primarily in the Anchorage and Dillingham group. Other Alaskan-owned LLP licenses were in Kenai Peninsula communities and Kodiak.

Table 7-4 summarizes the active LLP licenses open access BSAI pot Pacific cod catch in the Pacific cod directed fishery from 2008 through 2023. Only data from vessels greater than 60 ft. LOA are included. All CPs with catch were greater than 60 ft LOA. CP licenses used on CVs accounted for relatively low amounts of catch. The CP row in the table shows that all licenses with CP catch, when used on a CV, accounted for less than 1 percent of the CV catch total.

Table 7-4 Count of LLP licenses by the percentage of CV catch from 2008 through 2023

Values	Less than 1%	1% to 2%	greater than 2%	Total
LLP Licenses	21	17	18	56
CP	100%	0%	0%	100%
CV	9%	25%	65%	100%

Source: CAS data for catch amounts

7.1.2 Inactive LLP licenses

The information presented in this discussion is based on publicly available information on the annual LLP licenses issued as presented on NMFS website[14]. There are multiple ways to define an inactive LLP license. One way is that the LLP license is currently (as of February 2025) not assigned to a vessel. Three CV LLP licenses meet that criterion. Two of the three LLP licenses are held by a subsidiary of a CDQ group located in Anchorage. Combining the LLP data with Catch Accounting System data, neither of these licenses was associated with any directed Pacific cod catch using pot gear in the open-access BSAI Pacific cod fishery after 2004. One of those LLP licenses was associated with a small amount of catch in 2004. A third LLP license associated with the same mailing address as those two LLP Licenses had reported catch history in the fishery from 2004 through 2008. If 2008 was included in the qualifying catch history years, that license would be allocated a small quota. The third LLP license that was not assigned to a vessel was reported to be owned by a company with a Washington address.

Two CV LLP licenses with a BS pot cod endorsement have not been used in the pot cod fishery from 2008 through 2023. One was derived from the catch history of a vessel purchased by the Cascade Mariner and is held by Coastal Alaska Premier Seafoods LLC, a subsidiary of the Coastal Villages Regional Fund (CVRF). However, the CVRF does utilize Pacific Cod as part of its annual fishing plan. As stated in its 2011 – 2020 decennial report, it is CVRF's third most valuable fishery, after pollock and crab. CVRF owns and operates freezer/longliner vessels for the cod fishery. The second LLP license without any catch history in the BSAI Pacific cod fishery from 2008 through 2023 is held by Bering Sea Cod LLC in Washington State and was derived from the history of the F/V Bering Rose. Neither of the two LLP licenses without recent BSAI pot cod history is currently reported as being assigned to a vessel (January 21, 2025, LLP file), but the LLP licenses are transferable.

7.2 CP LLP licenses

A total of six CP LLP licenses were used to harvest BSAI Pacific cod in the directed open access Pacific cod fishery with pot gear on a CP during the 2003 through 2023 period. Three of the LLP licenses harvested more than 91 percent of the catch. All three LLP license owners were listed as being in Washington.

[14] e.g., https://www.fisheries.noaa.gov/sites/default/files/akro/25llp_gf.csv

8 Description of opportunities provided for new entrants in other programs that might apply to a program like the one under consideration

Council staff presented a discussion paper at the June 2019 Council meeting focused on elements included in catch share fisheries in other regions or outside the US that provide opportunities for new entrants (NPFMC 2019). That paper was developed in response to a paper presented to the Council at its June 2018 Council meeting that discussed "barriers to entry for the next generation of fishermen" and provided some examples of fisheries management programs with specific elements to facilitate participation by "small-scale fishermen, rural communities, indigenous peoples, and youth and future generations" (Cullenberg et al, 2017). The summary table from the Council's June 2019 paper is presented as Table 8-1.

The program elements designed to facilitate new entry into fisheries generally fall into general categories such as creating a subset of quota that can only be accessed by persons that meet a defined criteria, limiting how much quota a person may own/control, limiting the leasing of quota, owner onboard provisions, low interest loans that can be accessed by the groups that are being encouraged to enter the fishery, and providing educational/training opportunities for people wanting to enter the fishery. The following section also includes information regarding the potential to collect royalties as a strategy towards facilitating new entrants into the fishery

Table 8-1 Summary of new entry opportunity provisions included in other catch share programs

Country	Program	Objective	Administration	Target Population	Mechanism	Quota Source	Funding	Alaska Counterpart
Norway	Recruitment Quota	To recruit young boat owners into the fisheries	government	youth/crew/recent entrants	separate allocation; different criteria/rules	redistribution	N/A	Nothing really. CQE or CDQ groups could focus on age when determining their own criteria for quota distribution, but there are no official Federal fisheries programs off Alaska where eligibility is based around age.
	Limits on Transferability	Slow down the concentration of IVQs, geographically and within large companies, to preserve a diverse fleet structure. To slow down any increase in prices	government	all participants	different criteria/rules	N/A	N/A	Many of the catch share program in the Alaska region include limits on transferability. For example, in the IFQ Program the quota must be used by the assigned vessel class in the assigned IPHC area, limits on acquiring blocked/ unblocked QS, and QS use caps.
	Open Group Fishery	A compromise to accommodate part-time and small-scale fishers who did not qualify for IVQs in 1990.	government	disenfranchised; low income; small-scale (boat size, gear type, trip length)	open access; separate allocation	redistribution	N/A	Somewhat similar to the Entry Level longline fishery in the CGOA Rockfish Program, which does not require quota to access. However, the Entry Level fishery does not have an income threshold requirement.
	Provisions to protect Indigenous Access	Improve access for Norway's Indigenous Sámi population	government	indigenous	open access; separate allocation	redistribution	N/A	Some similarities to the CDQ Program - in that it identifies communities where Native people live, but it doesn't necessarily ensure that the benefits ONLY go to the Native people in those communities.
Iceland	Community Quota	Economic development for coastal communities	government	rural/coastal communities	separate allocation	redistribution	N/A	There are some similar to the CDQ and CQE programs, except here the communities don’t hold access to the quota. Quota is allocated from the government directly to the qualifying fishermen, but the communities can specify their priority requirements for the allocation.
	Coastal Fishing (Quota-Free Fishery)	Open up access to fisheries as a response to a 2004 UN Human Rights Committee ruling that said the ITQ system violated the human right to work; and to offer economic development opportunities in the rural fishing villages.	government	rural/coastal communities; small-scale (boat size, gear type, trip length)	open access; separate allocation; different criteria/rules	redistribution	N/A	Somewhat similar to the Entry Level longline fishery in the CGOA Rockfish Program, which does not require quota to access. In practice, this fishery appears to be much more competitive than the Entry Level fishery.

Country	Program	Objective	Administration	Target Population	Mechanism	Quota Source	Funding	Alaska Counterpart
Canada	Atlantic Shrimp Fishery "Adjacent to the Resource" Allocation	Economic development for coastal communities	government	rural/coastal communities	separate allocation	redistribution	N/A	Similar to CDQ. Community allocations of an offshore resource can be fished by larger firms; royalties may be used to support a small-scale inshore fishery, local processing capacity, and economic development.
	Prince Edward Island Future Fisher Program	Training and financial assistance for resident fishermen who obtained a commercial license after a defined cut-off date	government	youth/crew/recent entrants; rural/coastal communities	educational support; technical assistance; financial support	N/A	government	Federal Loan Program, Sitka apprentice program
New Zealand	Annual Catch Entitlement (ACE)	Allow those who do not own quota shares in a fully allocated fishery to annually lease the opportunity to fish (alternative to purchasing the underlying QS)	government	all participants; disenfranchised; youth/crew/recent entrants	opportunity to buy in	purchase (lease)	N/A	Analogous to IFQ in the Halibut/Sablefish Program (as distinct from QS). Prior to introduction of ACE, the only way to secure the opportunity to fish was to purchase quota shares, which created a higher barrier to entry and little opportunity.
US (not AK)	The Cape Cod Fishery Trust	ensure the profitability and sustainability of local, small-scale fishing businesses as the scallop and groundfish fisheries transitioned into catch share management programs	NGO	rural/coastal communities; small-scale (boat size, gear type, trip length); low income	permit bank, financial support, technical assistance	purchase	external fundraising, grants, loans	Alaska Sustainable Fisheries Trust, local fish fund, BBEDC Permit Loan Program
	Maine Lobster Island Limited Entry	Opportunities for year-round island community residents	government	rural/coastal communities	different criteria/rules	N/A	N/A	Nothing specifically analogous. Somewhat similar to some CDQs and CQEs that have specified community residence requirements, but Maine program is specified in regulation and involves separate spatial management area.
	Maine Lobster Student Licensing	Youth entry into lobster fishery	government	youth	different criteria/rules	N/A	N/A	N/A
	Eastern Maine Skippers Program	Help facilitate young people staying in fishing industry and staying in local communities	NGO	youth, rural/coastal communities	educational support	N/A	external fundraising, grants, loans	ALFA young fishermen's initiative, AKMCC young fishermen's network, young fishermen's development act (proposed)

9 NMFS Management Considerations

The 2024 discussion paper included information on the required and discretionary program elements the Council must consider when developing a LAPP as defined in Section 303A of the MSA. In addition to the statutory requirements, NMFS published a Catch Share Policy in 2017, sections of which are included here as management considerations that NMFS would like to highlight for the Council when considering a potential LAPP in this fishery. The Catch Share Policy outlined criteria for evaluating Catch Share Applicability and identified the following fishery characteristics that indicate where catch shares could be particularly beneficial: a) Fishery is overcapitalized, b) Stakeholders are receptive, c) Stocks are overfished, d) Regional/Institutional infrastructure exists, e) Bycatch is significant. The list is neither exhaustive nor prioritized, nor does it suggest that if a fishery doesn't have one or more of these indicators that it is not a good candidate for catch shares. However, these characteristics should be considered in the context of the BSAI Pacific cod pot CV ≥ 60 ft and pot CP sectors when considering developing this LAPP.

The Catch Share Policy also established Catch Share Guiding Principles "to ensure the best possible catch share design and program outcomes." These guiding principles cover the following topics: Specific Management Goals, Allocations, Transferability, Distinctions Among Sectors, Duration, Fishing Community Sustainability, Royalties, Cost Recovery, and Review Process. Considering lessons learned developing other LAPPs in the Alaska Region, NMFS would like to highlight royalties and cost recovery as they pertain to the Pacific cod pot CP and pot CV ≥ 60 ft sectors.

As stated in the NMFS Catch Share Policy:

> Section 303A(d) of the MSA requires the Councils to consider the use of auctions or other means to collect royalties for the initial or any subsequent distribution of LAPs…*NMFS will assist Councils if and when they determine that it is in the public interest to collect royalties in connection with the initial or subsequent allocations in a limited access privilege program.* The Nation's fisheries resources are managed in the public trust by NMFS. Many of the Nation's other public resources consumed or used by private individuals are subject to a payment (i.e., resource rental) for their usage (e.g., oil and gas leases, permit fees for grazing or silviculture on federal lands, auctions of federal radio frequency spectrum). The government recovers some rent for public resources other than fisheries. To date, the recipients of initial allocations of catch shares have received their allocations without a fee based on their historical fishing records; no Council has adopted a program to collect resource rent.
>
> Any FMP or amendment containing a LAPP should include a description of how the MSA Section 303A(d) provision was addressed. If a Council decides to include a royalty program, the revenues would be deposited in a special fund and can only be expended in the fisheries from which they came. Currently no LAPP collects royalty payments. Many important social, economic and community objectives of a FMP could be funded by royalty payments such as supporting specific goals for research, monitoring, new entrants/small entities, or sustainable fishing communities. Collection and use of royalty payments is one of several options to deal with criticisms that catch shares redistribute wealth and create windfalls to initial recipients. The capitalization of privileges also creates barriers to new entry. Initial share allocations/set-asides and adaptive management programs can deal with entry barriers before the fact whereas loans/subsidies for share purchases are alternatives that can support similar outcomes after the fact.

If the Council wants to consider collecting royalties or other strategy(s) towards facilitating new entrants into the fishery as the program matures, NMFS recommends this program element be identified early in the LAPP development process. Many of the strategies outlined in section 8 of this

paper have proven challenging to implement due to lack of funding or ability to compensate existing quota holders as harvest privileges are transferred to new entrants.

Cost recovery as authorized in MSA Section 303A(e) provides for NMFS to collect a fee from limited access privilege holders to recover funds NMFS pays to implement such programs. NMFS Catch Share Policy states:

> Cost recovery aims to recover a variety of government costs attributable to the private sector use of a public resource. Section 303A(e) of the MSA requires cost recovery of the management, data collection and analysis and enforcement programs that are directly related to and in support of LAP programs… While cost recovery will reimburse the public for some of the costs of management, data collection and enforcement, actual costs can exceed the 3-percent MSA cap, particularly in the early years of a catch share program and in cases of currently overfished stocks. Design costs (i.e., prior to implementation of a LAP) are also not subject to cost recovery.
>
> Adequate cost recovery can be especially problematic in economically depressed fisheries or for low-valued species. The subject of who pays for these costs may become an impediment to catch share support in the short term. Therefore, government support may be needed for some fisheries to address start-up and transition costs. Such investments are justifiable for catch share programs where the benefits of rebuilt fisheries can outweigh these costs in a relatively short period of time for most fisheries.
>
> Under any structure, *NMFS and Councils will need to design the most efficient catch share programs possible to meet their needs and minimize costs to the participants and the public.* This includes consideration of common infrastructure capabilities that support multiple catch share programs and spread the costs across multiple fisheries.

The annual landings, ex-vessel value and 3% of the ex-vessel value (representing the max cost recovery fee) for the combined Pacific cod pot CP and pot CV ≥ 60 ft sectors is included in Table 9-1 as a reference for the potential amount of recoverable funds for a LAPP in these sectors. Note that ex-vessel values are not yet available for 2024, but landings decreased by almost 50% from 2023 to 2024 and value is likely to have decreased as well over the two years. NMFS presented a discussion paper[15] at the April 2025 Council meeting outlining challenges in process and timing for cost recovery and many of the issues identified in the paper could apply to a potential LAPP in these pot cod sectors.

Table 9-1 groundfish landings (tons) and ex vessel value (nominal dollars) and 3% of value (representing maximum cost recovery fee) for Pacific cod pot CP and pot CV ≥ 60 ft sectors 2020-2024

Year	Landings		Value		3% max
2020	13,535	$	13,163,422	$	394,903
2021	8,720	$	7,181,934	$	215,458
2022	14,061	$	13,712,259	$	411,368
2023	11,444	$	9,040,685	$	271,221
2024	5,539				

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_Blend_CA

[15] Draft Discussion Paper –Cost Recovery Processes and Timing
https://meetings.npfmc.org/CommentReview/DownloadFile?p=06cfee5a-07a2-4650-ad13-82dc8c663e65.pdf&fileName=D1%20Annual%20Cost%20Recovery%20Discussion%20Paper.pdf

10 Conclusions/Next Steps

After considering the information in this paper and the 2024 discussion paper and listening to public testimony, the Council could move forward with developing a LAPP for the pot CP and/or the pot CV ≥ 60 ft sector. A purpose and need statement will be needed if the Council moves forward with developing a LAPP for these sectors. With a purpose and need statement developed, the Council could start crafting required and discretionary MSA provisions as components and options. Provisions described in the 2024 discussion paper include the LAPP's cooperative structure, allocation decisions, processors and community considerations, ownership and use caps, sideboard limits, vessel crew considerations, bycatch/PSC management, and monitoring requirements. If the Council determines that it lacks sufficient information to proceed with developing program elements and options, it could make a focused request for information it needs to be brought back at a future meeting, prior to proceeding with formal development of the regulatory package. The Council could also decline to take further action on this issue.

11 Persons Consulted

Jennifer Cahalan	PSMFC
Alicia Cozza	Independent consultant (formerly Saltwater Inc)
Mike Fey	AKFIN
Phil Ganz	NMFS AKRO SF
Jason Gasper	NMFS AKRO SF
Hannah Heimbuch	Under 60 Cod Harvesters
Jason Jannot	NMFS AKFSC FMA
Zachary Jones	Saltwater Inc
Josh Keaton	NMFS AKRO SF
Krista Milani	NMFS AKRO SF
Alicia M. Miller	NMFS AKRO SF
Alex Perry	NMFS OLE
Henry Tashjian	NMFS GC
Lisa Thompson	NMFS AKFSC FMA
Abby Turner-Franke	North Pacific Fisheries Association

12 References

Alaska Fisheries Science Center and Alaska Regional Office. 2024. North Pacific Observer Program 2023 Annual Report. AFSC Processed Rep. 2024-10, 128 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115.

Alaska Fisheries Science Center and Alaska Regional Office. 2025. North Pacific Observer Program 2024 Annual Report. Draft Presented to North Pacific Fishery Management Council May, 2025.

Cahalan, J., J. Gasper, and J. Mondragon. 2014. Catch sampling and estimation in the federal groundfish fisheries off Alaska, 2015 edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 46 p. Available at: https://repository.library.noaa.gov/view/noaa/4833.

Cullenberg, P., Donkersloot, R., Carothers, C., Coleman, J,, and Ringer, D. 2017. Turning the Tide: How can Alaska address the 'graying of the fleet' and loss of rural fisheries access? https://seagrant.uaf.edu/bookstore/pubs/M-215.html

NMFS 2017. National Marine Fisheries Service Policy 01-121. NOAA Catch Share Policy. January 4, 2017 https://media.fisheries.noaa.gov/dam-migration/01-121.pdf

NMFS 2023. Regulatory Impact Review/Environmental Assessment for Amendment 122 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area BSAI Pacific Cod Trawl Cooperative Program. Juneau AK. https://www.fisheries.noaa.gov/s3//2023-08/Final-Am-122-BSAI-PCTC-Program-EA-RIR.pdf

NOAA Fisheries. 2024. Alaska Seafood Snapshot August 24, 2024. https://www.fisheries.noaa.gov/s3//2024-10/ak-seafood-industry-snapshot-10-31-2024-afsc.pdf

NPFMC 2019. Discussion Paper: IFQ Access Opportunities- Global Examples. May 2019 .Anchorage AK. https://meetings.npfmc.org/CommentReview/DownloadFile?p=bef3d52d-45e2-4dd3-b041-c773355a5d83.pdf&fileName=D5%20IFQ%20Access%20Opportunities.pdf

NPFMC 2021. Crab PSC Limits in the BSAI Groundfish Trawl Fisheries. February 2021. https://meetings.npfmc.org/CommentReview/DownloadFile?p=89a2a312-6cec-4b86-8b86-e0484c8a0583.pdf&fileName=C4%20Crab%20PSC%20Analysis.pdf

NPFMC 2022. Bristol Bay Red King Crab Expanded Information. Anchorage AK. September 2022. https://meetings.npfmc.org/CommentReview/DownloadFile?p=d26d1383-cd85-4545-b4e7-29d402f414bf.pdf&fileName=D2%20BBRKC%20Discussion%20Paper.pdf.

NPFMC 2024. Groundfish Area Closures within the Bristol Bay Red King Crab Stock Assessment Area. January 16, 2024. https://meetings.npfmc.org/CommentReview/DownloadFile?p=0cb90fa5-5e0e-40fc-9af1-00cf97ce18b6.pdf&fileName=C2%20BBRKC%20Analysis.pdf

NPFMC 2024b. BSAI Pot Catcher Vessel ≥ 60 ft. and Pot Catcher Processor Cooperatives. June 2024. Anchorage AK. https://meetings.npfmc.org/CommentReview/DownloadFile?p=f1eeebdf-f7c1-461a-babc-0d32aa8df7ad.pdf&fileName=D4%20BSAI%20Pot%20Cod%20LAPP%20Discussion%20Paper.pdf

Stevens, B. G. "Survival of king and Tanner crabs captured by commercial sole trawls." Fishery Bulletin 88.4 (1990): 731-744. https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/fish-bull/stevens.pdf