

DRAFT FOR INITIAL REVIEW

Draft Regulatory Impact Review/Environmental Assessment for Proposed Regulatory Amendment to GOA Groundfish Fishery Management Plan for

GOA Tanner Crab Protection Measures

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Abstract: This draft Environmental Assessment/Regulatory Impact Review (EA/RIR) analyzes management measures under consideration by the North Pacific Fishery Management Council (Council) that would apply exclusively to participants in the Federal groundfish fisheries in the Gulf of Alaska (GOA) Fishery Management Plan area. The measures under consideration include time and area closures around Kodiak Island to protect Tanner crab. Closures are considered for two different areas on the east side of Kodiak Island, for a range of gear types, and on either a seasonal or year-round basis. This analysis also provides information to support an evaluation of the existing Marmot Bay Tanner Crab Protection Area and all Type I, II, and III closures around Kodiak Island. The Council will use this information to identify elements of existing closure areas that warrant consideration of modification or removal. The proposed action under consideration would amend the GOA Groundfish FMP and associated regulations to impose a new closure to the east side of Kodiak Island, and/or modify or remove existing federal closures around Kodiak Island.

For definition of acronyms and abbreviations, see online list: <https://www.npfmc.org/library/acronyms>

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Executive Summary

This draft Environmental Assessment (EA)/Regulatory Impact Review (RIR) analyzes potential time and area closures around Kodiak Island to protect Tanner crab which would apply exclusively to Gulf of Alaska (GOA) groundfish fisheries in the Exclusive Economic Zone (EEZ). Closures are considered for two different areas on the east side of Kodiak Island, applicable to a range of gear types, and on either a seasonal or year-round basis. This analysis also evaluates these existing crab protection areas around Kodiak Island for modification or removal: Marmot Bay Tanner Crab Protection Area and all Type I, II, and III red king crab closures. The proposed action under consideration would amend the GOA Groundfish FMP and associated regulations by imposing a new closure to the east side of Kodiak Island, and/or modifying or removing existing federal closures around Kodiak Island (see Figure ES-1). Actions taken to amend FMPs or implement regulations governing these fisheries must meet the requirements of applicable federal laws, regulations, and Executive Orders.

Purpose and Need

In April 2025, the Council adopted the following Purpose and Need statement for this action:¹

Crab is a prohibited species in the Gulf of Alaska (GOA) groundfish fisheries, and the Council has developed several time and area closures to minimize the impacts of groundfish fisheries on GOA crab. In recent years, new information about Tanner crab biology and management resulted in modifications to the harvest strategy and management measures for the state-managed GOA directed Tanner crab fishery. The Council is considering a new groundfish fishing area closure on the east side of Kodiak Island in areas known to have consistently high densities and abundance of Tanner crab. The Council is also considering a process to evaluate the effectiveness of existing groundfish fishery area closures around Kodiak Island, most of which were enacted in the late 1980s, to determine whether modifications are needed. Given the importance of crab and groundfish fisheries to the harvesting, processing and support sectors in the community of Kodiak, the Council intends to consider management actions that conserve and protect Tanner crab while minimizing negative impacts on Central GOA groundfish fisheries.

Alternatives

The proposed action under consideration would amend the GOA Groundfish FMP and associated regulations to modify either existing federal closures around Kodiak Island and/or to impose a new closure to the east side of Kodiak Island.

The Council adopted the following alternatives for analysis in April 2025. Alternatives 2 and 3 are not mutually exclusive.

Alternative 1: Status Quo

Alternative 2: Closure area

Objectives for closure area: minimize groundfish fishery interactions with Tanner crab in areas off the east side of Kodiak Island 1) where high densities of Tanner crab are known to occur and 2) during life stages in which available information indicates that Tanner crab are vulnerable to fishery interactions.

The Council intends to establish criteria and a timeline to review the effectiveness of the closure area.

¹ April 2025 Council motion available at: <https://meetings.npfmc.org/CommentReview/DownloadFile?p=0f12351e-ab1c-4bfc-b28f-6282c4a03b0f.pdf&fileName=D2%20MOTION.pdf>

Element 1: Closure Area

Option 1: ADF&G statistical area 525702

Option 2: East side of Kodiak Island - Federal waters north of 56 degrees 54.6 minutes latitude and 152 degrees 16 minutes longitude (referred to as the “Custom Closure Area”; see Figure ES-1 below)

Element 2: Closure duration

Option 1: Year-round

Option 2: Seasonal

a) Feb 15 – June 15 (current Type II closure dates)

b) April 1 – June 15 (directed Tanner fishery closure date by regulation through Tanner crab survey start date)

Element 3: Gear types subject to closure

Option 1: Groundfish Pot & Trawl (nonpelagic and pelagic) gear

Option 2: Nonpelagic trawl gear

Alternative 3: Evaluate the existing Marmot Bay Tanner Crab Protection Area and all Type I, II and III closures around Kodiak Island for modification or removal.

The Council intends to review the objective of each existing crab protection area around Kodiak Island and biological, fishery independent and dependent information available for the area and consider options for modifications or removal.

Alternative 3 would not lead to rulemaking or an amendment to the GOA FMP in its current form, because the Council has not identified specific elements of existing Federal crab protection closures that it wishes to modify or remove. Therefore, a quantitative impact analysis is not possible under Alternative 3. This type of analysis would be completed after the Council identifies the elements and options of the existing closure areas it may wish to modify or remove. As a result, Alternative 3 was not included in the EA/RIR analysis at this time and instead requested information for this alternative is located in Section 7 of the document, and is broken out in this Executive Summary into a separate section below the discussion of Alternative 2.

A map showing the closure areas considered under Alternative 2, and the existing Federal GOA crab protection area closures evaluated under Alternative 3, is included in Figure ES-1 below. Additional information on the existing Federal GOA crab protection areas is included within Sections 2.1.1 and 7.1. Figure ES-1 also orients the reader to the Alaska Department of Fish and Game (ADF&G) statistical areas surrounding Kodiak Island (including the four ADF&G statistical areas that overlap with the proposed custom closure area in Alternative 2, Element 1 Option 2—described further in Section 2.2.1), and the trawl survey stations for the annual ADF&G large-mesh trawl survey (which provide the best source of Tanner crab abundance and distribution data in the GOA—described further in Section 5.3.1.3 and 7.4).

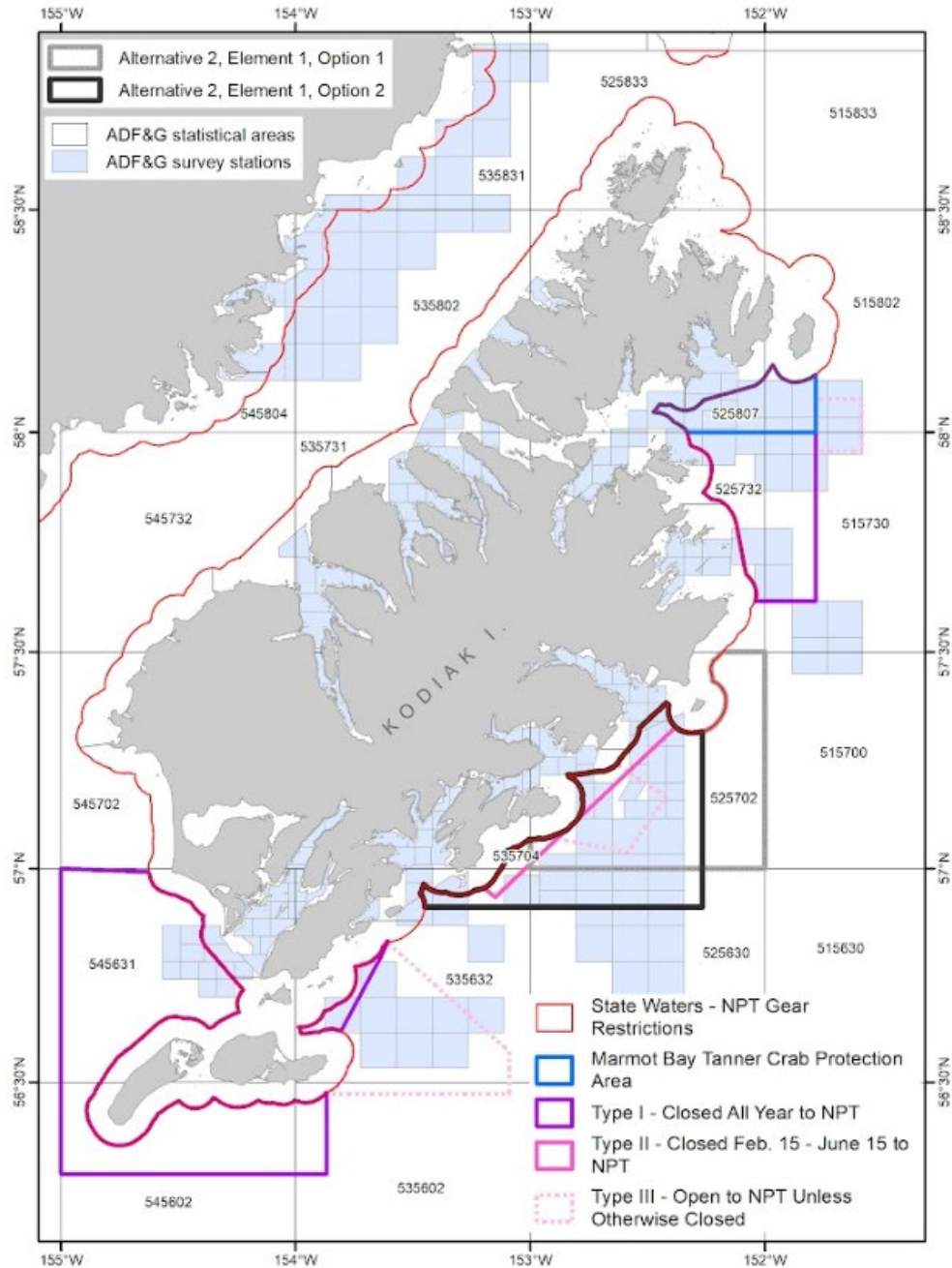


Figure ES -1 ADF&G groundfish/shellfish statistical reporting areas around Kodiak, Gulf of Alaska, federal crab closure areas, proposed closure areas (Alternative 2, Element 1), and ADF&G trawl survey footprint.
Source: Spalinger, ADF&G 2026.

Impacts & Expected Effects of Alternative 2

Under Alternative 2, vessels will be required to forgo fishing with certain gear types in the proposed area & time closures, as defined by the options selected within Elements 1-3. The areas considered for closure are productive areas for CGOA trawl fisheries (Section 3.1) and areas of high Tanner crab abundance (Sections 5.3.2 and 5.3.3).

Alternative 2 was analyzed for impacts on crab, groundfish and other fish species, other PSC species, and habitat, and for its economic and social impacts. The economic and social impacts are analyzed within the

RIR (Section 4), and the environmental impacts are analyzed within the EA (Section 5). Any effects of the alternatives on the resource components in this analysis would be caused by changes in the timing and location of groundfish fishing efforts resulting from the closure. The potential displacement of groundfish fisheries is discussed below, prior to describing the economic, social, and environmental impacts that may result from this displacement.

As described above, fishing activity would be displaced under Alternative 2. The groundfish pot and trawl fleets target a variety of species in the areas considered for closure (Section 3.1). The majority of fishing activity occurs with pelagic and nonpelagic trawl gear (PTR and NPT), with the principal target fisheries being the pollock, Pacific cod, and flatfish target fisheries (Section 3.1.3.2 and 3.1.4.2). The Pacific cod groundfish pot fishery was historically a principal target fishery in the areas considered for closure, but effort has largely shifted outside the areas after the Pacific cod stock collapse of 2018 and has not returned (Section 3.1.2). Given that groundfish pot fishing has been minimal in the proposed closure areas within the last decade, the displacement discussions below focus on groundfish trawl (PTR and NPT) target fisheries.

Strategies and decision-making on how to shift fishing behavior in response to the closure will vary by vessel. Vessels may opt to shift efforts within a specific target fishery—under this scenario, historical fishing patterns can provide general inferences on where, or how, fishing may shift within specific target fisheries (described further below). Vessels may instead opt to target other species if comparable fishing grounds are not found, or if the net costs associated with redistributing catch volumes of the target species are higher than the costs associated with switching effort to a different target fishery. This adds a high degree of uncertainty to discussions of fleet displacement impacts. CGOA vessels are highly diversified, have high rates of utilization across multiple gear types, and often participate in multiple target fisheries (see Sections 3 and 4.3.1). This directly affects how a vessel can respond to a spatial closure, both operationally and economically. Gear flexibility, and participation across multiple target fisheries, makes it easier to pivot to other targets if catch from one target fishery is displaced under Alternative 2. It also adds uncertainty to fishing displacement analyses and impacts—the impacts of targeting other species, or shifting the species composition of catch to a higher amount of a certain species, on Tanner crab PSC is not known at this time.

The effects of fishing displacement occurring within a specific target fishery can be examined via historical fishing patterns, which can provide general inferences on where, or how, fishing may shift within these target fisheries. Fishing displacement within the groundfish trawl target fisheries may occur spatially or temporally, depending on the options chosen in Alternative 2. Vessels may spatially redistribute catch in the same target fishery, if they can locate comparable fishing grounds. Pelagic and nonpelagic trawl fishing activities on the Eastern side of Kodiak are primarily concentrated in areas of high bathymetric relief, including gully systems. Fishing efforts are distributed along the length of the Barnabas gully system (including areas within and outside the boundaries of the proposed closure areas), and along the Chiniak Gully northeast of the proposed closure areas (Figure 3-1, Figure 3-2). This implies that, under Alternative 2 fishing effort may be spatially displaced immediately south to portions of the Barnabas gully not captured within the closure boundary, or to other adjacent (or non-adjacent) areas that overlap gully systems (such as ADF&G statistical areas 525630, 535632, 515700, or 515730), depending on which areas are deemed comparable and desirable to vessel operators. The gully systems with high concentrations of PTR and NPT fishing effort also are known to have high concentrations of Tanner crab (Section 5.3.1.1, Figure 5-10). If spatial displacement of groundfish fishing occurs, changes to Tanner crab PSC rates are possible, but are dependent on the location, amount of fishing effort, and target catch efficiency, among other things (Section 5.3.5). If Tanner crab PSC increases in other areas, this may offset some of the expected conservation benefits and location-specific PSC reductions afforded through Alternative 2.

Vessels may redistribute catch temporally, rather than spatially, under a seasonal closure (Element 2, Option 2a or 2b). Under a seasonal closure option, vessels would retain the ability to access the closure

area during the remainder of the year, which may allow effort to be redistributed within the areas considered for closure during not encompassed by the closure. This strategy would most likely be employed by flatfish fishery participants—peak target fishing in this fishery occurs in April, but consistent effort occurs in all months between March and October (Table 5-20). Vessels encounter Tanner crab throughout the year in the areas considered for closure (Section 5.3.4). Assumed vulnerability during different annual stages in Tanner crab life history varies (including molting and mating, soft-shell periods, carrying egg clutches, and hatching), but Tanner crab of any shell condition are presumably vulnerable to impacts from fishing gear (Section 5.3.1.5). Therefore, temporal shifts in fishing effort may result in changes to Tanner crab PSC and mortality, and are dependent on the specific timing of effort redistribution, target catch efficiency, location and amount of effort, and the rate of encounter with Tanner crab in the times/areas where catch is redistributed.

Economic and Social Impacts for Alternative 2

The Regulatory Impact Review (RIR; Section 4) evaluates the economic benefits and costs of the alternatives and the distribution of impacts. This RIR summary primarily focuses on impacts from Alternative 2 on groundfish fishery participants directly regulated by this action, and includes abbreviated discussions on impacts to non-regulated entities that may be indirectly impacted by the action. The degree and nature of impacts vary by fishery and gear type, depending on the options and suboptions selected under Alternative 2.

Alternative 1: No Action

Alternative 1 is the status quo alternative; all fishing activities could continue to the extent they are currently allowed within the proposed closure areas. Within area 525702 (Element 1, Option 1) and the custom closure area (Element 1, Option 2), the majority of catch volumes are harvested using groundfish trawl gear, with both nonpelagic and pelagic configurations (Section 3.1.5). The areas considered for closure are of particular importance to the shallow-water flatfish fishery, the arrowtooth flounder fishery, and the pollock fishery. All flatfish fisheries in the Central Gulf of Alaska (CGOA) are prosecuted using nonpelagic trawl gear (NPT). The pollock fishery is primarily conducted with pelagic trawl gear (PTR), though a small volume of pollock is also caught with NPT gear. As for pot gear, very little groundfish pot fishing activity has occurred in the areas considered for closure within the last decade—the vast majority of which was in the Pacific cod pot fishery.

Alternative 2:

Alternative 2 would close one of the considered areas to groundfish pot and/or trawl fishing, thereby resulting in changes to the timing and location of groundfish fishing efforts that historically occurred within the areas. The impact on groundfish vessels directly regulated by the action will be proportional to 1) the extent that they rely on the area for target fishing, 2) the degree to which displaced catch can be made up in the remaining open areas, and 3) the net costs associated with adjusting their fishing behavior.

Impacts to GOA Groundfish Vessels

CGOA pollock and flatfish fishery participants (which use PTR and NPT gear, respectively) have relied heavily on the areas of interest for target fishing, and these fisheries would experience the highest displacement under Alternative 2 based on historical trends in fishing effort (Section 3.1, 3.1.3, 3.1.4). The Pacific cod pot fishery was historically conducted in the areas considered for closure, however Federal groundfish pot fishing largely shifted outside the areas after the Pacific cod stock collapse in 2018 (Section 3.1.2). Therefore the majority of impact discussions below focus solely on impacts to pelagic and nonpelagic gear vessels and fisheries; groundfish pot fishery impacts are discussed only within Element 3 below.

The large number of factors at play results in uncertainty in the magnitude of impacts that may occur under this action. In general, adverse impacts from the area closures on any groundfish gear sector will be

lower under either seasonal time closure option (Element 2 Option 2a and 2b) versus an annual closure (Element 2 Option 1), and adverse impacts for most fisheries are lower under a closure of area 525702 (Element 1 Option 1) versus the custom closure area (Element 1 Option 2). In all impacted groundfish fisheries, the magnitude of adverse impacts depends on the extent to which they can redistribute catch and/or revenues, and the costs associated with changing their fishing behavior. Any vessels directly impacted by Alternative 2 may incur increases to operating costs if current fishing effort patterns within the proposed time/area closure boundaries are optimal for that vessel and/or gear type, and if comparable alternative patterns are not found.

Element 1: Closure Area

Of the two proposed closure areas, the custom closure area is of higher importance to the pollock and arrowtooth flounder fisheries than ADF&G statistical area 525702 (Sections 3.1.3.2 and 3.1.4.2). A larger volume of pollock and arrowtooth flounder are harvested from the custom area; therefore selecting the custom area closure option would result in higher levels of displacement for these fisheries. Conversely, fishing efforts in the GOA shallow-water flatfish fishery are concentrated within 525702—for this fishery, displacement would be higher under a 525702 area closure than the custom area closure (Section 3.1.4.2).

Element 2: Closure Duration

Impacts to all impacted groundfish fisheries would be highest under an annual closure (Element 2, Option 1) and would be reduced under the selection of one of the seasonal time closure windows in Element 2 (Option 2a or 2b). The degree to which impacts are reduced by the selection of either seasonal time closure over an annual closure duration varies by fishery.

For the pollock fishery (PTR gear), the selection of an annual closure (Option 1) would result in the greatest adverse impacts (see Section 4.3.1.2). The pollock fishery heavily relies on the areas of interest in the fall (during pollock B season, as shown in Section 3.1.3)—therefore, a high level of catch displacement would occur under an annual closure. However, during the seasonal time closure windows (Option 2a and 2b), very little pollock fishing activity occurs in the areas (Table 3-8). Therefore, impacts to PTR fisheries would be greatly minimized under the seasonal closure options.

Flatfish fisheries (NPT gear) heavily rely on the areas considered for closure throughout the year, primarily within the shallow-water flatfish and arrowtooth flounder targets (see Section 3.1.4.2), which coincide with the timing of the seasonal time closure options considered by the Council. Much of the NPT sector's activity in the areas of interest currently occurs within the periods considered for seasonal closure (Table 3-12), with peak fishing activity in the flatfish fisheries occurs between April and June (Table 5 20). Therefore, for fisheries, the selection of any time closure option would displace catch. Impacts would be seen by NPT gear users under any of the seasonal closure options considered, since the seasonal time closure windows overlap with a period of high NPT fishing activity. As described in the fleet distribution section above, a seasonal closure may result in temporal catch displacement for this sector, since flatfish harvest efforts occur throughout the year (described further in Section 3.1.4.2).

Element 3: Gear Types

Non-pelagic trawl gear (NPT) would be restricted from use in the closure area under both options in Element 3. It is the only sector that would be impacted regardless of option selection. Pelagic trawl gear and groundfish pot gear would only be restricted under Option 1 of Element 3. Additional details on the fishing activity conducted in the CGOA, and within the areas considered for closure under Alternative 2, can be found in Section 3.1.

For pot vessels, the implementation of any of the time/area closures considered by this action appear to have a small impact on groundfish fishing (Section 4.3.1.1). Any impacts to groundfish pot fishery participants would primarily be seen by participants in the Pacific cod pot fishery. Very minimal impacts

would arise for the sablefish fishery, as activity in this fishery primarily occurs in deep waters, outside of the areas considered for closure. Prior to the Pacific cod stock collapse, a higher proportion of CGOA Pacific cod pot catch volumes came from the areas (Table 3-3). If the Pacific cod Total Allowable Catch (TAC) increases in the future, pot fishing for this target in the proposed closure areas could increase, but that cannot be predicted with any degree of accuracy. Under either future scenario (high- versus low-TAC), it is likely that any displaced Pacific cod pot catch volumes may be recovered. Groundfish pot efforts are widely distributed around Kodiak, and it appears that there are many comparable areas for Pacific cod pot fishing activity to occur.

Pelagic trawl vessels have historically utilized the areas considered for closure during pollock B season harvest efforts in the fall; therefore an annual closure would result in a persistent loss of access to fishing grounds that have historically supported B season PTR activity (see Sections 3.1.3.1 and 4.3.1.2). Based on catch distribution maps (Section 3.1.3.3), it appears that vessels may be able to redistribute PTR harvest volumes under the proposed area closures. Catch redistribution would also be constrained by factors such as existing closures (as described in Section 2.2.1), and spatial catch specifications (as described in Section 5.2.1.1), both of which may increase the potential costs associated with redistributing fishing effort.

Nonpelagic trawl vessels rely heavily on the areas of interest, and the selection of any closure option combination under Alternative 2 would impact this sector—primarily through targeted flatfish fishing activity (Section 4.3.1.3). Catch volumes for flatfish species are typically highest in April (see Section 3.1.4.2), which is included within both seasonal time closure windows considered in Alternative 2. If either area was closed to NPT fishing during one of the seasonal closure windows, approximately 10% of the CGOA NPT groundfish harvests would be displaced.

Most species of economic importance to the NPT fleet (including arrowtooth flounder, POP, and pollock) are found in relatively high densities in other comparable areas on the Eastern side of Kodiak. Any displaced catch volumes in these target fisheries resulting from Alternative 2 may be replaceable through redistribution of effort, either spatially or temporally. However, harvest in the GOA shallow-water flatfish target fishery may not be fully redistributed under Alternative 2, especially if an annual closure option was chosen for area 525702. GOA shallow-water flatfish are unique in that they appear to be most concentrated within the proposed closure areas. Between 2021 and 2025, 58% of all shallow water flatfish caught in the CGOA were harvested from area 525702, and 53% were harvested from the custom area (Table 3-15). Vessel operators may seek to recoup the revenues previously earned via targeted shallow-water flatfish harvests through increasing participation in other, higher-value target fisheries, if alternate fishing grounds for shallow-water flatfish are not found. The magnitude and likelihood that this would occur depends on the degree to which displaced catch can, or will, be made up in remaining open areas, and the market interest for these species, among others.

Due to the high rates of cross-gear utilization in the CGOA fleets (Section 4.3.1), the cohorts of impacted entities are not distinct, and vessels may be impacted by this action through multiple dimensions. If operators actively fish in the areas considered for closure using a combination of groundfish pot, PTR, and NPT gear, their dependency on these areas may be higher than the vessel-level dependency tables within Section 3.1 indicate (see Table 3-5, Table 3-9, and Table 3-13). In contrast, vessels that utilize only one of these gear types (either annually or seasonally) have more limited operational flexibility. The majority of gear crossover occurs between PTR and NPT users, since vessels do not need separate LLPs to use these gear types in the CGOA. Vessels capable of deploying alternative gear (e.g., PTR vs NPT) may be able to maintain access to alternate fishing opportunities, and it may be easier for vessels to pivot to other fisheries or fishing strategies under the time/area closures considered under Alternative 2.

Other Economic and Social Impacts

In general, the types and magnitude of potential social impacts that may occur as a result of the proposed action vary under the different alternatives.

At a community level, the potential social and economic impacts that could be realized depend on the community's level of dependence on the impacted fisheries, the historical reliance of each groundfish sector on the closure area, and the ability of vessels to modify fishing behavior under Alternative 2. From a community perspective, Kodiak is by far the most centrally engaged in and dependent on the fisheries impacted by this action (Section 3.4), as measured by multiple metrics (including groundfish pot and trawl harvesters, Tanner harvesters, shore-based processors, and fishery support sectors). Kodiak (and other communities highly engaged in the fisheries impacted by this action) has a diverse fishery economy and relies on a diverse portfolio of different fisheries throughout the year. Therefore the magnitude of change expected due to the proposed action is not expected to extend to community-level impacts, because the revenues associated with catch from the proposed area closures comprises a small proportion of total community-level fishing revenues (Table 3-26, Table 3-30, Table 3-34).

The activity of shoreside processors engaged in the groundfish pot and trawl fisheries active in the proposed area closures is described further in Section 3.4.5 and Section 3.5. As noted in Table 3-41, processing activity averages 6.2 processors annually and is heavily concentrated in Kodiak—therefore any impacts to shoreside processors would be specific to the processor environment within Kodiak. Operational changes or costs could extend to shore-based processors, depending on the magnitude of impacts to the groundfish harvesting sector. Interruptions to the flow of deliveries may occur as a result of displaced fishing efforts, if the timing of fishing efforts changes under Alternative 2. Speculations on the specific locations of effort displacement cannot be accurately gleaned from available information, therefore the likelihood or magnitude of this impact is unknown. If the timing of peak flatfish delivery harvests shifted, catch that may have otherwise been delivered to processors within the “gap season” between pollock A season and peak summer salmon processing efforts may be shifted to other times during the year. This of course depends on optimal catch timing and location, including factors such as product size, quality, and value. If catch is displaced after June 15th, conflicts and interference with salmon processing efforts would arise. However, considered in conjunction with Amendment 113 to the GOA Groundfish FMP, which moved the start of the Central GOA Rockfish Program (CGOA RP) fishery to April 1 to help make processing operations more efficient, impacts to shoreside processing operations that may accrue from flatfish fishery displacement are expected to be minimal in nature.

To the extent that this action may decrease PSC and provide protections for Tanner crab stocks compared to the status quo alternative, Kodiak Tanner crab users may benefit from Alternative 2. Tanner crab are harvested in Kodiak through subsistence, sport, and commercial fisheries—the proposed action could result in beneficial impacts for these three user groups; however the magnitude of impacts cannot be quantified. Impacts to these user groups rely on the extent to which benefits to Tanner crab accrue to a level that impacts abundance or availability of legal-sized male crab. The likelihood of these benefits are described in the Environmental Impacts section, below.

Environmental Impacts for Alternative 2

The Environmental Assessment (EA; Section 5) evaluates the potentially affected environment and the degree of the impacts of the alternatives and options on the various resource components. This EA summary focuses primarily on impacts from Alternative 2 on Tanner crab and habitat under Element 1, 2, or 3. Other resource components of the EA that are not included in this summary since they are expected to have minimal impact on the stock level are: 1) the principal groundfish species that are targeted with nonpelagic and pelagic trawl gear and pot gear in the Central Gulf of Alaska region on the eastern side of Kodiak Island and NMFS Areas 620 and 630 (Figure 1-1): pollock, Pacific cod, rockfish, and flatfish (Section 5.2), 2) Chinook salmon and Pacific halibut PSC (Section 5.4 and 5.5). Habitat impacts of bottom contact from groundfish gear in known locations of Tanner crab abundance are also covered (Section 5.6).

Impacts to Tanner crab

Alternative 1: No Action

Alternative 1 is the status quo alternative. If Alternative 1 is selected, all elements of the existing closures to protect crab around Kodiak Island would be maintained. Under Alternative 1, Tanner crab PSC would be expected to continue at levels similar to what has been observed historically, varying by season, year, area, and gear type (Section 5.3.4). There is no stock assessment for GOA Tanner crab that would evaluate the combined effects of fishing mortality, PSC, and environmental variability, so it is difficult to discern the impacts of a specific source of mortality, such as PSC from groundfish fishing on the Tanner crab stock. The Kodiak District Tanner crab fishery, managed through the ADF&G harvest strategy, has generally remained open since 2000 because abundance of mature males (and later also of mature females) were sufficient to meet minimum GHLL thresholds most years, with closures issued in five years (2014-2017, 2021). However, on a local level, Tanner crab abundance is currently on a downward trend in both proposed closure areas (Alternative 2, Element 1, Options 1 and 2). Therefore, under Alternative 1, Tanner crab PSC occurring in the Central GOA groundfish fisheries would continue to represent an ongoing source of mortality. However, given the observed cyclical population dynamics (Section 5.3.2) and the ability of the stock to support a directed fishery in most years (Section 3.2; Section 5.3.1.2), the relative impacts of PSC removals do not appear to be significant at the population level.

Although Tanner crab seem to be fairly predictable in location within gullies that span multiple statistical areas, tagging data from 2004-2010 (Section 5.3.1.1) suggests that large males do not move beyond ADF&G Tanner crab management boundaries (i.e., Kodiak District Sections, shown in Figure 3-3). Therefore, the connectivity across areas and gully systems is unknown. If, for instance, connectivity is lower, impacts from observed and unobserved mortality from fishing may have greater impact on the local population and vice versa. If fishing pressure that was once spread across the length of Barnabas Gully is concentrated in a smaller area of the gully system due to the Alternative 2 closure area, the impacts to the local Tanner crab stock from increased fishing intensity is unknown.

Assumed vulnerability by crab life stage to fishing gear interactions varies (see Section 5.3.1.4). Tanner crab are likely most vulnerable when they have just molted and are soft-shelled (Feb – July; peak Apr – May), when they carry egg clutches (year-round), and when the egg clutches are hatching (Apr – May). It is unclear how long it takes a Tanner crab shell to harden and when primiparous females begin their terminal molt for mating, therefore the window for which soft-shell crab are vulnerable may extend before and after the Feb – July timeframe. However, crab of any shell condition are presumably vulnerable to impacts from fishing gear.

Alternative 2:

Alternative 2 would close an area to groundfish fishing, thereby redistributing fishing effort and potentially changing Tanner crab PSC depending on the options and suboptions selected. Potential impacts may vary depending on which closure duration and/or gear type options are selected and how that correlates to crab life stages.

Element 1 – closure area

Tanner crab are associated with Kodiak Island bays and the complex gullies that extend from them as demonstrated by ADF&G survey abundance information, species distribution model results, locations of PSC encounters, and research on positive associations with soft sediment (Section 5.3). Gullies and other areas of bathymetric relief are productive for Tanner crab and may also be productive systems for groundfish (Figure 3-1, Figure 3-2, Figure 5-7). The custom closure (Element 1, Option 2) contains a larger amount of the Barnabas gully system on its southern and western boundaries, and also a higher proportion of the east side Tanner crab population in 2025 than area 525702 (as shown in Figure 5-12; Figure 5-12, Figures 5-17, 5-18, 5-19).

Areas of historical fishing may be indications of where displaced groundfish fishing may occur. Catch track density maps (Section 3.1.3.3 and 3.1.4.3) and bottom contact maps by gear type indicate that fishing with nonpelagic and pelagic trawl gear occurs in Barnabas Gully directly over known concentrations of Tanner crab, spanning both proposed closure areas (Element 1, Options 1 & 2) and statistical area 525630, as well as adjacent statistical areas 535632, 515700, and 515730, plus other locations further to the northeast and the west side of Kodiak Island.

When comparing the annual average catch by gear (PTR shown in Table 3-7, NPT shown in Table 3-11, all gears shown in Table 3-16), the custom closure would displace somewhat more groundfish fishing than area 525702 (shallow-water flatfish, arrowtooth with NPT; pollock with PTR). Estimates of Tanner crab PSC, on an annual basis, are fairly similar between both closure area options, but is slightly higher, on average, in the custom closure (Table 5-25). This is likely due to the higher amount of groundfish catch occurring in the proposed custom closure area, the fact that the proposed custom closure area includes a higher percentage of the Tanner crab population, and that the custom closure contains more of the predicted hotspots in the species distribution maps (Figure 5-15, Figure 5-16, and Figure 5-17). Overall, the custom closure (Element 1, Option 2) may potentially afford higher degree of protection to Tanner crab from observed and unobserved fishing mortality than statistical area 525702 (Element 1, Option 1).

Element 2 – closure duration

A year-round closure duration (Option 1) may provide the most conservation benefits to protect soft-shell crab with egg clutches from potential interactions with fishing gear and any resulting observed or unobserved mortality. This option has the potential to displace a majority of the B season pollock fishing with PTR in the proposed closure areas, and to displace the spring peak in shallow-water flatfish and arrowtooth fishing with NPT gear, potentially shifting impacts on Tanner crab PSC elsewhere. As mentioned under Element 1, changes in Tanner crab PSC amounts may be adverse if fishing is displaced into areas with higher PSC rates and may offset expected conservation benefits.

The seasonal closures (Option 2a or 2b) may provide fewer conservation benefits relative to the year-round closure; however, Option 2a (Feb 15-Jun 15) covers a majority of the time period in which crab are thought to be soft-shell, including molting and mating periods, and Option 2b (Apr 1-Jun 15) covers what is thought to be the peak for molting and mating. Either option could displace a portion of flatfish and arrowtooth fishing with NPT but is not expected to displace fishing with PTR.

For shallow-water and arrowtooth flatfish fishing with NPT, Tanner crab PSC rates in adjacent statistical area 535632 were highest when compared to the proposed closure areas and statistical area 525630. This suggests that if displaced fishing were to take place in 535632 during any proposed closure duration, the intended benefits to the local Tanner crab population from restricting fishing in the proposed closure areas may not be achieved, but if displaced fishing shifted to 525630, the benefits to crab may not be achieved.

The combination of the year-round closure duration (Alt. 2, Element 2, Option 1) and the custom closure area (Alt. 2, Element 1, Option 2) could displace the most NPT and PTR fishing. According to NPT historical catch, there are high concentrations of shallow-water flatfish in both proposed area closure options (Alt. 2, Element 1, Options 1 and 2), and the highest volume of arrowtooth founder harvest as compared to elsewhere. If fishing with NPT for these targets were displaced by a year-round closure, and displaced fishing occurred just to the south in statistical area 525630 (Table 5-28) where PSC rates are currently lower, the impacts to PSC amounts may be lessened. If NPT fishing were displaced more to the southwest in statistical area 535632, PSC rates are higher, and impacts to PSC amounts may be adverse and at least marginally offset accrued benefits to the Tanner crab population.

Either seasonal closure duration (Alt. 2, Element 2, Option 2a or 2b), could displace a portion of fishing with NPT gear, presumably to nearby locations of historical fishing, such as statistical area 525630. This location has comparatively lower Tanner crab PSC rates from NPT than 525702 and may therefore

decrease Tanner PSC amounts if PSC rates stayed the same during periods of higher fishing intensity in the fall.

Fishing with PTR for pollock in the proposed closure areas mainly occurs during the B season (Sept/Oct), therefore the year-round closure would effectively displace all B season pollock fishing elsewhere.

According to the catch density map (Figure 3-1), other B season fishing locations could be just south (525630) or southwest (535632) of the proposed closure areas in areas of varying Tanner crab PSC, or to the northeast in Chiniak Gully where Tanner crab PSC occurs but PSC rates are not yet known. Either seasonal closure option (Alternative 2, Element 2, Option 2a or 2b) is not expected to displace much, if any, fishing for pollock with PTR.

Element 3 – gear types

The two options included under Element 3 would either restrict the closure areas to all pot and trawl gear types (Option 1), or only to nonpelagic trawl gear (Option 2). By gear type, nonpelagic trawl gear catches the highest amount of Tanner crab PSC, followed far behind by pelagic trawl and then groundfish pot gear (at least since 2018). This is in part because NPT gear is used to target fisheries, like shallow-water flatfish and arrowtooth flounder, normally concentrated near the seafloor with forward net mesh sizes that are smaller than pelagic trawl nets that could result in higher levels of observed Tanner crab PSC relative to PTR vessels targeting pollock. It should be noted that although PTR PSC rates are lower, those PSC rates may not be representative of gear interactions with crab because the gear does not retain crab very well, and therefore unobserved mortality may be an additional contributor to effects on the Tanner crab population (see Section 5.3.1.5). Unobserved mortality is also a concern for the other gear types. Under either Option 1 or 2, restricting NPT from a proposed closure area may provide the greatest localized conservation benefits to Tanner crab by reducing observed and unobserved mortality, but it is difficult to ascertain population level impacts. Under Option 1, additionally restricting PTR fishing from a proposed closure area would presumably provide further conservation benefits to Tanner crab due to reduced unobserved crab mortality. In either case, it is difficult to ascertain the degree to which reductions in crab bycatch would result in population level impacts to the Tanner crab stock.

If vessels using nonpelagic or pelagic trawl gear were displaced from either proposed area for an entire year, and these vessels instead harvested flatfish or pollock immediately south/southwest, the potential conservation benefits to Tanner crab could be marginalized to some degree.

Potential impacts to Tanner crab habitat

While the variety of options in the three elements under Alternative 2 would result in different impacts to habitat, generally, a closure area off of Kodiak Island to fishing gear would decrease the expected bottom contact in the proposed closure areas (Section 5.6). In this analysis, estimated bottom contact area is a useful way to make some inferences about potential disturbance to habitat in areas where there are high crab densities, and inferences about the potential extent for crab and gear interactions, and subsequent observed and unobserved mortality. Since only the legacy Catch-In-Areas database was available (see section 5.1.1.2), bottom contact was only estimated for 2012 through August 2022 and does not represent trends in recent years. However, inferences can be made about trends in these estimates. Overall trends in estimated bottom contact area were similar between the two proposed closure area options. Estimated bottom contact is comparatively less for pelagic trawl gear than from nonpelagic trawl gear. Estimated bottom contact for groundfish pot gear is very minimal in the area, especially since 2018. However, if fishing effort shifts outside the closure area the cumulative bottom contact area from groundfish fishing in the Kodiak area may be unaffected. To the extent that the proposed closure areas restrict groundfish fishing from areas that coincide with areas that are understood to be important to the Tanner crab stock, there may be potential benefit to the stock.

Comparison of Alternatives 1 and 2 for Decision-making

Resource Category Potentially Impacted	Alt. 1	Alternative 2						
		Element 1: Area		Element 2: Duration			Element 3: Gear	
		Option 1: Stat Area 525702	Option 2: Custom Area	Option 1: Year-Round	Option 2a: Feb 15 – June 15	Option 2b: April 1 – June 15	Option 1: NPT, PTR, and POT	Option 2: NPT
Environmental Impacts								
Tanner Crab Stock	Status quo	Reduces benefits relative to custom closure, but still provides conservation benefit. Spatial changes in fishing effort may offset some benefits.	Greatest conservation benefit; highest amount of Tanner crab population, highest amount of fishing. Spatial changes in fishing effort may offset some benefits.	Aligns with soft-shell and egg clutch timing. Would displace the most fishing, and would provide the greatest conservation benefit, relative to Option 2a or 2b.	Aligns with majority of crab soft-shell window. Would displace NPT activity; reduces benefits relative to year-round closure. Temporal displacement of fishing efforts may offset some benefits.	Aligns with peak molting/mating activity. Would displace NPT activity; reduces benefits relative to year-round closure or longer time closure window option. Temporal displacement of fishing efforts may offset some benefits..	Greatest conservation benefit relative to Option 2; would reduce interactions and displace the most fishing activity.	Reduced conservation benefit relative to Option 1; would still provide conservation benefits.
Economic Impacts								
Pot vessels	Status quo; minimal activity in sablefish IFQ fishery, some Pcod activity in high TAC years	Greater (but still minimal) impacts to Pcod fishery relative to Option 2; catch volumes are higher from 525702	Lower impacts to Pcod fishery relative to Option 1	Minimal adverse impacts; low levels of Pcod and sablefish fishery activity in the areas. Impacts could increase if Pcod TAC improves.	Minimal impact; Pcod A season often ends prior to Feb 15	Minimal impact; Pcod A season rarely extends past 4/1	Gear type prohibition implemented; minimal impacts expected under any combination	Status quo
Pelagic trawl vessels	Status quo; PTR activity in areas in the fall (pollock B season)	Lower impacts to PTR fisheries relative to Option 2; catch volumes are lower from 525702	Greater impacts to PTR fisheries relative to Option 1; catch volumes are greater from custom area	Moderate adverse impact; areas are utilized by pollock fishery in the fall	Minimal impact as harvest in the areas primarily occurs in the fall	Minimal impact as harvest in the areas primarily occurs in the fall	Gear type prohibition implemented; impacts are greatest under an annual closure of the custom area	Status quo
Nonpelagic trawl vessels	Status quo; NPT activity in areas year-round	Greater impacts to shallow-water flatfish relative to Option 2; lower impacts to all other NPT fisheries	Greater impacts to NPT fisheries relative to Option 1; lower impacts to shallow-water flatfish	Greatest adverse impact, compared to other options within Element 2	Moderate adverse impacts; overlaps with peak flatfish season. Catch may be displaced temporally	Moderate adverse impacts; overlaps with portion of peak flatfish season. Catch may be displaced temporally	Gear type prohibition implemented; magnitude of adverse impacts vary based on element selection	Gear type prohibition implemented; magnitude of adverse impacts vary based on element selection

Alternative 3

In its April 2025 motion, the Council signaled that it intends to consider options for modification or removal of the existing Federal crab protection closures around Kodiak Island after an evaluation has been completed. In its current form, Alternative 3 would not lead to rulemaking or an amendment to the GOA FMP, because the Council has not identified specific elements of existing Federal crab protection closures that it wishes to modify or remove. **Therefore, the reader should note that, at this time, it is not possible for the analysts to provide a quantitative analysis of the potential impacts that modifying or removing the existing crab closure areas would have on crab populations (including but not limited to Tanner crab) or federally-managed groundfish fisheries. This type of analysis would be completed after the Council identifies the elements of the existing closure areas it may wish to modify or remove.**

As a result, Alternative 3 was not included in the EA/RIR analysis at this time and instead, requested information for this alternative is located in Section 7 of this document. Alternative 3 could be included within the EA/RIR in future iterations of the analysis, should the Council identify and select aspects of the existing closure area frameworks that it wishes to consider modifying or removing. A quantitative impact analysis is not possible at this time; however in general, if an evaluation under Alternative 3 led to the removal of one or more closure areas, this Alternative would impact vessels using nonpelagic trawl gear by allowing the gear type to be used in an area where it is currently restricted from use. Type I, II, and III red king crab closure areas and the Marmot Bay Tanner crab closure area are all closed to nonpelagic trawl gear, and removing one or more of these closure areas could potentially benefit vessels that use nonpelagic trawl gear in the Central GOA. However, the impacts vary widely depending on which (if any) areas around Kodiak Island are considered or selected for removal, and whether they are selected for removal in combination with the adoption of Alternative 2.

Subsections in Section 7 contain information to help the Council identify elements of existing closure areas it may wish to modify or remove. Information within Section 7 includes a description of the history and Council rationale behind these closures (7.1), closure objectives (7.2), and an overview of policy and management considerations for the closure frameworks (7.3).

Section 7.4 includes ADF&G survey abundance, observer estimates, and PSC estimates for crab populations within the existing closures to help inform the Council during their evaluation process. Additionally, details on the regulatory requirements that vessels must adhere to when deploying pelagic trawl gear within the Federal GOA crab protection closures around Kodiak Island are included within Section 7.5. Finally, Section 7.6 details pathways the Council may consider as next steps after reviewing the considerations and information provided within this document.

A summary of the information within Section 7 is provided for reference within the table below.

Alternative 3 – Evaluation Summary

Existing Closure Area	Conservation Objective	Closure Duration	Closure Area	Gear Type	Crab Abundance & Observed PSC	Considerations
Type I (est. 1986, amended 1987) Marmot Flats Alitak Flats/Towers	Promote rebuilding of severely depressed RKC stocks by reducing fishing mortality. Extended an annual closure in 1987 to increase probability of successful rebuilding	Year round Provides maximum protections to crab; deemed necessary to promote stock rebuilding in certain areas of high female RKC abundance.	Areas selected based on female RKC distribution data from 1960s. Male abundance was assumed to not limit reproductive success of females.	NPT prohibited; Flatfish fishing historically occurred in the areas, & observed bycatch from flatfish fisheries were high. Other groundfish fisheries/gears not selected; had not historically occurred in these areas	RKC: Survey shows no RKC in Marmot flats; avg. PSC of 0 crab/yr in period. Alitak contains 18% of surveyed abundance; PSC of 0.2 crab/yr in period. Tanner: Alitak contains 4% of surveyed abundance; avg. PSC of 104.4 crab/yr. Marmot flats contains 2% of surveyed abundance; PSC historically high but declined over time (0 crab in 2025).	Alitak contains last remaining productive portion of king crab stock Marmot Flats may provide incidental Tanner protections; overlaps a portion of Chiniak gully where known concentrations of Tanner crab are found SSL area closures overlap Type I areas; may provide incidental protections
Type II (est. 1986) Barnabas Area Chirikof Island	Promote rebuilding of severely depressed RKC stocks by reducing fishing mortality	2/15 to 6/15 Duration was thought to encompass entirety of soft-shell phase; intended to protect RKC during period of highest vulnerability to damage & handling mortality	Areas selected based on historical RKC female distribution data (see above).	NPT prohibited; Evaluated/selected based on historical fishing activity & bycatch rates in areas (see above). Contact w/ any gear could result in high mortality for RKC during soft-shell season; NPT was historically used in areas during soft-shell window	RKC: Barnabas contains 0.05% of surveyed Kodiak RKC abundance; avg. PSC of 0 crab/yr. Chirikof not surveyed; avg PSC of 0 crab/year. Tanner: Barnabas contains 6% of surveyed Kodiak Tanner abundance; avg PSC of ~17,700 crab/yr. Chirikof not surveyed; avg PSC of 43 crab/yr.	Chirikof not surveyed; abundance difficult to quantify Duration based on data from 1960s/1970s; could be revisited for king crab. For Tanner crab, duration covers majority of mating and soft-shell period SSL area closures overlap Type II areas; may provide incidental protections. Proposed Alt. 2 closures overlap Barnabas area.
Type III (est. 1989) Outer Marmot Bay Barnabas Horse's Head Chirikof	Further facilitate rebuilding efforts if significant recruitment events occur in the future	Open unless closed Trigger-based closures increase probability of successful rebuilding, while otherwise maintaining groundfish fishing opportunities	Areas adjacent to Type I/II closures selected; identified as potential migratory pathways and rearing areas for juvenile King crab	Open to all fishing, unless triggered. NPT prohibited if triggered	RKC: Survey shows no RKC in Type III areas; no recorded RKC PSC in areas. Tanner: Survey data not analyzed for Type III areas; avg. PSC of ~2,000 crab/yr in Horse's Head, other areas not broken out.	Have never been triggered; benefits have not yet been afforded Outdated threshold & trigger: threshold based on historical abundance levels, trigger utilizes obsolete pot survey data SSL area closures overlap Type III areas; may provide incidental protections
Marmot Bay Tanner Crab Protection Area (est. 2014)	Reduce negative impacts of groundfish fishing on Tanner crab. NPT gear modification requirements implemented in conjunction, to further reduce GOA crab mortality	Year round Provides the most protection to Tanner crab, and aligns duration with adjacent Type I closure area (Marmot Flats)	Area selected based on historical distribution of mature Tanner crab, and high rate of Tanner crab fishing mortality in the area relative to other areas	NPT prohibited; Based on high rates of bycatch with NPT gear	RKC: Survey shows no RKC; and no recorded RKC PSC in area. Tanner: Area contains 1% of surveyed Kodiak Tanner abundance; PSC historically high but declines over time (0 crab in 2025)	Recent data shows area has lowest Tanner abundance of all existing Kodiak crab protection areas (& lowest average amount of legal males) SSL overlapping Kodiak-area closures may provide incidental protection

1 Introduction

This draft Environmental Assessment (EA)/Regulatory Impact Review (RIR) analyzes management measures under consideration by the North Pacific Fishery Management Council (Council) that would apply exclusively to Gulf of Alaska (GOA) groundfish fisheries in the Exclusive Economic Zone (EEZ). The measures under consideration include time and area closures around Kodiak Island to protect Tanner crab. Closures are considered for two different areas on the east side of Kodiak Island, for a range of gear types, and on either a seasonal or year-round basis. This analysis also evaluates the existing Federal closure areas around Kodiak Island to protect GOA crab, including the Marmot Bay Tanner Crab Protection Area and all Type I, II, and III closures, for modification or removal.

This document is a draft EA/RIR for Initial Review. A draft EA/RIR provides assessments of the environmental impacts of a proposed action and its reasonable alternatives, the economic benefits and costs of the alternatives, the distribution of impacts, and identification of the small entities that may be affected by the alternatives. This draft EA/RIR addresses the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA, 16 U.S.C. 1801, et seq.), the National Environmental Policy Act, Executive Order 12866, and the Regulatory Flexibility Act. A draft EA/RIR is a standard document produced by the Council and the NMFS Alaska Region to provide an analytical background for decision-making.

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the United States has exclusive fishery management authority over all marine fishery resources found within the EEZ. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the regional fishery management councils. In the Alaska Region, the Council has the responsibility for preparing Fishery Management Plans (FMPs) and FMP amendments for the marine fisheries that require conservation and management, and for submitting its recommendations to the Secretary. Upon approval by the Secretary, NMFS is responsible for carrying out the federal mandates of the Department of Commerce regarding marine and anadromous fish.

The proposed action under consideration would amend the GOA Groundfish FMP and associated regulations to modify either existing federal closures around Kodiak Island and/or to impose a new closure to the east side of Kodiak Island. Actions taken to amend FMPs or implement regulations governing these fisheries must meet the requirements of applicable federal laws, regulations, and Executive Orders.

1.1 Purpose and Need

In April 2025, the Council adopted the following Purpose and Need statement for this action:

Crab is a prohibited species in the Gulf of Alaska (GOA) groundfish fisheries, and the Council has developed several time and area closures to minimize the impacts of groundfish fisheries on GOA crab. In recent years, new information about Tanner crab biology and management resulted in modifications to the harvest strategy and management measures for the state-managed GOA directed Tanner crab fishery. The Council is considering a new groundfish fishing area closure on the east side of Kodiak Island in areas known to have consistently high densities and abundance of Tanner crab. The Council is also considering a process to evaluate the effectiveness of existing groundfish fishery area closures around Kodiak Island, most of which were enacted in the late 1980s, to determine whether modifications are needed. Given the importance of crab and groundfish fisheries to the harvesting, processing and support sectors in the community of Kodiak, the Council intends to consider management actions that conserve and protect Tanner crab while minimizing negative impacts on Central GOA groundfish fisheries.

1.2 History of this Action at the Council

The Council has considered protection measures for Kodiak District Tanner crab (*Chionoecetes bairdi*) on the Northeast and Eastside of Kodiak Island periodically since 2008, including Alaska Department of Fish and Game (ADF&G) groundfish statistical areas (statistical areas) 525702 and 525630 (see Figure 1-2). In 2008, the Council requested a discussion paper to explore Tanner crab protection measures, and in 2012, the Council took final action to establish the first Kodiak district Tanner crab closure area (Marmot Bay Tanner Crab Protection Area), as well as a requirement for the use of modified sweeps on nonpelagic trawl gear (Amendment 89, effective in February 2014 (79 FR 2794). In 2016, the Council initiated a discussion paper to summarize existing Tanner crab protection measures, and after review of fishing activities and observer coverage information, the Council decided not to take further action in 2018.

The most recent discussion paper was reviewed in April 2025 and resulted in the Council's motion to adopt a purpose and need statement and a suite of alternatives for this analysis.

Table 1-1 History of this action

Council meeting date	Discussion paper link and summary	Council Action
June 2023	Staff tasking testimony requesting a discussion paper to inform GOA Tanner crab protections	Staff tasking motion for discussion paper
February 2024	Discussion paper to inform potential Gulf of Alaska (GOA) Tanner crab protections per June 2023 request	Motion for expanded discussion paper
April 2025	Expanded discussion paper per Council motion in February 2024	Motion to initiate analysis

1.3 Description of Management Area

The GOA management area encompasses the U.S. Exclusive Economic Zone (EEZ) of the North Pacific Ocean, exclusive of the Bering Sea, between the eastern Aleutian Islands at 170° W longitude and Dixon Entrance at 132° 40' W longitude. The management area is divided into the Western, Central, and Eastern regulatory areas. This action pertains to the Central GOA regulatory area, consisting of Federal management reporting areas 620 and 630 in the Gulf of Alaska (Figure 1-1). The Central GOA can also be defined as the Gulf of Alaska waters around Kodiak Island ranging from 147° W longitude to 159° W longitude; from Prince William Sound to the Shumagin Islands.

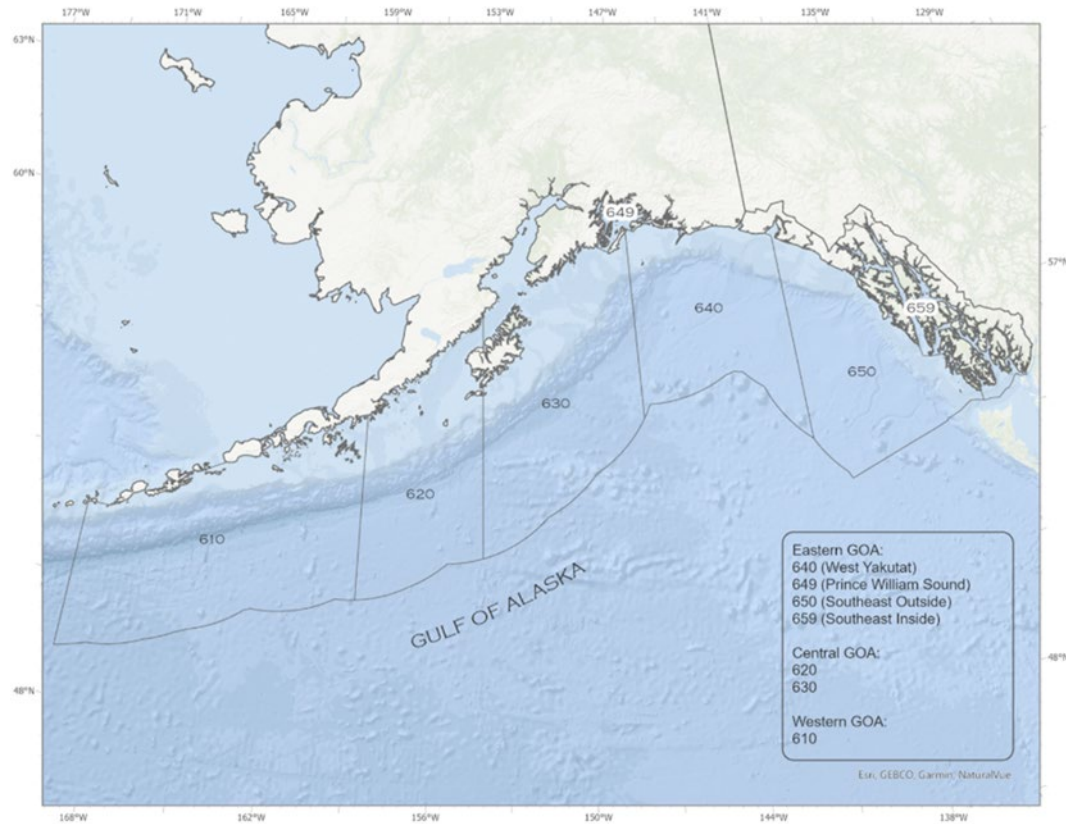


Figure 1-1 Regulatory and reporting areas in Federal waters off Alaska – Gulf of Alaska

Within the Central GOA Federal reporting areas, there are numerous smaller ADF&G statistical reporting areas (also referred to as statistical areas throughout the analysis). Figure 1-2 below shows the statistical areas in the section of the Central GOA immediately surrounding Kodiak Island, the ADF&G survey stations surrounding Kodiak Island (relevant to Section 5.3), the existing GOA crab protection areas (see Section 2.1.1 and Section 7), and the areas considered for closure under Alternative 2.

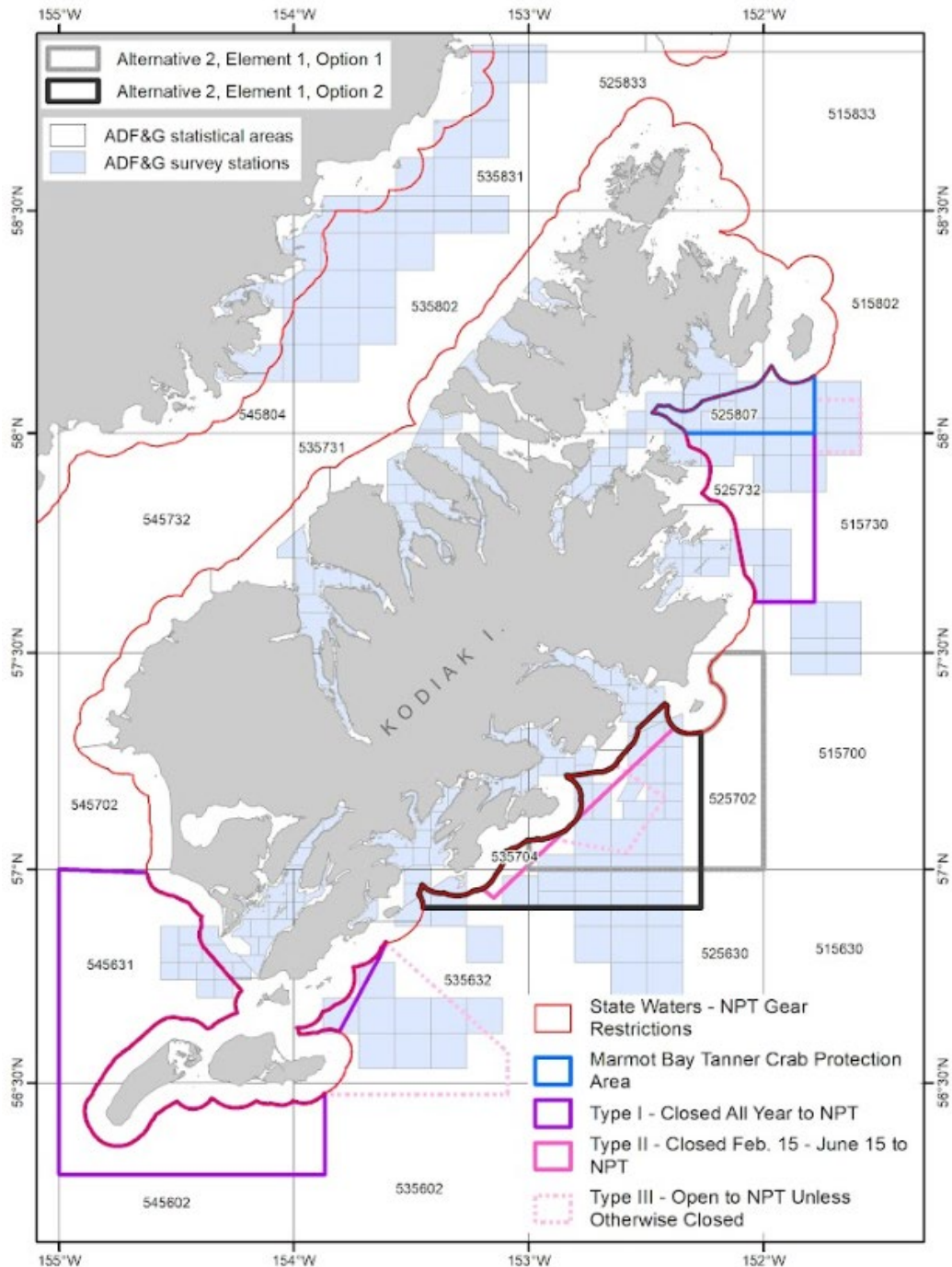


Figure 1-2 ADF&G groundfish/shellfish statistical reporting areas around Kodiak, Gulf of Alaska, federal crab closure areas, proposed closure areas (Alternative 2, Element 1), and ADF&G trawl survey footprint. Source: Spalinger, ADF&G 2026.

1.4 RIR and EA requirements

Regulatory Impact Review

The preparation of an RIR is required under Presidential Executive Order (E.O.) 12866 (58 FR 51735, October 4, 1993) as amended through E.O. 14094, April 6, 2023 (88 FR 21879). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following Statement from the E.O.:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

E.O. 12866, as amended by E.O. 14094 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be “significant.” A “significant regulatory action” is one that is likely to:

- Have an annual effect on the economy of \$200 million or more (adjusted every 3 years by the Administrator of OIRA for changes in gross domestic product); or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, territorial, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise legal or policy issues for which centralized review would meaningfully further the President’s priorities or the principles set forth in this Executive order, as specifically authorized in a timely manner by the Administrator of OIRA in each case.

Environmental Assessment

There are four required components for an environmental assessment. The need for the proposal is described in Section 1.1, and the alternatives in Chapter 2. The probable ecological impacts of the proposed action and alternatives are addressed in Chapter 5, and social and economic impacts in Chapter 4. A list of agencies and persons consulted is included in Chapter 9.

1.5 Documents Incorporated by Reference in this Analysis

This impact assessment relies heavily on the information and evaluation contained in previous environmental analyses, and these documents are incorporated by reference. The documents listed below contain information about the fishery management areas, fisheries, marine resources, ecosystem, social, and economic elements of the groundfish fisheries. They also include comprehensive analysis of the effects of the fisheries on the human environment and are referenced in the analysis of impacts throughout this document.

Alaska Groundfish Harvest Specifications Final Environmental Impact Statement (NMFS 2007).

This EIS provides decision makers and the public an evaluation of the environmental, social, and economic effects of alternative harvest strategies for the federally managed groundfish fisheries in the GOA and the Bering Sea and Aleutian Islands management areas and is referenced here for an understanding of the groundfish fishery. The EIS examines alternative harvest strategies that comply with Federal regulations, the Fishery Management Plan (FMP) for Groundfish of the GOA, the Fishery Management Plan (FMP) for Groundfish of the BSAI Management Area, and the Magnuson-Stevens Fishery Conservation and Management Act. These strategies are applied using the best available scientific information to derive the total allowable catch (TAC) estimates for the groundfish fisheries. The EIS evaluates the effects of different alternatives on target species, non-specified species, forage species, prohibited species, marine mammals, seabirds, essential fish habitat, ecosystem relationships, and economic aspects of the groundfish fisheries. This document is available from <https://alaskafisheries.noaa.gov/fisheries/groundfish-harvest-specs-eis>.

Stock Assessment and Fishery Evaluation (SAFE) Reports for the Groundfish Resources of the GOA (NPFMC 2025).

Annual SAFE reports review recent research and provide estimates of the biomass of each species and other biological parameters. The SAFE report includes the acceptable biological catch (ABC) specifications used by NMFS in the annual harvest specifications. The SAFE report also summarizes available information on the ecosystems and the economic condition of the groundfish fisheries off Alaska. This document is available from <http://www.afsc.noaa.gov/refm/stocks/assessments.htm>.

Stock Assessment and Fishery Evaluation (SAFE) Reports for the Crab Resources of the BSAI (NPFMC 2025).

Annual SAFE reports review recent research and provide estimates of the biomass of each species and other biological parameters. The SAFE report includes the acceptable biological catch (ABC) specifications used by NMFS in the annual harvest specifications. The SAFE report also summarizes available information on the ecosystems and the economic condition of the crab fisheries off Alaska. Appendix D of the EBS Tanner crab SAFE contains the Ecosystem and Socioeconomic Profile for that species. ESPs are also available for Bristol Bay red king crab and snow crab. The ESP is a useful reader reference for summary information on the relevant ecosystem conditions, stock dynamics, fishery participation, production, and market values. This document is available from <https://www.npfmc.org/library/safe-reports/>.

Final Environmental Assessment / Regulatory Impact Review / Initial Regulatory Flexibility Analysis for Amendment 26 to the Fishery Management Plan for Groundfish of the GOA: Establish the Crab Protection Time/Area Closures Around Kodiak Island (NMFS 1992)

This EA/RIR/IRFA analyzes the impacts of proposed amendments and alternatives, 1) extending the sunset date for the king crab protection zones near Kodiak Island, and 2) closing the Eastern Gulf of Alaska east of 140°W longitude to trawl gear. These proposed amendments were part of an annual solicitation cycle by the Council. The first action extended the sunset date for existing king crab protection zones to re-establish Type I, II, and III closures implemented through GOA FMP Amendments 15 and 18, consecutively. The second action was not adopted by the Council but was later implemented under GOA FMP Amendment 41 as the Southeast Alaska Trawl Closure. This document is available from: <https://repository.library.noaa.gov/view/noaa/33219>

Final Environmental Assessment / Regulatory Impact Review / Initial Regulatory Flexibility Analysis for Amendment 93 to the FMP for Groundfish of the GOA: Chinook Salmon PSC in the GOA pollock fishery (NMFS 2012)

This document is an Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis analyzing proposed management measures that would apply exclusively to the directed pollock fishery in the Western and Central GOA. The measures under consideration include setting PSC limits in the Central and Western GOA for Chinook salmon (*Oncorhynchus tshawytscha*), which would close the directed pollock fishery in those regulatory areas once attained; full retention of salmon species; and increased observer coverage on vessels under 60 feet length overall. The purpose of this action is to address PSC of Chinook salmon in the GOA, and establish measures that protect against the risk of high Chinook salmon removals in the GOA pollock trawl fisheries in future years. This document is available from: <https://repository.library.noaa.gov/view/noaa/22951>

Final Environmental Assessment / Regulatory Impact Review / Initial Regulatory Flexibility Analysis for Amendment 89 to the FMP for Groundfish of the Gulf of Alaska: Area Closures for Tanner crab (*Chionoecetes bairdi*) Protection in Gulf of Alaska groundfish fisheries (NMFS 2013).

This EA/RIR/IRFA analyzes the impacts of four alternatives to close specific areas of the Central Gulf of Alaska Regulatory Area (Central GOA, or CGOA) to the use of trawl gear and pot gear or as a suboption, in lieu of a closure to require additional observer coverage in these areas. Based on the Council's recommendation, NMFS determined that increased observer coverage in specific areas of the Central GOA would interfere with the goals and objectives of the restructured observer program and is not necessary. The intent to improve Tanner crab bycatch information is addressed in the restructured observer program, which was implemented in 2013. The Council's preferred alternative is to close a portion of Marmot Bay northeast of Kodiak Island to the use of trawl gear, except for the use of pelagic trawl gear to target pollock. The Council's preferred alternative for the Marmot Bay Protection Area trawl closure will be combined with the Council's preferred alternative requiring modified nonpelagic trawl gear to be used when targeting flatfish in Central Gulf of Alaska Regulatory Area to form a suite of management measures for the protection and conservation of Tanner crab and reduce the potential for adverse impacts by nonpelagic gear on benthic habitat. This document is available from: <https://repository.library.noaa.gov/view/noaa/6310>

Environmental Assessment / Regulatory Impact Review / Initial Regulatory Flexibility Analysis for Proposed Amendment 89 to the Fishery Management Plan for Groundfish of the Gulf of Alaska: Trawl Sweep Modification in the flatfish fishery in the Central Gulf of Alaska (NMFS 2013)

This action would require nonpelagic trawl vessels targeting flatfish in the Central Gulf of Alaska to use elevating devices on trawl sweeps to raise them off the seafloor. The purpose of this action is to reduce unobserved crab injury and mortality in the Central Gulf of Alaska from potential adverse effects of nonpelagic trawl gear for flatfish fishing. This action also modified existing regulations to increase the maximum length permissible for door and new bridles between the trawl sweeps from 180 feet to 185 feet in the Bering Sea. This modification is to accommodate the use of connecting devices, such as hammerlocks, attached to net and door bridles. This document is available from: <https://repository.library.noaa.gov/view/noaa/6309>

Endangered Species Act (ESA) Section 7(a)(2) Biological and Section 7(a)(4) Conference Opinion under the FMP for the Groundfish Fisheries of the Gulf of Alaska (NMFS 2024a)

This biological opinion considers the effects of the groundfish fisheries managed under the GOA FMP to listed and proposed species and critical habitat. Details regarding why the reinitiation is warranted and why NMFS elected to consult separately on the GOA and BSAI groundfish fisheries are described below in the background section. A forthcoming consultation will consider the effects of the groundfish fisheries

under the BSAI FMP to listed species and critical habitat. This document is available from:
<https://repository.library.noaa.gov/view/noaa/66786>

Final Programmatic Supplemental Environmental Impact Statement (PSEIS) on the Alaska Groundfish Fisheries (NMFS 2004).

The PSEIS evaluates the Alaska groundfish fisheries management program as a whole and includes analysis of alternative management strategies for the GOA and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries. The EIS is a comprehensive evaluation of the status of the environmental components and the effects of these components on target species, non-specified species, forage species, prohibited species, marine mammals, seabirds, essential fish habitat, ecosystem relationships, and economic aspects of the groundfish fisheries. A Supplemental Information Report (NPFMC and NMFS 2015) was prepared in 2015 which considers new information and affirms that new information does not indicate that there is now a significant impact from the groundfish fisheries where the 2004 PSEIS concluded that the impact was insignificant. The PSEIS document is available from <https://alaskafisheries.noaa.gov/node/33552>, and the Supplemental Information Report from <https://www.fisheries.noaa.gov/resource/document/alaska-groundfish-harvest-specifications-environmental-impact-statement-eis>.

2 Description of Alternatives

The proposed action under consideration would amend the GOA Groundfish FMP and associated regulations to modify either existing federal closures around Kodiak Island and/or to impose a new closure to the east side of Kodiak Island.

The Council adopted the following alternatives for analysis in April 2025. Alternatives 2 and 3 are not mutually exclusive.

Alternative 1: Status Quo

Alternative 2: Closure area

Objectives for closure area: minimize groundfish fishery interactions with Tanner crab in areas off the east side of Kodiak Island 1) where high densities of Tanner crab are known to occur and 2) during life stages in which available information indicates that Tanner crab are vulnerable to fishery interactions.

The Council intends to establish criteria and a timeline to review the effectiveness of the closure area.

Element 1: Closure Area

Option 1: ADF&G statistical area 525702

Option 2: East side of Kodiak Island - Federal waters north of 56 degrees 54.6 minutes latitude and 152 degrees 16 minutes longitude (see reference figure)

Element 2: Closure duration

Option 1: Year-round

Option 2: Seasonal

a) Feb 15 – June 15 (current Type II closure dates)

b) April 1 – June 15 (directed Tanner fishery closure date by regulation through Tanner crab survey start date)

Element 3: Gear types subject to closure

Option 1: Groundfish Pot & Trawl (nonpelagic and pelagic) gear

Option 2: Nonpelagic trawl gear

Alternative 3: Evaluate the existing Marmot Bay Tanner Crab Protection Area and all Type I, II and III closures around Kodiak Island for modification or removal

The Council intends to review the objective of each existing crab protection area around Kodiak Island and biological, fishery independent and dependent information available for the area and consider options for modifications or removal.

2.1 Alternative 1, No Action

Alternative 1 (also referenced in this document as the no action alternative, or the status quo alternative), would not impose any additional closures on the east side of Kodiak. No changes to current fishing practices or timing would occur. This alternative would also retain the existing Marmot Bay Tanner Crab Protection Area, and all Type I, II and III closures currently in place around Kodiak to protect crab species.

2.1.1 Description of Existing Closures to Protection GOA Crab

The Council has established several static fixed closure areas around Kodiak Island to protect GOA red king crab (*Paralithodes camtschaticus*) and Tanner crab (*Chionoecetes bairdi*) populations, including the Type I-III areas, and the Marmot Bay Tanner Crab Protection Area. Regulations governing these closures are located in 50 CFR part 679 (§ 679.22(b)).

Closure areas established for the protection of GOA red king crab populations are designated as Type I, II, or III areas. The Marmot Bay Tanner Crab Protection Area, located northeast of Kodiak Island, was implemented in 2014 specifically for the purpose of minimizing Tanner crab bycatch and to protect Tanner crab stocks from adverse effects of GOA groundfish fisheries. These areas are closed to fishing with trawl gear, except for directed fishing for pollock with pelagic trawl gear.

Descriptions of the Federal closure areas around Kodiak Island to protect GOA crab are summarized in Table 2-1 and within Figure 2-2. Additional information on these closure areas is included in Section 7, including information on the objectives of these closures (7.2) history and development (7.1), and related groundfish regulations (7.5) that stipulate the prohibited and allowed fishing activities in these areas.

Table 2-1 Types, gear prohibitions, and names of area closures providing direct (Tanner crab protection area) and indirect (Type I, II, and III) protections for Tanner crab in the Kodiak Island area.

Closure Area	Definition	Conservation Value
Marmot Bay Tanner Crab Protection Area <i>Prohibition:</i> Nonpelagic trawl gear <i>Duration:</i> Closed all year <i>Established:</i> 2014	Area of historical importance to Tanner crab stocks, with a high incidence of bycatch in the groundfish nonpelagic trawl fisheries.	Established to provide additional protection to GOA Tanner crab by reducing the incidental catch of Tanner crab in GOA groundfish fisheries, and reducing negative impacts of nonpelagic trawl gear on Tanner crab.
Type I Closure Areas Alitak Flats and Towers (879 nm ²) Marmot Flats Area (280 nm ²) <i>Prohibition:</i> Nonpelagic trawl gear <i>Duration:</i> Closed all year <i>Established:</i> 1987	King crab stock rebuilding areas, where highest concentration of female king crab historically occurred. Areas selected based on distributional data, collected from ADF&G pot surveys and from commercial fishing efforts in the 1960s.	Reduced incidental mortality of king crab resulting from interactions with nonpelagic trawl gear. Provide indirect protections for Tanner crab.
Type II Closure Areas Chirikof Island Area (528 nm ²) Barnabas Area (82 nm ²) <i>Prohibition:</i> Nonpelagic trawl gear <i>Duration:</i> February 15 – June 15 <i>Established:</i> 1987	Areas of seasonal importance, where king crab were historically found during the soft-shell season. Soft-shell season definition based on recommendations in 1986 joint ADF&G and NMFS report to the Council.	Established seasonal protections for king crab during vulnerable molting period and associated habitats. Provide indirect protections for Tanner crab.
Type III Closure Areas Outer Marmot Bay Barnabas Horse's Head Chirikof <i>Prohibition:</i> Nonpelagic trawl gear <i>Duration:</i> Open unless otherwise closed <i>Established:</i> 1989	Areas where juvenile crab would likely occupy should a significant recruitment event occur. Includes rearing areas and migratory pathways adjacent to existing Type I and II closure areas. Become operational following determination that a recruitment event has occurred. Areas can be designated as either Type I or II following this determination.	Can provide additional protections of up to 1,288 nm ² area across the four regions. To date, these closures have not been triggered due to a lack of recruitment.

Sources: [GOA Groundfish FMP](#), 50 CFR 679.22(b)(1), and the [North Pacific Conservation and Spatial Management Areas in Alaska's Exclusive Economic Zone](#): Area Summaries.

Figure 2-2 below shows the locations of the Type I-III areas and the Marmot Bay Tanner Crab Protection Area, as well as other closure areas around Kodiak Island applicable to groundfish fishery participants. The figure is not inclusive of all types of time and area closures, but does include the main restrictions to groundfish fisheries in this analysis. Many of these closures were instituted to reduce PSC of non-crab species, or reduce interactions with Steller sea lions, but may also provide incidental protections to king and Tanner crab.

Also shown in this map are the two areas considered for closure under Alternative 2. There is some overlap between these existing closures and the proposed area closures included in this analysis.

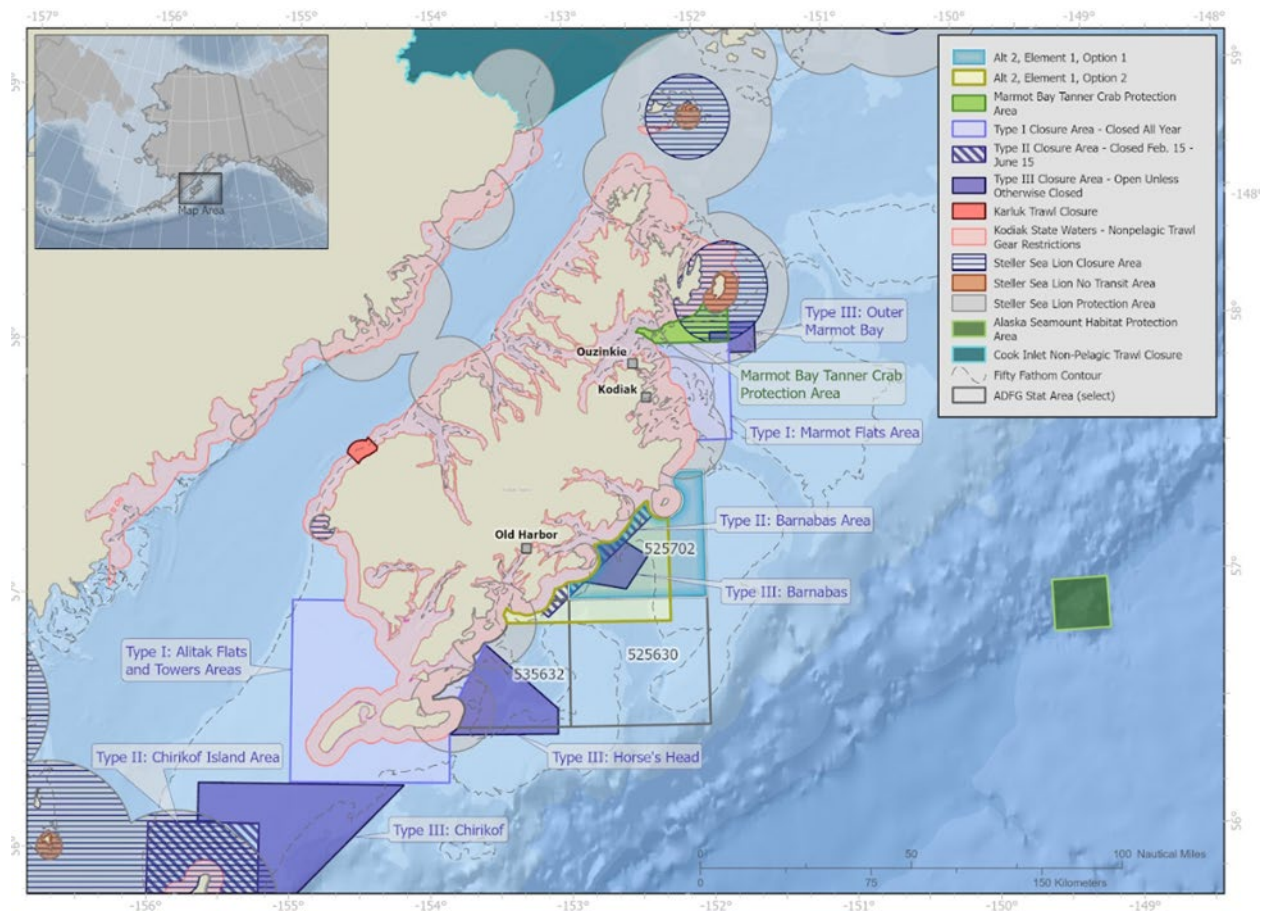


Figure 2-1 Summary map of existing closures to protect GOA crab, other State and Federal closures applicable to groundfish fishery participants, and areas considered for closure under Alternative 2. Source: PSMFC

2.2 Alternative 2: Tanner Crab Closure

Under Alternative 2, a new closure would be enacted on the east side of Kodiak Island to minimize interactions among the Federal groundfish fisheries and Tanner crab in the proposed areas. Specifically, the proposed closures include areas off the east side of Kodiak Island where high densities of Tanner crab are known to occur (see Element 1), during life stages in which available information indicates that Tanner crab are vulnerable to fishery interactions (see Element 2), and for specific gear types that Tanner crab are vulnerable to in the above time/area intersection (see Element 3). The Council intends to establish criteria and a timeline to review the effectiveness of the new closure area as part of this Alternative.

2.2.1 Element 1: Closure Area

Element 1 of Alternative 2 contains two mutually exclusive options for a closure area to protect Tanner crab (Figure 2-2): Option 1, ADF&G statistical area 525702, and Option 2, custom closure area.

Under Element 1, Option 1, ADF&G statistical area 525702 (~ 1,959 km²) would be closed to vessels targeting Federally managed groundfish species. The timing of the closure as well as the groundfish gear types that the closure would apply to are specified under Elements 2 and 3. The Council is considering a closure that would apply to statistical area 525702 in light of information in ADF&G's annual survey

indicating the Barnabas gully system within this statistical area is known to have a persistent presence of Tanner crab, and higher densities of adult Tanner crab every 5-6 years as recruitment pulses age to the fishery (cyclical recruitment. Statistical area 525702 also contains historically important fishing grounds for several groundfish fisheries (Section 3.1).

Under Element 1, Option 2, a custom closure on the east side of Kodiak Island would be designated and closed to groundfish fishing gears and timing as specified under Elements 2 and 3. The Council is considering this custom closure under Element 1, Option 2 in response to public comment submitted by the Kodiak Crab Alliance Cooperative (KCAC) in April 2025. KCAC, which represents the Kodiak District commercial Tanner crab fleet, developed two custom closure areas for the Council's consideration, noting that 'statistical charts do not accurately represent Tanner crab habitat.' The comment letter also highlighted that the custom areas are smaller than the statistical area closures considered.

The custom closure area developed by KCAC, and included in the Council's motion as Element 1, Option 2 comprises Federal waters north of 56° 54.6 minutes latitude and west of 152° 16 minutes longitude (~1,858 km²). As stated for the prior closure option, this closure area encompasses a portion of the Barnabas gully system where the ADF&G survey has shown a consistent Tanner crab population. The custom area overlaps portions of ADF&G statistical areas 525702, 525630, 535632, and all of 535704 (Figure 2-2).

The areas considered for closure under Element 1 are shown below, in Figure 2-2. ADF&G statistical area 525702 (Option 1) is outlined in blue, and the custom area under Option 2 is outlined in green.

This map also describes other existing time and area closures on the east side of Kodiak that overlap or lie adjacent the areas considered for closure. Protection areas have been established in the GOA for the western distinct population segment (DPS) of Steller sea lions (SSLs) and their prey. Federal SSL protection areas in the GOA (67 FR 34860, May 6, 2002; [50 CFR 679.22\(b\)\(2\)](#)) include restriction of all groundfish fishing with 3 nm of identified sites prohibitions on directed fishing for Pacific cod, Atka mackerel, and walleye pollock in specified areas to reduce prey competition (50 CFR 679.22(b)(2)(i)-(iv)). Additional information on SSL protection measures is available through the NOAA SSL webpage.²

Pertinent to this analysis, highlighted below are five SSL Protection Areas on the east side of Kodiak island, immediately adjacent to the proposed closures.³ These Protection Areas, as they relate to trawl gear, are detailed below, listed in order from SW to NE:

- Twoheaded Island: year-round closure to directed pollock and Pacific cod fishing with trawl gear from 0-10 nm
- Cape Barnabas: year-round closure to directed pollock and Pacific cod fishing with trawl gear from 0-3 nm
- Gull Point, seasonal closures that vary in size by fishery:
 - Jan 20 – May 31, 0-10 nm: no directed pollock fishing with trawl gear
 - Aug 25 – Nov 1, 0-3 nm: no directed pollock fishing with trawl gear
 - Jan 20 – June 10, 0-10 nm: no directed Pacific cod fishing with trawl gear
 - Sept 1 – Nov 1, 0-3 nm: no directed Pacific cod fishing with trawl gear
- Ugak Island, seasonal closures that vary in size by fishery:
 - Jan 20 – May 31, 0-10 nm: no directed pollock fishing with trawl gear
 - Aug 25 – Nov 1, 0-3 nm: no directed pollock fishing with trawl gear

² NOAA Fisheries Steller Sea Lion Protection Measures webpage: <https://www.fisheries.noaa.gov/alaska/commercial-fishing/steller-sea-lion-protection-measures>.

³ Three SSL protection areas overlap with the closure areas considered in Alternative 2 of this action. The Twoheaded Island SSL protection area overlaps with the southwestern corner of the custom closure area (Element 1, Option 2) for the duration of the year. The Gull Point & Ugak Island SSL protection areas overlap with both areas considered for closure (Element 1, Options 1 & 2) during A season.

- Jan 20 – June 10, 0-10 nm: no directed Pacific cod fishing with trawl gear
- Sept 1 – Nov 1, 0-3 nm: no directed Pacific cod fishing with trawl gear
- Cape Chiniak: year-round closure to directed pollock and Pacific cod fishing with trawl gear from 0-10 nm

State SSL protections were adopted to mirror Federal regulations, and may be imposed to restrict fishing by emergency order when parallel groundfish fisheries for Pacific cod, Atka mackerel, and walleye pollock are open, with protection requirements to match federal fishery management measures restrict approach and transit within 3 nm of a rookery ([5 AAC 28.087](#)).

Finally, the map also shows the ADF&G statistical areas that overlap with the custom closure: 525702, 525630, 535632, and 535704 (Figure 2-2).

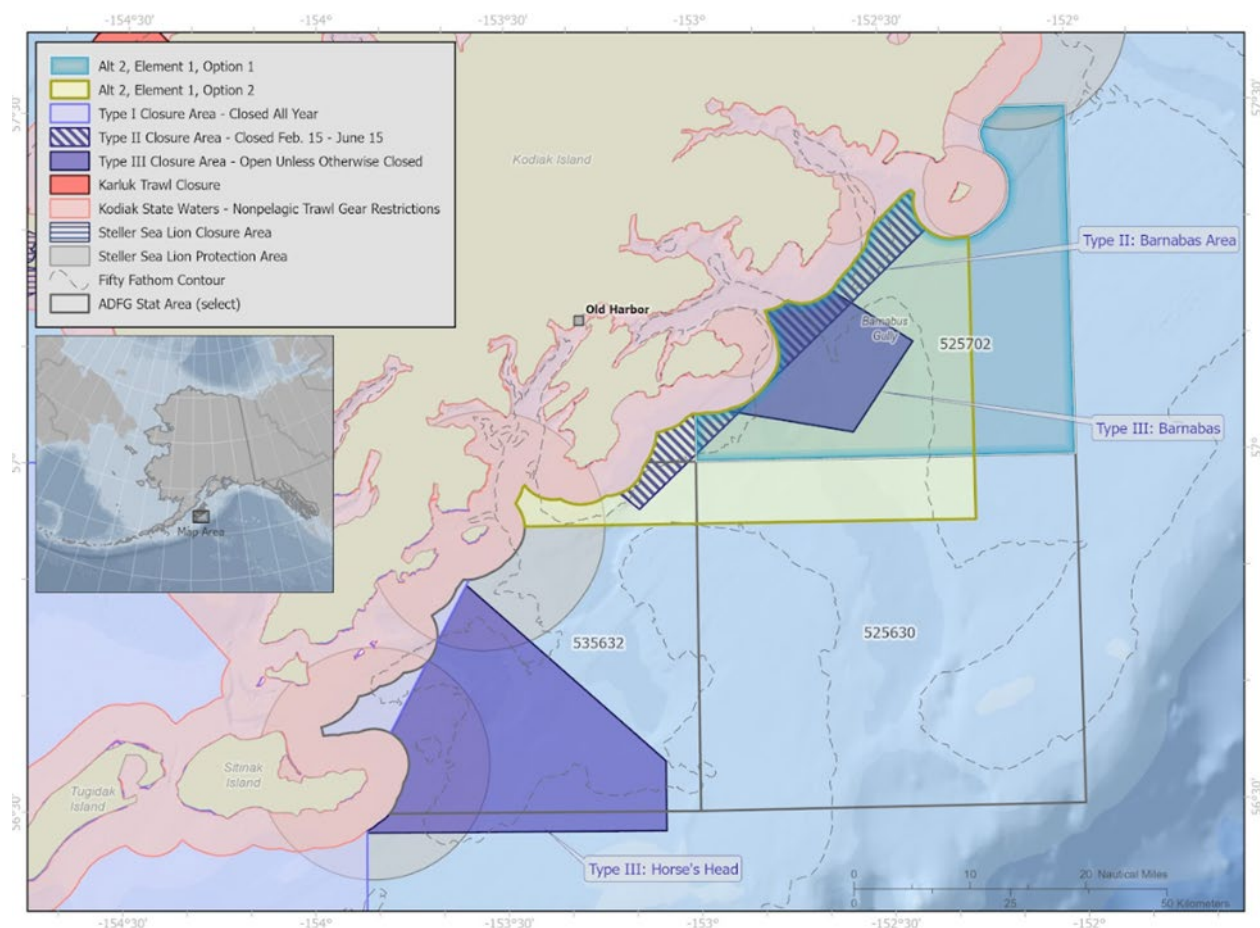


Figure 2-2 Time and area closures on the east side of Kodiak, including proposed closures (Alt. 2, Element 1, Options 1 & 2) and other adjacent closures in the region. Source: PSFMC.

The area of each relevant closure and statistical area (Figure 2-2) is as follows in Table 2-2. The overlap areas refer to how much of a given statistical area is within the custom closure. For instance, 100% of statistical area 535704 is within the custom closure, and 60.29% of 525702 is within the custom closure. The “area overlap” total is equivalent to the km² that the statistical area overlaps with the custom closure.

Table 2-2 Areas and percent overlap of identified areas, including proposed closures (Alt. 2, Element 1, Options 1 & 2), and adjacent statistical areas. Source: NOAA HCD/SF calculations from existing boundaries.

Reference Area	Area (km ²)	Area overlap (km ²) with custom closure (Alt. 2, Element 1, Option 2)	Percent overlap with custom closure (Alt. 2, Element 1, Option 2)
Alt. 2, Element 1, Option 1 (525702)	1,959	1,181	60.3%
525630	3,406	464	13.6%
535632	2,176	175	8.1%
535704	38	38	100%
Alt. 2, Element 1, Option 2 (custom closure)	1,859		

2.2.2 Element 2: Closure Duration

Element 2 contains two options for the duration of the closure. Option 1 of Element 2 would include a year-round closure whereas Option 2 would establish a seasonal closure. Option 2a would establish a seasonal closure from February 15 – June 15 each year, as compared to Option 2b which would establish a seasonal closure from April 1 – June 15 each year. The timing of Option 2a corresponds to the timing of the existing Type II closures to protect molting adult female red king crab (see Section 2.1.1). The timing of Option 2b corresponds to the timing of the directed Tanner fishery regulatory closure date (April 1) through the ADF&G Tanner crab survey start date (June 15).

2.2.3 Element 3: Gear Types Subject to Closure

Element 3 specifies the groundfish gear types that would be subject to the specified closure.

Option 1 would prohibit the use of groundfish pot, pelagic trawl, and nonpelagic trawl gear for groundfish harvest in the closure areas under consideration. Option 2 would prohibit the use of nonpelagic trawl gear inside the closure areas under consideration in Element 1. Option 2 would align the gear types prohibited from fishing in the closure areas under consideration in Alternative 2 with the gear type subject to existing Federal crab closures around Kodiak Island (see Section 2.1.1 and Table 2-1).

The sectors and vessels that use these gear types are described below. Each gear type is detailed in regulation under § 679.2 “Authorized fishing gear”. Additional detail on the fishing activity conducted in the CGOA, and within the areas considered for closure under Alternative 2, can be found in Section 3.1. Additional detail on the impact of these gears on Tanner crab is included in Section 5.3.1.5, and Section 5.3.4.

Groundfish Pot Gear

Pot gear is used to target both Pacific cod and sablefish in the Central GOA. Pot gear can be rigid or collapsible. Collapsible pots, also known as slinky pots, are lightweight and can be fished on both large and small vessels. The typical Pacific cod pot has tunnels on three sides with cod triggers that allow the passage and retention of Pacific cod. These tunnels with triggers are normally fixed via webbing to a set of web bars that are inset from the outside frame bars by approximately 2 inches. In the sablefish fishery, the use of pot gear has increased dramatically in the GOA since they became legal for use in 2017—between 2020 and 2024, three-quarters of the sablefish harvested in the Central GOA was harvested by pot gear (NPFMC 2025b). This has occurred as a result of both the regulatory changes and the development of slinky pots. The amount of catch in the sablefish IFQ fishery by pot type (rigid or slinky),

was collected for the first time in 2022; as of 2022, catch volumes from slinky pots comprised 67% of the total sablefish IFQ harvests in the CGOA.

In the groundfish pot fisheries, square or conical pots are usually set on single, neutrally buoyant groundlines, which reduce the likelihood of lost gear. Fishing gear is expensive to purchase and replace, so participants have an incentive to incur small additional costs to reduce the likelihood of gear conflicts, or increased chances of gear retrieval in the case of a hang-up. Fishermen may operate in proximity to one another over many fishing days and seasons, so avoidance of gear conflict between individuals has both a private and a social benefit.

Groundfish Trawl Gear

Groundfish trawl gear is used in the Central GOA pollock, Pacific cod, flatfish, and rockfish fisheries. The Central GOA trawl fleet consists of smaller catcher vessels (CVs), 58 to 99 ft length overall (LOA), as well as large catcher processors (CPs). All vessels in the CGOA trawl fleet are required to have a groundfish License Limitation Program (LLP) license with a fishing area endorsement for the Central GOA, and catcher vessel and trawl designations.

Two types of trawl gear are specified in the Council's motion for this action: pelagic and nonpelagic trawl gear. These gears are often referred to as PTR and NPT. The federal definitions for pelagic and nonpelagic trawl gear (within Authorized Fishing Gear, at § 679.2) are binary—any trawl gear that does not meet the requirements for pelagic trawl gear is defined as nonpelagic trawl gear.

Due to the design differences in how the gear operates (as described further below), pelagic trawl fishing is allowed in some areas closed to nonpelagic trawl gear—including the existing Federal crab protection areas around Kodiak Island. Section 7.1 provides an overview of these areas. Detail on the regulatory requirements that pelagic trawl vessels must adhere to when using pelagic trawl gear in areas/times where nonpelagic trawling is not allowed can be found within Section 7.5.

Information on groundfish pelagic and nonpelagic trawl gear is provided below, including physical descriptions, regulations, and the fisheries they are used in, is included below. Additional information can be found within the Pelagic Trawl Gear Definition RIR for Final Action, published in May 2025 (NPFMC 2025a).

Pelagic Trawl Gear

Pelagic trawl gear (often referred to as PTR) is used by vessels participating in the pollock fisheries in the CGOA as well as CGOA trawl rockfish fisheries (primarily Pacific ocean perch). In federal regulations, pelagic gear is defined within paragraph (14) of 'Authorized fishing gear' (at 50 CFR 679.2).⁴ In addition to the structural requirements in the definition, pelagic trawl gear has other operational requirements that must be met when it is used in certain fisheries and/or areas.⁵ Pelagic trawl gear used in BSAI or GOA directed pollock fisheries must meet a performance standard, at 50 CFR 679.7(a)(14). Pelagic trawl gear that is used within areas closed to nonpelagic trawling (which include the Type I-III closure areas, and Marmot Bay Tanner Crab Protection Area) must comply with gear limits at 50 CFR 679.24(b)(3). These

⁴ The Council took final action to update the definition of pelagic trawl gear in June 2025. The Council's action was a response to outdated regulations, which did not reflect modern pelagic trawl gear configurations developed in response to conservation and management objectives. The Council's preferred alternative would allow the continued use and innovation of salmon bycatch excluder devices, allow instrumentation necessary to monitor net performance, and remove unnecessary outdated text. More information on this topic can be found under agenda item C3c, at <https://meetings.npfmc.org/Meeting/Details/3087>.

⁵ The Council is in the process of receiving and reviewing updates on ongoing gear innovation research efforts, and will consider an evaluation of a performance standard, if appropriate. The Council first received information reviewing the performance standard within the [BBRKC Closure Area initial review analysis](#). A discussion paper on the topic was presented in [June 2025](#).

limits stipulate that, inside these areas, the footrope of a pelagic trawl may not be in contact with the seabed for more than 10 percent of the period of any tow.

Vessels in the GOA vary the configurations of their pelagic trawl gear within the regulatory requirements defined at paragraph (14) of the definition of authorized fishing gear in § 679.2 based on the species targeted and area they are fishing. Variations include vertical distance rise, horizontal opening size, front and intermediate mesh size, and door spread, among others (NPFMC 2012). Smaller vessels generally use smaller sized pelagic trawls (compared with CPs) when fishing for pollock that take less horsepower to tow. GOA pelagic trawls typically have a vertical net opening of 120 ft (36.6 m) and a horizontal opening of 240 ft (73.2 m) (wing-end spread of 360 ft (109.7 m)) for vessels with an average 1,000 horsepower. Front meshes of large pelagic trawls may be as large as 120 ft (36.6 m). Net mesh gets smaller towards the intermediate and codend, with the codend typically having 5 inch (12.7 cm) stretched mesh. Doors are made of steel and range in size from 9.8 ft² (3 m²) up to 22.9 ft² (7 m²). Door spread in most fishing depths and trawl warp/scope combinations is typically 328 ft (100 m) to 590 ft (180 m) (NPFMC 2012).

Nonpelagic Trawl Gear

Nonpelagic trawl gear (often referred to as NPT) is used to target flatfish, Pacific cod, and rockfish. Nonpelagic trawl gear includes all trawl gear that does not meet the definition of pelagic trawl gear, and is defined in federal regulation as “a trawl other than a pelagic trawl” (§ 679.2 “Authorized fishing gear”). Nonpelagic trawl gear contains characteristics not found in pelagic trawl gear such as discs, bobbins, or rollers to raise the footrope off the seabed, as well as flotation within codends. Mesh size is generally much smaller in the forward section of a nonpelagic trawl when compared to pelagic trawl gear. As described in 50 CFR 679.7(b)(9), vessels directed fishing for flatfish in the Central GOA Regulatory Areas must use modified nonpelagic trawl gear as specified at 50 CFR 679.24(f) to raise portions of the gear off the ocean bottom using sweeps. This regulation was intended to reduce unobserved crab mortality, and to reduce impacts to habitat. Regulations at § 679.24(f) include enforceable standards for modified nonpelagic trawl gear. The standards include a minimum clearance for the sweeps and a minimum and maximum distance between elevating devices. The standards also describe the measuring locations to determine compliance with the clearance requirement and cross section limitations for the line between elevating devices. Public testimony during prior iterations of this analysis described that, while only legally required to use modified sweeps while fishing flatfish, some GOA vessels use them for all nonpelagic hauls, including when targeting rockfish, cod, and sablefish.

2.3 Alternative 3: Evaluate Existing GOA Crab Closures

Under Alternative 3, the Council is considering a process to evaluate the effectiveness of existing Federal crab protection closures around Kodiak Island, most of which were enacted in the late 1980s. This includes the Type I, II, and III closure areas, and the Marmot Bay Tanner Crab Protection Area. The Council intends to consider options for modification or removal of the existing Federal crab protection closures around Kodiak Island after an evaluation has been completed.

Alternative 3 would not lead to rulemaking or an amendment to the GOA FMP in its current form, because the Council has not identified specific elements of existing Federal crab protection closures that it wishes to modify or remove. The evaluation under Alternative 3 will, however, facilitate the identification of elements of the existing closure frameworks that the Council may wish to modify or remove.

In its current form, a quantitative impact analysis is not possible under Alternative 3. This type of analysis would be completed after the Council identifies the elements and options of the existing closure areas it may wish to modify or remove. As a result, Alternative 3 was not included in the EA/RIR analysis at this time and instead requested information for this alternative is located in Section 7 of the document. It is the intent to include Alternative 3 in the EA/RIR once the Council has identified elements and options for modifications or removals of these closure areas.

3 Description of Fisheries

The proposed action would potentially regulate vessels participating in the trawl and pot groundfish fisheries in reporting area 630 (Kodiak district) of the Central GOA (CGOA) regulatory area. Information is provided below on groundfish activity by gear type & by fishery, to provide context on the groundfish participation and activity occurring within the proposed area closures. Also included are descriptions of the Kodiak Tanner crab fisheries and the Kodiak processing sector, which provide additional context to the entities that may be indirectly impacted by this action.

Fisheries in this region are complex as there are a multitude of combinations of gear types, vessel types, and targets prosecuted in one year. The vast majority of groundfish fisheries in the GOA are not rationalized, and vessel owners and operators often rely on a diverse portfolio of different species and fisheries throughout the year to sustain their business. Vessel owners in the CGOA often have participate in multiple license limitation programs (LLPs) and have fishing licenses multiple endorsements, including for groundfish trawl (nonpelagic and pelagic) and/or groundfish pot fisheries in the CGOA, and may also participate in the Kodiak Tanner commercial fishery.

Detail on vessel crossover between these fisheries is described in Section 4.3, and within Table 4-1 and Table 4-2, and additional information on crossover between fleets by license program is included in the 2012 Fishing Fleet Profiles publication (NPFMC, 2012).

3.1 Affected Groundfish Fisheries

This section analyzes groundfish fisheries, by gear type and management program, that are conducted within area 525702 and the custom closure area. Data and information is only provided for groundfish pot and trawl fisheries; fishing activity from other gear types is not included since these gear types would not be directly regulated by the proposed action.

Vessel counts broken out by gear type provided within Section 3.1 and Section 3.4, are not additive. CGOA vessels often participate in multiple target fisheries over the course of the year. Many CGOA groundfish pot & trawl vessels utilize more than one of these three gears in a given year, with the majority of crossover occurring within vessels utilizing trawl gear. The majority of CGOA trawl vessels participate in target fisheries using both nonpelagic and pelagic trawl gear over the course of the year, though some only use pelagic trawl gear.

Groundfish pot and trawl gear are used in a wide array of target fisheries in the CGOA, and are used by vessels fishing under multiple management programs. Within the proposed area closures, vessels participate in a variety of fisheries, including pollock, Arrowtooth flounder, shallow-water flatfish, Pacific cod, and rockfish, among others. The groundfish species targeted in the custom closure area and ADF&G statistical area 525702 are described in Table 3-1, sorted by the volume of catch in each target fishery that is harvested from the areas of interest. Gears used in each target fishery are also included in the table below. NPT gear was used in the areas throughout the year and was used in all target fisheries shown below. PTR gear was used in February and between April and October, in the pollock, sablefish, and rockfish target fisheries. Groundfish pot gear was used intermittently over the year; in January/February, April/May, and September/November.

Target fishery activity in the areas occurs throughout the year, with the bulk of harvest volumes coming from the pollock and arrowtooth flounder fisheries. Activity in the pollock and Pacific cod fisheries largely corresponds with seasonal fishery opening/closing dates, when TAC allocations are made seasonally available. Meanwhile, flatfish fishery activity is less dictated by regulatory opening/closing dates, as these fisheries are open nearly year-round. Flatfish are often referred to as a ‘gap filler’ species, since harvesters strategically time target fishing for these species outside of peak seasons for other, high-value fisheries.

In the Council's motion, Element 2 considers closure durations that span either annually, or for a dedicated period of the year. These seasonal time closure windows are highlighted in light blue (seasonal time closure A), and dark blue (seasonal time closure B) below. Nearly all target fisheries conducted in the areas considered for closure have activity occurring within seasonal time closure A and B. However, Pacific cod fishery activity in the areas only overlaps with the seasonal time closure windows in February (in the Pacific cod pot sector). The bulk of Pacific cod fishery activity in the areas of interest is conducted in January/early February, and in October.

Table 3-1 Target Fisheries Occurring in Custom Closure Area & Statistical Area 525702, by Month, 2021 – 2025

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pollock (NPT & PTR)		X	X	X	X				X	X		
Arrowtooth Flounder (NPT)	X	X		X	X	X		X	X	X	X	
Shallow Water Flatfish (NPT)				X	X	X	X	X	X	X	X	
Pacific Cod (NPT & POT)	X	X							X	X	X	
Sablefish (POT)				X	X	X	X	X	X	X	X	
Rockfish (NPT & PTR)				X	X	X	X	X	X	X	X	
Flathead Sole (NPT)												X
Rex Sole (NPT)					X							

Note: The seasonal time closure windows considered by the Council are shown in blue. The February 15-June 15 seasonal time closure option (Element 2, Option 2a) is shown in light blue; the period overlapping with the April 1-June 15 seasonal time closure option (Element 2, Option 2b) is shown in dark blue.

Information on catch volume, ex-vessel and wholesale value of catch, and vessel counts are provided below by gear type, then by management program, and finally by target fishery. For several key target species, targeted fishing occurs across several management programs and/or gear types. For example, the pollock fishery in the CGOA is an open access fishery, but vessels in the Rockfish Program (RP) also target the species. Pollock is typically targeted using pelagic trawl gear, with PTR accounting for ~90% of annual directed pollock fishery harvests in the CGOA, however NPT gear is also used to target this species. Vessels participating in different or multiple management programs, or using different gear types, to participate in directed fishing for a target species often have different harvest patterns.

3.1.1 Method for Custom Closure Catch, Value, and PSC Apportionment

The closure area considered under Alternative 2, Element 1, Option 1 encompasses the entirety of statistical area 525702 and no other statistical areas. The custom closure area considered under Alternative 2, Element 1, Option 2 overlaps four ADF&G statistical areas: 525702, 525630, 535622, and 535704. These areas are referred to within the analysis as the “statistical areas of interest”. As described in Table 2-2, the custom area encompasses 100% of statistical area 535704, and only portions of the other statistical areas. The custom area includes 60% of the total area contained within 525702, 13.6% of the area within 525630, and 8.1% of the area within 535632.

As the custom closure area encompasses only portions of 525702, 525630, and 535632, sums of all fishing activity occurring within these four statistical areas (i.e., catch volume totals, PSC, value of catch, etc.) would overestimate the groundfish harvest that has historically occurred within the custom closure being considered, because fishing activity occurs in the portions of area 525702, 525630, and 535632 that are not contained within the custom closure boundaries.

Fishing activity is reported by regulatory area boundaries, such as statistical areas, that do not align with custom closure boundaries, and therefore it can be difficult to apportion catch and other metrics at a higher spatial and temporal resolution. The Catch-in-Areas (CIA) database may offer a higher resolution method but was not available at the time of this analysis (see Section 5.1.1.2).

Analysts created an approach, reported as the “custom area”, to estimate groundfish harvests and activity occurring within the actual boundaries of the custom closure. These “custom area” estimates are based on observer data, which more accurately reflect the specific location of groundfish activity occurring within the boundaries of the custom closure area. However, not all trips/hauls/sets are observed, and observer coverage rates vary by fishery and year, therefore the entire period of analysis (2012-2024) was used to inform the apportionment strategy.

Observer data were used to estimate the proportion of catch occurring within the proposed custom closure. Observer data included here in this method are the *vessel tracks* which are lines drawn between the specific start and end locations of fishing, as well as the associated catch for that tow/haul/set. Catch for a specific tow/haul/set was assumed to be evenly distributed across the vessel track.

First, vessel tracks were determined to either be inside the custom closure boundary, outside the custom closure boundary, or partially inside. Rather than assigning hauls or sets entirely inside or outside the closure, vessel tracks associated with each observed haul (for vessels using either PTR or NPT gear) or set (for vessels using pot gear) were spatially intersected, or overlaid, with the closure boundary. For each haul or set, the proportion of fishing activity occurring within the closure was estimated based on the fraction of the vessel track located inside the closure. This proportion was then applied to the observed catch to estimate the amount of catch occurring within each statistical area intersecting the closure.

At the haul level, for partial vessel tracks:

$$\frac{\% \text{ of vessel track length inside custom boundary} \times \text{total observed catch for that haul}}{\text{portion of catch for that haul inside the custom boundary}}$$

Second, the catch estimated to have occurred within the custom closure’s boundary was summed across all observed hauls or sets for all years (“Observed Catch Within Custom Closure”, Column 4) and divided by total observed catch (“Observed Catch”, Column 3) to estimate the proportion of catch occurring within the closure for each statistical area, by gear type (Column 5, Table 3-2). For example, the observed catch within the custom closure for NPT in statistical area 525630 was 5,099 mt. This was divided by the total observed catch, 24,283 mt, to derive a proportion of 21%.

To translate haul-level catch to “Observed Catch Within Custom Closure”:

$$\sum (\text{Sum}) \text{ of catch for all hauls fully in custom boundary} + \sum (\text{Sum}) \text{ of all catch for hauls partially in custom boundary}$$

To estimate proportion of catch occurring within the closure for each stat area, by gear:

$$\text{Observed Catch Within Custom Closure} / \text{Observed Catch} = \% \text{ catch for stat area, gear type combo}$$

Third, these observer-derived, gear-specific statistical area proportions were then applied to total catch and value from catch accounting data to estimate the amount of catch and associated value occurring within the proposed closure. For example, the total catch (observed and unobserved) was 54,656 mt for NPT fishing in statistical area 525630. When the proportion of 21% is applied to this total catch in 525630, the estimated total catch in the custom closure area from statistical area 525630 is 11,478 mt. The proportions differ by gear type and statistical area (525630, 525702, 535632, and 535704). When all the proportions are applied to the total catch for each statistical area and then summed, the custom closure area total for that gear type can be estimated.

For total custom closure catch, in a specific year, for a specific gear type:

$$(525630 \text{ proportion } (\%) \times 525630 \text{ total catch}) + (525702 \text{ proportion } (\%) \times 525702 \text{ total catch}) + (535632 \text{ proportion } (\%) \times 535632 \text{ total catch}) + (535704 \text{ proportion } (\%) \times 535704 \text{ total catch})$$

This approach leverages the spatial resolution of vessel tracks to proportionally apportion catch across closure boundaries, applying a proportion to actual total catch numbers. The same approach was used to calculate **catch, value, and PSC occurring within the custom closure boundaries throughout the analyses**—including tables within Section 3.1, and Section 5. For example, the 2024 NPT Tanner crab PSC estimates for the custom area (number of crab, shown in Table 5-25) are calculated using the sum of the estimates derived in **step three** of the process described above by: adding 21% of the Tanner crab PSC occurring within 525630 (21% of 5,842, or 1,227 crab), plus 89% of the PSC occurring within 525702 (89% of 10,869, or 9,673 crab), plus 5% of the PSC occurring within 535632 (5% of 5,934, or 297 crab), and 78% of the catch occurring within 535704 (100% of 0, or 0 crab), to get an estimated NPT Tanner crab PSC total of 11,197 crab occurring within the custom area.

This method assumes that (1) vessel tracks accurately represent the spatial distribution of fishing effort within each haul or set, and (2) observer coverage is representative of fleet-wide fishing patterns within each statistical area. Statistical area 535704 had limited observer coverage, but also minimal fishing effort; as a result, any uncertainty in the estimated proportion for this area is not expected to meaningfully affect overall results. As previously mentioned, observer coverage rates vary by fishery and year, with particularly low observer coverage rates for groundfish pot gear. This may increase the uncertainty associated with estimates of catch from groundfish pot gear in the custom closure; however, the method outlined above aggregates data from the entire time period to ensure the spatial distribution is more representative. Aggregating across years provides a more stable characterization of future fishing activity but does not account for annual variability in fishing behavior, species distribution, and environmental conditions that may occur from year to year. As the custom closure catch is only an estimate based on observer data, caution should be taken when interpreting the data and when comparing the data to the other proposed closure area, statistical area 525702 (Alt. 2, Element 1, Option 1) or other statistical areas.

Table 3-2 Identified statistical areas observed catch by gear and percent used for custom closure estimation (Alt. 2, Element 1, Option 2), cumulative 2012-2024 catch

Gear	Statistical Area	Observed Catch	Observed Catch Within Custom Closure	Percentage of Observed Catch within Custom Closure*	Total Catch (Observed plus Unobserved)	Total Catch by Stat Area Occurring Within Custom Closure (est.)
NPT	525630	24,283	5,099	21%	54,656	11,478
	525702	43,420	38,644	89%	76,972	68,505
	535632	5,589	279	5%	12,670	634
	535704	9	9	100%	70	70
	Custom Closure, est.		44,032			80,686
POT	525630	716	107	15%	4,855	728
	525702	1,203	722	60%	5,954	3,572
	535632	216	2	1%	1,654	17
	535704	12	9	78%	387	302
	Custom Closure, est.		841			4,619
PTR	525630	13,381	7,627	57%	56,231	32,052
	525702	23,731	23,256	98%	126,019	123,499
	535632	2,935	646	22%	13,972	3,074
	535704	0	NA	NA	334	NA
	Custom Closure, est.		31,529			158,624
Total	Custom Closure est. (NPT+POT+PTR)		76,402			243,930

*Percentages of observed catch within custom closure, by gear and ADF&G statistical area, were used to calculate catch, value, and PSC occurring within the custom closure boundaries throughout the analyses—including tables within Section 3.1, and Section 5. Additional information on observer coverage rates is included in the 2026 Final Annual Deployment Plan, at https://www.fisheries.noaa.gov/s3/2026-01/Final_2026_ADP_akro.pdf

3.1.2 Groundfish Pot Gear

Pot gear is used to target both Pacific cod and sablefish in the CGOA (as shown in Table 3-6). Of the groundfish pot catch in the proposed closure areas, nearly all groundfish pot fishing activity occurs in the Pacific cod target fishery—very little sablefish activity occurs in the proposed areas. Therefore, this section focuses primarily on Pacific cod pot fishing activities.

3.1.2.1 Catch, Value, and Vessel Counts

Table 3-3 below provides an annual overview of groundfish pot fishing activity in the areas of interest, including catch volume & proportion, ex-vessel revenue, and vessel counts. Table 3-4 compares the annual groundfish pot catch activity, and activity occurring only within the seasonal time closure windows defined in Element 2 of Alternative 2.

As shown in Table 3-3, average annual catch volumes from area 525702 and the custom area accounted for 3.2% and 2.5% of total CGOA groundfish pot harvests, respectively. In terms of value, an average of \$0.4 million in ex-vessel value was derived annually from 525702 groundfish pot catch volumes, and \$0.3 million was derived from the custom closure area. Less than 5% of all vessels using groundfish pot gear in the CGOA annually were active in area 525702 (0-4 groundfish pot vessels, out of 39-117 total in the CGOA),

The areas considered for closure yielded a higher volume of catch, and a higher proportion of total CGOA groundfish harvests, prior to the Pacific cod stock collapse (occurring after the marine heatwave of 2015

and 2016).⁶ The maximum catch volumes in the time series occurred in 2015. In that year, 1,364 mt of groundfish were harvested in area 525702 using groundfish pot gear, which comprised 5.8% of total CGOA groundfish pot catch volumes. Very little groundfish pot fishing activity has occurred in the areas considered for closure within the last decade.

As shown in Table 3-4, very little groundfish pot activity occurs in the areas considered for closure during either seasonal time window. Groundfish pot harvest volumes landed between 2/15 and 6/15 comprise less than 5% of annual total pot harvests from area 525702 and the custom area. Comparatively, across the entire CGOA catch landed between 2/15 and 6/15 comprise nearly half of all annual groundfish pot harvests. This is driven by activity in the sablefish fishery, which typically occurs between March and December. However, the fishery is largely conducted outside the areas considered for closure—therefore seasonality in harvest volumes in the areas considered for closure is driven by seasonal activity in the Pacific cod pot fishery.

The Pacific cod pot fishery, which comprises the majority of groundfish pot harvests from the areas considered for closure (as described in Section 3.1.2.2 below), occurs largely outside the seasonal time closure windows. Pacific cod pot A season is often closed via inseason management action prior to the 6/10 regulatory closure date. The fishery season closed prior to 2/15 in 8 of the last 15 years—therefore, all fishing activity would have occurred entirely outside the seasonal time closure windows considered in this analysis in those years.

⁶ See the 2026 GOA Pacific Cod SAFE report for additional information—available at <https://files.npfmc.org/SAFE/2025/GOApcod.pdf>

Table 3-3 Annual CGOA Groundfish Pot Catch Volume & Value with Identified Statistical Areas, 2012-2025

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg.
Groundfish Pot Catch Volume, mt															
Total CGOA	23,035	15,658	21,493	23,442	20,789	11,937	3,750	4,443	3,587	9,592	12,762	9,508	11,571	13,214	13,199
525702	1,344	896	997	1,364	589	370	-	-	-	*	*	*	107	81	425
% of CGOA	5.8%	5.7%	4.6%	5.8%	2.8%	3.1%	-	-	-	*	*	*	0.9%	0.6%	3.2%
Custom Area	1,227	780	718	879	423	250	-	-	1	107	30	70	85	49	330
% of CGOA	5.3%	5.0%	3.3%	3.8%	2.0%	2.1%	-	-	<0.1%	1.1%	0.2%	0.7%	0.7%	0.4%	2.5%
Groundfish Pot Ex-vessel Value, millions of 2024 dollars															
Total CGOA	37.4	37.6	44.6	42.2	25.6	31.4	42.1	34.9	28.1	26.0	43.4	33.1	20.8	31.2	34.2
525702	1.5	0.7	1.0	1.3	0.5	0.4	-	-	-	*	*	*	0.1	0.1	0.4
Custom Area	1.3	0.6	0.7	0.8	0.4	0.3	-	-	<0.1	0.1	<0.1	0.2	0.1	0.1	0.3
Groundfish Pot Wholesale Value, millions of 2024 dollars															
Total CGOA	45.5	31.1	41.9	39.7	38.4	28.4	14.4	19.8	20.4	47.1	65.7	36.0	40.3	NA	36.1
525702	2.7	1.8	1.9	2.3	1.1	0.7	-	-	-	*	*	*	0.2	NA	0.9
Custom Area	2.4	1.6	1.4	1.5	0.8	0.5	-	-	0.0	0.3	0.1	0.3	0.2	NA	0.7
Groundfish Pot CV Counts															
Total CGOA	82	76	57	66	74	78	39	51	85	117	123	111	97	114	83.6
525702	11	9	6	7	9	4	0	0	0	2	2	2	3	3	4.1
% of CGOA	13%	12%	11%	11%	12%	5%	0%	0%	0%	2%	2%	2%	3%	3%	5%

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

Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-4 Groundfish Pot Catch Volume and Vessels, by Seasonal Time Closure Option and Area, 2012-2025

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg.
Seasonal Time Closure Option A (2/15 to 6/15)															
Groundfish Pot Catch Volume, mt															
Total CGOA	9,458	8,084	8,995	9,858	8,934	5,769	1,679	1,329	1,754	4,264	6,259	5,256	4,785	6,208	5,902
525702	-	-	-	-	-	170	-	-	-	-	*	*	-	-	20
% of CGOA	-	-	-	-	-	2.9%	-	-	-	-	*	*	-	-	0.3%
Custom Area	-	-	-	-	-	103	-	-	*	*	7	63	*	-	13
% of CGOA	-	-	-	-	-	1.8%	-	-	*	*	0.1%	1.2%	*	-	-
Groundfish Pot Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	10.2	6.4	8.0	8.7	7.9	7.3	4.0	4.6	5.3	16.9	22.1	13.9	11.4	21.2	10.6
525702	-	-	-	-	-	0.2	-	-	-	-	*	*	-	-	<0.1
Custom Area	-	-	-	-	-	0.1	-	-	*	*	<0.1	0.1	*	-	<0.1
Groundfish Pot Wholesale Value, millions of 2024 dollars															
Total CGOA	18.6	16.0	17.5	16.7	16.5	12.4	6.3	7.0	8.8	22.5	31.7	20.2	18.2	NA	16.4
525702	-	-	-	-	-	0.3	-	-	-	-	*	*	-	NA	0.1
Custom Area	-	-	-	-	-	0.2	-	-	*	*	<0.1	0.2	*	NA	<0.1
Groundfish Pot Vessel Counts															
Total CGOA	77	64	50	59	61	64	28	25	39	74	86	82	68	83	61.4
525702	0	0	0	0	0	3	0	0	0	0	1	2	0	0	0.4
Seasonal Time Closure Option B (4/1 to 6/15)															
Groundfish Pot Catch Volume, mt															
Total CGOA	-	152	226	134	1,085	1,381	251	504	835	2,672	3,150	2,544	2,613	2,940	1,320
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	-	*
% of CGOA	-	-	-	-	-	*	-	-	-	-	-	*	-	-	*
Custom Area	-	-	-	-	-	*	-	-	*	*	1	34	*	-	7
% of CGOA	-	-	-	-	-	*	-	-	*	*	0.0%	1.3%	*	-	0.5%
Groundfish Pot Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	-	0.1	0.2	0.1	0.9	2.7	2.1	3.2	4.1	14.7	16.9	10.8	9.5	16.4	5.8
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	-	*
Custom Area	-	-	-	-	-	*	-	-	*	*	<0.1	0.1	*	-	<0.1
Groundfish Pot Wholesale Value, millions of 2024 dollars															
Total CGOA	-	0.3	0.4	0.2	2.0	3.9	2.4	4.3	5.4	17.9	21.0	12.5	13.1	NA	6.4
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	NA	*
Custom Area	-	-	-	-	-	*	-	-	*	*	<0.1	0.2	*	NA	<0.1
Groundfish Pot Vessel Counts															
Total CGOA	0	17	7	8	12	42	7	13	25	61	65	58	46	54	29.6
525702	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0.2

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

Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-5 summarizes how much individual vessels depend on 525702 pot fishing as a share of their total annual revenue. Most vessels derive a small portion of their income from this fishery, with the largest number falling in the 1–10% category, followed by those earning less than 1%. Only a few vessels reach moderate dependence levels (10–30%), and very few exceed 30%, with almost none above 50%.

Table 3-5 Statistical Area 525702 Pot Gear Revenue as a Percent of Total Revenue for Vessels Active, 2012-2024 (Number of Vessels)

525702 Pot Rev as a % of Total	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annual Average 2012-2024
<1%	2	4	0	1	3	1	0	0	0	0	0	0	1	0.9
1-10%	5	2	2	3	4	3	0	0	0	2	2	1	1	1.9
10-20%	1	2	2	1	2	0	0	0	0	0	0	0	1	0.7
20-30%	1	0	1	1	0	0	0	0	0	0	0	1	0	0.3
30-40%	1	0	1	0	0	1	0	0	0	0	0	0	0	0.2
40-50%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
50-60%	1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
60-70%	0	1	0	0	0	0	0	0	0	0	0	0	0	0.1
70-80%	0	0	0	1	0	0	0	0	0	0	0	0	0	0.1
80-90%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
90-100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Grand Total	11	9	6	7	9	5	0	0	0	2	2	2	3	4.3

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

3.1.2.2 Target Fisheries

Within the areas considered for closure, groundfish pot catch volumes peaked in 2012 (16.8% of total CGOA groundfish pot catch), before gradually declining to 0 mt by 2018. Groundfish pot harvest resumed in these areas in 2021, ranging between annual totals of 54 mt (2022) and 218 mt (2024) in the most recent five years of data (between 0.4% and 2.0% of total CGOA groundfish pot catch volumes).

As shown in Table 3-6 below, nearly all of the groundfish pot fishing activity in the proposed area closures occurs in the Pacific cod target fishery. Prior to the Pacific cod stock collapse, Pacific cod pot harvests from area 525702 comprised ~5% of total Pacific cod pot harvest volumes in the CGOA. The custom closure yielded ~4%. In more recent years, the proportion of groundfish pot harvest volumes, by target species, is still heavily skewed towards Pacific cod: between 2017 and 2025, Pacific cod comprised 90% of the groundfish volumes harvested from these areas with pot gear. This is driven by historic utilization of the areas, though activity has declined after the Pacific cod stock collapse. Variation and historical trends in the value of the groundfish pot catch from the areas considered for closure are driven by the variation in Pacific cod harvests.

Table 3-6 Central Gulf Groundfish Pot Catch, Ex-Vessel Value, and Wholesale Value, by Area and Fishery, 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Groundfish Pot Catch (mt)															
IFQ (Sablefish)						445	572	1,134	2,567	5,201	5,920	4,627	5,377	5,865	3,523
525702						-	-	-	-	*	-	*	-	3	9
Custom Area*						-	-	-	1	7	1	41	4	2	6
OA(Pacific Cod)	13,507	7,502	11,589	13,679	12,508	7,566	1,750	1,580		2,051	3,586	3,066	4,163	4,073	6,663
525702	1,344	896	997	1,364	589	370	-	-	-	*	*	*	107	78	420
Custom Area*	1,227	780	718	879	423	250	-	-	-	100	30	29	81	47	326
SMPC (Pacific Cod)	9,528	8,156	9,904	9,763	8,280	3,926	1,428	1,728	1,020	2,340	3,255	1,815	2,032	3,277	4,747
CGOA Total, All Pot Fisheries	23,035	15,658	21,493	23,442	20,789	11,937	3,750	4,443	3,587	9,592	12,762	9,508	11,571	13,214	13,199
525702 Total	1,344	896	997	1,364	589	370	-	-	-	*	*	*	107	81	425
Custom Area Total	1,227	780	718	879	423	250	-	-	1	107	30	70	85	49	330
Groundfish Pot Ex-Vessel Value (millions of 2024 dollars)															
IFQ (Sablefish)						\$ 5.3	\$ 4.6	\$ 7.1	\$ 12.4	\$ 30.6	\$ 38.5	\$ 20.0	\$ 20.2	\$ 34.9	\$ 19.3
OA(Pacific Cod)	\$ 14.7	\$ 5.9	\$ 10.9	\$ 12.7	\$ 11.3	\$ 8.0	\$ 2.4	\$ 2.2	\$ -	\$ 1.9	\$ 3.8	\$ 2.7	\$ 2.5	\$ 3.4	\$ 5.9
SMPC (Pacific Cod)	\$ 10.3	\$ 6.5	\$ 8.9	\$ 8.6	\$ 7.3	\$ 4.1	\$ 1.9	\$ 2.5	\$ 1.1	\$ 2.1	\$ 3.5	\$ 1.6	\$ 1.3	\$ 2.7	\$ 4.5
CGOA Total, All Pot Fisheries	\$ 25.0	\$ 12.5	\$ 19.8	\$ 21.4	\$ 18.5	\$ 17.3	\$ 8.9	\$ 11.9	\$ 13.5	\$ 34.6	\$ 45.9	\$ 24.3	\$ 24.0	\$ 41.0	\$ 22.8
525702 Total	\$ 1.5	\$ 0.7	\$ 1.0	\$ 1.3	\$ 0.5	\$ 0.4	\$ -	\$ -	\$ -	*	*	*	\$ 0.1	\$ 0.1	\$ 0.4
Custom Area Total	\$ 1.3	\$ 0.6	\$ 0.7	\$ 0.8	\$ 0.4	\$ 0.3	\$ -	\$ -	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.3
Groundfish Pot Wholesale Value (millions of 2024 dollars)															
IFQ (Sablefish)						\$ 6.1	\$ 5.8	\$ 9.9	\$ 16.7	\$ 36.6	\$ 45.3	\$ 23.3	\$ 27.0	NA	\$ 19.0
OA(Pacific Cod)	\$ 26.8	\$ 14.9	\$ 22.6	\$ 23.2	\$ 23.2	\$ 14.7	\$ 4.7	\$ 4.7	\$ -	\$ 4.9	\$ 10.9	\$ 8.0	\$ 8.9	NA	\$ 12.0
SMPC (Pacific Cod)	\$ 18.8	\$ 16.2	\$ 19.3	\$ 16.5	\$ 15.3	\$ 7.6	\$ 3.9	\$ 5.2	\$ 3.7	\$ 5.6	\$ 9.6	\$ 4.7	\$ 4.3	NA	\$ 9.3
CGOA Total, All Pot Fisheries	\$ 45.5	\$ 31.1	\$ 41.9	\$ 39.7	\$ 38.5	\$ 28.4	\$ 14.4	\$ 19.8	\$ 20.4	\$ 47.1	\$ 65.7	\$ 36.0	\$ 40.3	NA	\$ 33.5
525702 Total	\$ 2.7	\$ 1.8	\$ 1.9	\$ 2.3	\$ 1.1	\$ 0.7	\$ -	\$ -	\$ -	*	*	*	\$ 0.2	NA	\$ 0.8
Custom Area Total	\$ 2.4	\$ 1.6	\$ 1.4	\$ 1.5	\$ 0.8	\$ 0.5	\$ -	\$ -	\$ 0.0	\$ 0.3	\$ 0.1	\$ 0.3	\$ 0.2	NA	\$ 0.7

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

*Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3 2 for additional information.

Note: 100% of OA and SMPC Pacific cod ex-vessel volume in the Pacific Cod target, and 99.9% of IFQ sablefish volume in the sablefish target.

3.1.2.3 CGOA Groundfish Pot Catch Distribution

Maps showing the spatial distribution of fishing activity across the CGOA were generated for PTR and NPT in Sections 3.1.3.3 and 3.1.4.3 based on observer data for 2012-2025. However, these maps are not included for CGOA groundfish pot fishing activity due to the low observer rates in the sector. An observer-based vessel track density map would not be representative of pot activity across the CGOA. Although observer data was used in the custom area calculations of catch, value, and PSC (as described in Section 3.1.1), those estimates are of a lower spatial resolution than the CPUE maps, aggregating pot activity across a statistical area. Therefore, while observer-based estimates for groundfish pot activity should all be interpreted with caution, the custom area estimates of catch, value, and PSC were retained because they offer the best approximation available.

3.1.3 Pelagic Trawl Gear

Pelagic trawl gear (PTR) is used in the CGOA by vessels participating in the open access (OA) pollock fishery, and by Rockfish Program (RP) vessels in the rockfish target fishery.

As noted in Table 3-1, both pollock and rockfish are targeted using both NPT and PTR gear. **A description of NPT activity in the open access pollock fishery and rockfish target fisheries is included separately, within Section 3.1.4.1.**

3.1.3.1 Catch, Value, and Vessel Counts

Table 3-7 below provides an annual overview of groundfish pelagic trawl fishing activity in the areas of interest, including catch volume & proportion, ex-vessel revenue, and vessel counts. Table 3-8 compares the annual groundfish pelagic trawl catch activity, and activity occurring only within the seasonal time closure windows defined in Element 2 of Alternative 2.

Annual variances in PTR harvest in these areas largely follow trends in pollock harvest volumes (described further in Section 3.1.3.2), since pollock comprises the vast majority of PTR harvest volumes, and the vast majority of pollock catch volumes are harvested with PTR. Pollock TACs in the CGOA are spatially apportioned to federal reporting area 620 and 630—therefore, PTR harvest volumes from the areas considered for closure are compared in Table 3-7 as both as a proportion of CGOA total PTR volumes, and as a proportion of area 630 PTR totals.

PTR pollock target fishery harvest volumes from the areas considered for closure have fluctuated widely between 2012 and 2025. As shown in Table 3-7, the areas of interest were of greater importance to the PTR fleet prior to 2019, versus after. Prior to 2019, approximately one-third of groundfish harvested in area 630 with PTR were harvested from the custom closure area, and ~30% were harvested from area 525702. In these years, over half of the PTR fleet in the CGOA were active within area 525702. After 2019, the custom closure area yielded an average of 14% of area 630 PTR harvest volumes, and area 525702 yielded 13%. The proportion of the CGOA fleet harvesting from the areas reached a minimum of 30% in 2019. Though PTR volumes from the areas increased slightly within the last five years, they remain below the long-term average.

As shown in Table 3-7, the custom closure area has yielded a slightly higher volume of PTR harvests than area 525702. An average of 11,330 mt of groundfish were harvested with PTR gear in the custom closure area annually between 2012 and 2025, comprising 11% of total CGOA PTR harvests and 28% of federal reporting area 630 PTR harvests. Area 525702 followed similar trends to the custom closure, but comprised a lower proportion of pollock total catch volumes than the custom area in all years.

Table 3-8 describes the PTR activity occurring in these areas during the seasonal time closure options defined in Element 2 of Alternative 2. Very little PTR activity occurs within the areas of interest during seasonal time closure option A or B. Although approximately half of all CGOA PTR volumes are harvested during the window contained in Seasonal Time Closure A (and a quarter are harvested within Seasonal Time Closure B), only ~1% of harvests from the areas of interests occur during this season. The majority of pollock target fishing in the CGOA within this season occurs in federal reporting area 620, and activity within area 630 occurs almost entirely outside the areas considered for closure. As described in Section 2.2.1, the areas considered for closure overlap with several SSL protection areas that are closed seasonally to pelagic trawling for pollock. Additionally, as described in Section 5.2.1.1, overall pollock TACs for federal reporting area 630 are lower in the A season.

Table 3-7 Annual PTR Groundfish Catch, Value, and Vessels, by Area, 2012-2025

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg.
Annual PTR Catch Volume, mt															
Total CGOA	68,871	74,939	117,994	130,815	111,062	132,157	120,131	91,650	87,553	87,582	112,384	112,464	100,873	130,269	105,625
Total 630	25,133	26,050	38,823	51,681	64,176	53,199	41,104	27,956	32,257	35,575	42,374	46,262	30,396	51,641	40,473
525702	8,013	6,497	13,022	15,494	25,230	9,960	10,445	7,848	3,048	3,493	4,472	3,231	6,922	8,344	9,001
% of CGOA	11.6%	8.7%	11.0%	11.8%	22.7%	7.5%	8.7%	8.6%	3.5%	4.0%	4.0%	2.9%	6.9%	6.4%	8.5%
% of 630	31.9%	24.9%	33.5%	30.0%	39.3%	18.7%	25.4%	28.1%	9.4%	9.8%	10.6%	7.0%	22.8%	16.2%	22.2%
Custom Area	8,066	8,369	17,709	21,910	34,637	14,798	13,237	8,114	3,384	3,941	5,071	3,611	6,994	8,784	11,330
% of CGOA	11.7%	11.2%	15.0%	16.7%	31.2%	11.2%	11.0%	8.9%	3.9%	4.5%	4.5%	3.2%	6.9%	6.7%	10.7%
% of 630	32.1%	32.1%	45.6%	42.4%	54.0%	27.8%	32.2%	29.0%	10.5%	11.1%	12.0%	7.8%	23.0%	17.0%	28.0%
Annual PTR Ex-vessel Value, millions of 2024 dollars															
Total CGOA	37.4	37.6	44.6	42.2	25.6	31.4	42.1	34.9	28.1	26.0	43.4	33.1	20.8	31.2	34.2
525702	4.3	3.3	4.9	5.1	5.7	2.3	3.6	2.9	1.0	1.0	1.7	0.9	1.4	2.0	2.9
Custom Area	4.3	4.2	6.8	7.1	7.9	3.4	4.6	3.0	1.1	1.2	2.0	1.0	1.4	2.1	3.6
Annual PTR Wholesale Value, millions of 2024 dollars															
Total CGOA	83.6	100.8	117.4	110.3	89.4	94.6	107.8	84.5	73.9	77.5	117.5	108.7	78.3	NA	95.7
525702	9.3	8.6	12.9	13.0	20.0	6.8	9.0	7.0	2.4	2.9	4.4	3.0	5.0	NA	8.0
Custom Area	9.3	11.1	17.6	18.3	27.5	10.3	11.5	7.3	2.7	3.2	5.1	3.4	5.1	NA	10.2
Annual PTR CV Counts															
Total CGOA	61	49	50	55	55	47	55	55	56	47	43	41	39	37	49
525702	33	31	39	35	40	23	33	25	16	19	21	16	19	19	26
% of CGOA	54%	63%	78%	64%	73%	49%	60%	45%	29%	40%	49%	39%	49%	51%	53%

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_Blend_CA
Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-8 PTR Groundfish Catch, Value, and Vessels, by Seasonal Time Closure Option and Area, 2012-2025

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg.
Seasonal Time Closure Option A (2/15 to 6/15)															
PTR Catch Volume, mt															
Total CGOA	40,062	22,458	68,378	82,193	45,001	50,832	56,137	34,389	39,252	48,985	63,255	68,628	67,641	86,776	54,105
525702	-	*	-	867	*	*	-	-	*	*	*	*	-	-	95
% of CGOA	-	*	-	1%	*	*	-	-	*	*	*	*	-	-	<1%
Custom Area	-	*	-	877	94	8	*	-	*	*	51	257	-	4	112
% of CGOA	-	*	-	1%	<1%	<1%	*	-	*	*	<1%	<1%	-	<1%	<1%
PTR Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	21.5	10.8	24.9	25.6	9.9	11.8	19.3	13.0	12.4	14.1	23.7	19.9	13.6	20.9	17.2
525702	-	*	-	0.3	*	*	-	-	*	*	*	*	-	-	<0.1
Custom Area	-	*	-	0.3	<0.1	<0.1	*	-	*	*	<0.1	0.1	-	<0.1	<0.1
PTR Wholesale Value, millions of 2024 dollars															
Total CGOA	47.9	29.3	66.0	67.0	34.5	35.6	50.3	31.5	32.7	43.0	64.6	65.7	50.9	NA	47.6
525702	-	*	-	0.7	*	*	-	-	*	*	*	*	-	NA	0.1
Custom Area	-	*	-	0.7	0.0	0.0	*	-	*	*	0.1	0.2	-	NA	0.1
PTR CV Counts															
Total CGOA	38	39	43	50	42	40	50	45	45	40	38	41	38	36	41.8
525702	0	1	0	9	1	2	0	0	2	1	1	4	0	0	1.5
Seasonal Time Closure Option B (4/1 to 6/15)															
PTR Catch Volume, mt															
Total CGOA	17,108	15,557	29,640	42,276	29,596	22,163	18,962	22,108	31,474	20,448	26,603	25,442	27,062	32,739	25,798
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	-	14
% of CGOA	-	-	-	-	-	*	-	-	-	-	-	*	-	-	<1%
Custom Area	-	-	-	-	-	4	*	-	-	-	*	257	-	*	29
% of CGOA	-	-	-	-	-	<1%	*	-	-	-	*	1%	-	*	<1%
PTR Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	1.8	0.2	1.5	7.4	1.6	1.2	2.2	2.2	2.1	3.1	5.0	4.0	2.5	5.1	2.8
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	-	<0.1
Custom Area	-	-	-	-	-	<0.1	*	-	-	-	*	0.1	-	<0.1	<0.1
PTR Wholesale Value, millions of 2024 dollars															
Total CGOA	5.3	0.5	4.1	19.6	5.5	4.0	7.6	5.4	7.4	11.9	17.0	16.0	12.0	NA	8.9
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	NA	<0.1
Custom Area	-	-	-	-	-	<0.1	*	-	-	-	*	0.2	-	NA	<0.1
PTR CV Counts															
Total CGOA	13	3	19	46	22	23	17	18	22	23	28	27	32	30	23.1
525702	0	0	0	0	0	1	0	0	0	0	0	4	0	0	0.4

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

Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-9 reports the number of pelagic trawl vessels active in statistical area 525702 by the share of their total annual ex-vessel revenue derived from pelagic trawl harvests in the area, 2012–2024. Most pelagic trawl vessels earn less than 10% of their total revenue from statistical area 525702. On average, 2.6 vessels per year earn <1%, and 21.6 vessels earn 1–10%. Only 2.5 vessels per year earn 10–20%, and fewer than one vessel per year earns more than 20%. Kodiak vessels follow this same pattern: although Kodiak contributes the largest number of vessels to the area, very few Kodiak vessels derive more than 10% of their revenue from 525702, indicating low vessel-level dependence and correspondingly limited economic vulnerability for the community.

Table 3-9 Statistical Area 525702 Pelagic Trawl Revenue as a Percent of Total Revenue for Vessels Active, 2012-2024 (Number of Vessels)

525702 Rev as a % of Total	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annual Average 2012-2024
<1%	3	1	2	1	2	1	1	4	2	7	3	7	0	2.6
1-10%	28	28	32	28	29	20	29	19	13	12	18	9	16	21.6
10-20%	2	2	5	6	9	2	3	1	0	0	0	0	3	2.5
20-30%	0	0	0	0	0	0	0	0	1	0	0	0	0	0.1
30-40%	0	0	0	0	0	0	0	1	0	0	0	0	0	0.1
40-50%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
50-60%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
60-70%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
70-80%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
80-90%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
90-100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Grand Total	33	31	39	35	40	23	33	25	16	19	21	16	19	26.9

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

3.1.3.2 Target Fisheries

Over 99% of CGOA PTR harvest volumes come from the open access (OA) pollock target fishery and the Rockfish Program (RP) rockfish target fishery. Nearly all directed pollock harvests are caught in the OA fishery, and nearly all rockfish harvests are caught by RP vessels. PTR gear is overwhelmingly preferred for the pollock target fishery (accounting for ~95% of CGOA OA pollock harvest volumes), but there are a small number of vessels that directed fish for pollock using nonpelagic gear (generally due to size or horsepower constraints of the vessels). Conversely, in the rockfish target fishery NPT is the preferred gear type; however PTR has increased in use after the implementation of the RP (as described within the 2025 CGOA RP Program Review⁷). Ten years ago, ~20% of the sector's CGOA groundfish harvests were caught using PTR gear—in 2025, 42% of RP CGOA catch volumes were caught with PTR. Discussions of NPT harvests in these target fisheries are included separately, in Section 3.1.4.2.

Table 3-10 describes the ex-vessel volumes attributable to OA and RP pelagic trawl gear harvests in the CGOA. As shown, the majority of PTR catch volumes in the CGOA, and within the areas considered for closure, occur in the pollock OA fishery. Very few rockfish target harvests occur with PTR gear within the proposed area closures. Therefore, as described within Section 3.1.3.1 above, descriptions of PTR harvests and pollock target fishery harvests occurring in the areas considered for closure are largely interchangeable.

⁷ Available at https://files.npfmc.org/catch_shares/Rockfish/RockfishProgramReview2025.pdf.

Table 3-10 Central Gulf Pelagic Trawl Catch, Ex-Vessel Value, and Wholesale Value, by Area and Fishery, 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Pelagic Trawl Catch (mt)															
Pollock (OA)	65,946	72,880	115,675	127,895	109,682	128,331	114,324	84,549	76,339	73,737	99,669	98,062	89,099	117,225	98,101
525702	8,013	6,497	13,022	15,494	25,230	9,960	10,445	7,844	3,048	3,493	4,472	3,231	6,922	8,344	9,001
Custom Area*	8,066	8,369	17,709	21,910	34,637	14,682	13,128	8,106	3,382	3,936	5,028	3,611	6,977	8,784	11,309
Rockfish (RP)	2,925	2,059	2,319	2,920	1,380	3,826	5,807	7,101	11,214	13,845	12,716	14,402	11,775	13,044	7,524
525702	-	-	-	-	-	-	-	4	-	-	-	-	-	-	0
Custom Area*	-	-	-	-	-	116	109	7	2	4	43	-	16	-	21
CGOA Total, All PTR Fisheries	68,871	74,939	117,994	130,815	111,062	132,157	120,131	91,650	87,553	87,582	112,384	112,464	100,873	130,269	105,625
525702 Total	8,013	6,497	13,022	15,494	25,230	9,960	10,445	7,848	3,048	3,493	4,472	3,231	6,922	8,344	9,001
Custom Area Total	8,066	8,369	17,709	21,910	34,637	14,798	13,237	8,114	3,384	3,941	5,071	3,611	6,994	8,784	11,330
Pelagic Trawl Ex-Vessel Value (millions of 2024 dollars)															
Pollock (OA)	\$ 35.0	\$ 36.4	\$ 43.4	\$ 40.8	\$ 24.9	\$ 29.5	\$ 39.1	\$ 31.2	\$ 24.3	\$ 21.5	\$ 38.6	\$ 28.6	\$ 18.2	\$ 27.6	\$ 31.4
Rockfish (RP)	\$ 2.4	\$ 1.2	\$ 1.2	\$ 1.5	\$ 0.7	\$ 1.9	\$ 3.0	\$ 3.8	\$ 3.8	\$ 4.5	\$ 4.9	\$ 4.4	\$ 2.6	\$ 3.6	\$ 2.8
CGOA Total, All PTR Fisheries	\$ 37.4	\$ 37.6	\$ 44.6	\$ 42.2	\$ 25.6	\$ 31.4	\$ 42.1	\$ 34.9	\$ 28.1	\$ 26.0	\$ 43.4	\$ 33.1	\$ 20.8	\$ 31.2	\$ 34.2
525702 Total	\$ 4.3	\$ 3.3	\$ 4.9	\$ 5.1	\$ 5.7	\$ 2.3	\$ 3.6	\$ 2.9	\$ 1.0	\$ 1.0	\$ 1.7	\$ 0.9	\$ 1.4	\$ 2.0	\$ 2.9
Custom Area Total	\$ 4.3	\$ 4.2	\$ 6.8	\$ 7.1	\$ 7.9	\$ 3.4	\$ 4.6	\$ 3.0	\$ 1.1	\$ 1.2	\$ 2.0	\$ 1.0	\$ 1.4	\$ 2.1	\$ 3.6
Pelagic Trawl Wholesale Value (millions of 2024 dollars)															
Pollock (OA)	\$ 76.5	\$ 97.3	\$ 114.3	\$ 106.1	\$ 87.4	\$ 87.8	\$ 97.6	\$ 75.3	\$ 60.9	\$ 60.2	\$ 99.3	\$ 90.5	\$ 63.7	NA	\$ 85.9
Rockfish (RP)	\$ 7.0	\$ 3.5	\$ 3.5	\$ 4.3	\$ 2.1	\$ 6.8	\$ 10.2	\$ 9.2	\$ 13.1	\$ 17.3	\$ 18.2	\$ 18.2	\$ 14.7	NA	\$ 9.9
CGOA Total, All PTR Fisheries	\$ 83.6	\$ 100.8	\$ 117.9	\$ 110.4	\$ 89.5	\$ 94.6	\$ 107.8	\$ 84.5	\$ 74.0	\$ 77.5	\$ 117.5	\$ 108.7	\$ 78.4	NA	\$ 95.8
525702 Total	\$ 9.3	\$ 8.6	\$ 12.9	\$ 13.0	\$ 20.0	\$ 6.8	\$ 9.0	\$ 7.0	\$ 2.5	\$ 2.9	\$ 4.4	\$ 3.0	\$ 5.0	NA	\$ 8.0
Custom Area Total	\$ 9.3	\$ 11.1	\$ 17.6	\$ 18.3	\$ 27.5	\$ 10.3	\$ 11.5	\$ 7.3	\$ 2.7	\$ 3.2	\$ 5.1	\$ 3.4	\$ 5.1	NA	\$ 10.2

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

* Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Note: 99.9% of pelagic trawl OA harvest volumes are in the Pollock target, and 98.6% of pelagic trawl RP harvest volumes are in the Rockfish target. 19.5% of RP vessels utilized pelagic trawl gear.

3.1.3.3 CGOA PTR Catch Distribution

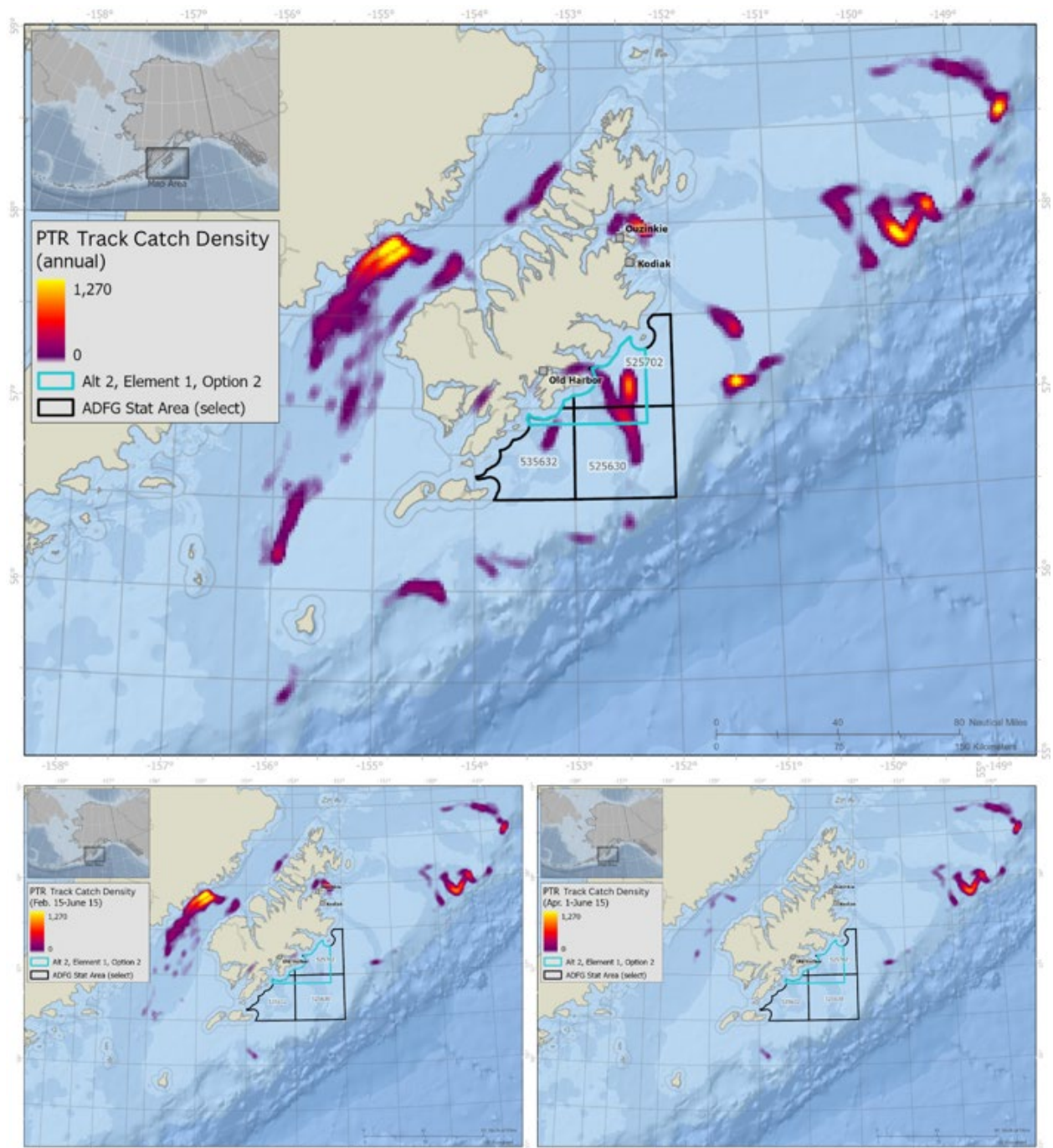


Figure 3-1 Track catch density maps for pelagic trawl gear catch, 2012-2025. The scale ranges from low to high density (purple to yellow). Data included in these maps are derived only from observed hauls. The top map represents the year-round closure duration (Alt. 2, Element 2, Option 1); the bottom-left map represents the seasonal closure duration option of Feb 15-June 15 (Alt. 2, Element 2, Option 2a); the bottom-right map represents the seasonal closure duration option of Apr 1-June 15 (Alt. 2, Element 2, Option 2b).

In lieu of CIA data, track catch density maps were produced to visualize pelagic trawl fishing activities around Kodiak Island from 2012-2025 through a line (or track) density function, where observed catch and track lines were translated to catch density based on the amount of fishing and catch that occurred in a specific 1 nm grid cell, with a search radius of 2 nm (Figure 3-1). The scale ranges from cooler colors, representing low density, to warmer colors representing high catch. These maps do not represent all fishing activities with this gear type as only observed fishing is included; however, the spatial distribution and density is representative of where historical fishing has occurred and is densest.

For the year-round option, fishing is widespread, with the highest catch densities in areas of high bathymetric relief, including in both proposed closure areas (Alt. 2, Element 1, Options 1 and 2), in the adjacent statistical area to the south (525630), and on the western side of Kodiak Island. Fishing activity is much reduced and less widespread in either seasonal closure option (bottom-left and bottom-right maps), with the least activity in the Apr1-Jun15 timeframe (Alt. 2, Element 2, Option 2b). In either seasonal closure option, fishing activity is almost non-existent in the proposed closure areas, and highest along the western side of the island during the Feb 15-Jun 15 (Option 2a) closure duration option.

3.1.4 Nonpelagic Trawl Gear

Groundfish vessels participating in the RP and in OA fisheries use NPT gear in the CGOA to participate in a variety of target fisheries. RP vessels primarily target rockfish with NPT gear, while OA vessels primarily target Arrowtooth flounder, pollock, Pacific cod, and shallow-water flatfish. By volume, the OA Arrowtooth flounder fishery, RP rockfish fishery, and OA pollock fishery comprise the majority of NPT harvests in the CGOA—volumes caught in all other target fisheries comprise the remaining 20% of total CGOA NPT harvests (see Table 3-14 and Table 3-15).

3.1.4.1 Catch, Value, and Vessel Counts

Table 3-11 below provides an annual overview of groundfish nonpelagic fishing activity in the areas of interest, including catch volume & proportion, ex-vessel revenue, and vessel counts. Table 3-12 compares the annual groundfish nonpelagic trawl catch activity, and activity occurring only within the seasonal time closure windows defined in Element 2 of Alternative 2.

As shown in Table 3-11, harvests from area 525702 comprised an average of 10.8% of total CGOA NPT catch volumes, and harvests from the custom closure comprised 11.3%. The ex-vessel value of the catch from these areas averaged \$2.5 and \$2.6 million annually between 2012 and 2025. Approximately

NPT harvests from the areas considered for closure have declined over time. These areas yielded higher volumes of NPT harvests, and comprised a higher proportion of overall CGOA catch volumes, prior to 2020. Before 2020, ~13% of groundfish harvested with NPT in the CGOA were harvested from the custom closure area, and 12% were harvested from area 525702. In these years, over half of the NPT CV fleet in the CGOA were active within area 525702, and a quarter of the NPT CP fleet were active in the area annually. Since 2020, volumes and vessel counts from the areas considered for closure have declined. Though NPT volumes from the areas increased slightly within the last five years, they remain below the long-term average.

Trends in NPT harvests generally follow CGOA-wide trends in flatfish and Pacific cod harvests, since flatfish and Pacific cod historically comprised the majority of NPT harvest volumes. Additional detail on fishery-level trends are provided in Section 3.1.4.2 below.

Table 3-12 describes the NPT activity occurring in these areas during the seasonal time closure options defined in Element 2 of Alternative 2. Unlike other gear types impacted by this action, NPT gear is used during the seasonal time windows within the areas considered for closure. As shown in Table 3-12, approximately 37% of annual 525702 NPT harvests and 41% of custom closure area NPT harvests occur

within time area closure 2A (2/15 to 6/15). Time area closure 2B harvest volumes from these areas comprised 25% and 27% of respective annual NPT catch volume totals.

Seasonal trends in NPT harvests shown in Table 3-12 correlate with flatfish harvests, since flatfish comprise the majority of NPT harvest volumes. Directed fishing opens for flatfish fisheries on 1/20 and remains open by regulation until 12/31. Flatfish are landed in the CGOA year-round, and the highest proportion of flatfish catch volumes are landed in April (as described in Section 5.2.1.4). Rockfish fishery seasons also overlap with the seasonal time closure windows (the majority of RP trawl fishery primary species harvests occur in May, as described in Section 5.2.1.3), however harvest volumes from these fisheries comprise a much smaller proportion of NPT harvests from the areas of interest than flatfish. Therefore seasonal NPT catch volumes in the areas of interest are driven by activity in the flatfish fishery.

Table 3-11 CGOA Groundfish NPT Catch, Value, & Vessels, by Area, 2012-2025

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg.
NPT Catch Volume, mt															
Total CGOA	56,982	66,027	85,489	61,994	58,966	58,289	48,282	52,053	49,029	32,547	34,947	30,218	40,830	37,612	50,947
525702	6,618	6,114	8,233	8,097	9,206	4,763	5,254	8,677	6,476	2,814	1,478	1,146	3,976	4,119	5,498
% of CGOA	11.6%	9.3%	9.6%	13.1%	15.6%	8.2%	10.9%	16.7%	13.2%	8.6%	4.2%	3.8%	9.7%	11.0%	10.8%
Custom Area	7,093	7,326	9,119	8,038	9,203	5,363	5,617	8,932	6,499	2,731	1,401	1,240	4,056	4,069	5,763
% of CGOA	12.4%	11.1%	10.7%	13.0%	15.6%	9.2%	11.6%	17.2%	13.3%	8.4%	4.0%	4.1%	9.9%	10.8%	11.3%
NPT Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	42.1	38.0	44.8	33.9	32.7	33.3	25.8	22.5	17.9	14.2	18.2	12.0	13.3	13.4	25.9
525702	4.1	3.1	4.4	4.3	4.2	2.1	2.1	3.3	2.4	1.1	.9	.5	1.0	1.2	2.5
Custom Area	4.4	3.6	4.7	4.2	4.2	2.4	2.3	3.3	2.4	1.2	.9	.5	1.0	1.2	2.6
NPT Wholesale Value, millions of 2024 dollars															
Total CGOA	103.7	104.0	122.4	88.9	91.4	100.1	69.4	60.8	51.6	42.2	55.5	42.2	54.3	NA	75.9
525702	10.1	7.8	10.1	10.1	11.2	6.4	6.1	8.4	6.1	3.8	2.6	1.8	4.5	NA	6.8
Custom Area	10.8	9.3	11.1	10.0	11.5	7.4	6.5	8.5	6.4	3.9	2.5	1.9	4.6	NA	7.3
NPT CV Counts															
Total CGOA	57	58	60	46	44	42	39	42	36	29	39	28	39	30	42.1
525702	37	31	27	30	32	19	20	23	18	15	11	11	16	10	21.4
% of CGOA	65%	53%	45%	65%	73%	45%	51%	55%	50%	52%	28%	39%	41%	33%	51%
NPT CP Counts															
Total CGOA	9	9	8	6	7	6	6	7	7	6	8	5	7	5	6.9
525702	4	2	2	1	3	2	1	1	1	1	1	0	1	0	1.4
% of CGOA	44%	22%	25%	17%	43%	33%	17%	14%	14%	17%	13%	0%	14%	0%	20%

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

Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-12 NPT Groundfish Catch, Value, and Vessels, by Seasonal Time Closure Option and Area, 2012-2025

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Avg.
Seasonal Time Closure Option A (2/15 to 6/15)															
NPT Catch Volume, mt															
Total CGOA	24,790	28,515	35,423	25,421	27,207	23,223	17,997	26,408	28,065	10,348	12,483	11,391	15,094	11,865	21,302
525702	2,154	2,729	1,980	2,022	3,491	2,760	1,386	3,689	3,667	357	479	537	1,682	1,650	2,042
% of CGOA	9%	10%	6%	8%	13%	12%	8%	14%	13%	3%	4%	5%	11%	14%	10%
Custom Area	2,639	3,864	2,894	2,118	3,732	3,356	1,754	4,159	3,726	367	455	558	1,668	1,528	2,344
% of CGOA	11%	14%	8%	8%	14%	14%	10%	16%	13%	4%	4%	5%	11%	13%	11%
NPT Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	18.1	16.0	19.1	12.7	15.7	13.7	8.6	11.8	9.5	4.8	7.0	4.6	5.0	5.6	10.9
525702	1.5	1.2	0.9	0.9	1.6	1.1	0.5	1.4	1.2	0.2	0.4	0.2	0.4	0.5	0.9
Custom Area	1.7	1.7	1.3	1.0	1.7	1.4	0.7	1.5	1.2	0.2	0.3	0.2	0.4	0.5	1.0
NPT Wholesale Value, millions of 2024 dollars															
Total CGOA	45.8	47.3	53.5	35.5	43.0	39.7	26.0	30.8	28.8	15.1	22.9	18.2	21.6	NA	32.9
525702	3.4	3.5	2.1	2.2	4.1	3.8	1.6	3.4	3.2	0.7	1.1	0.8	1.8	NA	2.4
Custom Area	4.1	4.9	3.2	2.3	4.7	4.8	2.0	3.7	3.3	0.7	1.0	0.9	1.8	NA	2.9
NPT CV and CP Counts															
Total CGOA CVs	51	48	52	40	37	35	30	34	32	27	30	25	34	27	35.9
525702 CVs	26	21	17	18	20	16	16	20	16	11	7	7	4	7	14.7
Total CGOA CPs	6	4	5	4	3	3	3	3	5	5	6	3	4	4	4.1
525702 CPs	2	2	2	1	1	1	1	1	1	1	1	0	0	0	1.0
Seasonal Time Closure Option B (4/1 to 6/15)															
NPT Catch Volume, mt															
Total CGOA	14,947	15,126	25,617	19,153	22,228	17,607	14,477	17,429	24,345	8,195	10,183	9,611	12,423	10,073	15,815
525702	1,198	1,505	1,513	1,291	2,341	2,518	758	1,800	2,841	*	*	436	1,682	1,491	1,393
% of CGOA	8%	10%	6%	7%	11%	14%	5%	10%	12%	*	*	5%	14%	15%	9%
Custom Area	1,419	2,044	2,122	1,329	2,664	2,680	949	1,812	2,859	62	114	450	1,668	1,370	1,539
% of CGOA	9%	14%	8%	7%	12%	15%	7%	10%	12%	1%	1%	5%	13%	14%	10%
NPT Ex-Vessel Value, millions of 2024 dollars															
Total CGOA	9.9	8.4	12.6	9.2	12.5	10.8	7.0	8.9	8.3	3.2	4.8	3.3	3.8	4.2	7.6
525702	0.6	0.6	0.6	0.4	0.9	1.0	0.3	0.8	1.0	*	*	0.1	0.4	0.4	0.5
Custom Area	0.7	0.8	0.8	0.5	1.1	1.1	0.4	0.7	1.0	<0.1	0.1	0.1	0.4	0.4	0.6
NPT Wholesale Value, millions of 2024 dollars															
Total CGOA	28.1	25.4	36.7	26.7	35.5	30.8	22.2	23.2	25.4	10.5	16.5	13.8	16.4	NA	23.9
525702	1.6	1.6	1.4	1.1	2.6	3.5	1.0	1.8	2.5	*	*	0.6	1.8	NA	1.5
Custom Area	1.9	2.2	1.9	1.2	3.2	3.8	1.2	1.8	2.5	0.1	0.2	0.6	1.8	NA	1.7
NPT CV and CP Counts															
Total CGOA CVs	35	29	39	34	35	30	29	33	30	21	27	24	24	26	29.7
525702 CVs	15	17	14	10	17	15	13	15	14	2	2	6	4	7	10.8
Total CGOA CPs	6	4	4	4	3	3	3	3	5	5	6	3	4	4	4.1
525702 CPs	2	2	1	1	1	1	1	0	1	1	1	0	0	0	0.9

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

Note: Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-13 reports on the number of vessels active in Statistical Area 525702 by the share of their total annual ex-vessel revenue derived from nonpelagic trawl harvests in the area, 2012–2024. Most vessels earn less than 10% of their total revenue from statistical area 525702. On average, 6.7 vessels per year earn <1%, and 12.5 vessels earn 1–10%. Only 1.8 vessels per year earn 10–20%, and fewer than one vessel per year earns more than 20%. Kodiak vessels follow this same pattern: although Kodiak contributes the largest number of vessels to the area, very few Kodiak vessels derive more than 10% of their revenue from 525702, indicating low vessel-level dependence and correspondingly limited economic vulnerability for the community.

Table 3-13 Statistical Area 525702 Nonpelagic Trawl Revenue as a Percent of Total Revenue for Vessel active, 2012-2024 (number of vessels)

525702 Rev as a % of Total	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annual Average 2012-2024
<1%	9	10	4	11	13	7	7	7	5	4	4	2	4	6.7
1-10%	22	18	19	14	12	11	12	12	10	9	6	9	9	12.5
10-20%	3	2	3	3	5	1	0	2	1	0	0	0	3	1.8
20-30%	0	0	0	0	1	0	1	2	1	1	1	0	0	0.5
30-40%	0	0	1	2	0	0	0	0	0	0	0	0	0	0.2
40-50%	1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
50-60%	0	1	0	0	0	0	0	0	1	0	0	0	0	0.2
60-70%	0	0	0	0	1	0	0	0	0	0	0	0	0	0.1
70-80%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
80-90%	0	0	0	0	0	0	0	0	0	1	0	0	0	0.1
90-100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Grand Total	35	31	27	30	32	19	20	23	18	15	11	11	16	22.2

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

3.1.4.2 Target Fisheries

RP Fisheries

Vessels in the RP primarily target rockfish with NPT; however PTR is also used (primarily for POP), and has increased in use after the implementation of the RP. The 2025 CGOA RP Program Review⁸ provides further detail on gear use in this sector, among other sector-level detail on vessels, harvest, and management.

As noted in Table 3-14, overall RP vessel activity in the areas considered for closure has been low over the time series shown. Less than 1% of annual RP rockfish target fishing activity in the CGOA occurs in the areas of interest annually. Utilization of the areas for rockfish target fishing declined after the implementation of the Rockfish Program. In 2025, less than 1 mt of rockfish were harvested by RP vessels using NPT in the custom area, and no harvest occurred in area 525702.

RP vessels incidentally harvest sablefish with NPT in the areas considered for closure. Sablefish catch from these areas is highly variable. In 2020, 2021, and 2022, the areas considered for closure yielded about one-third of total CGOA sablefish harvests for the RP sector. The high catch volumes of sablefish in these years were outliers within the time series. In all other years, the sector's sablefish harvest comprised less than 5% of total CGOA sablefish harvest volumes caught by RP vessels.

⁸ Available at https://files.npfmc.org/catch_shares/Rockfish/RockfishProgramReview2025.pdf.

Table 3-14 Central Gulf Nonpelagic Trawl Rockfish Program Catch, Ex-Vessel Value, and Wholesale Value, by Area and Fishery, 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
RP Nonpelagic Trawl Catch (mt)															
Rockfish	16,115	15,352	18,113	18,939	22,911	16,364	17,812	14,170	13,915	17,791	17,971	15,565	14,468	16,208	16,835
525702	24	8	8	48	129	64	132	51	10	36	49	46	13	-	44
Custom Area*	88	140	142	99	540	218	214	194	87	102	66	77	29	0	143
Sablefish	235	264	141	223	180	122	218	169	319	349	338	291	494	370	265
525702	-	1	-	0	-	-	-	-	43	113	126	6	33	2	23
Custom Area*	11	1	-	0	-	3	2	6	63	121	123	5	32	2	26
Other Targets*	1,913	775	2,467	1,437	851	920	244	1,212	632	933	572	1,363	629	1,682	1,116
525702	140	14	77	3	-	0	-	-	-	-	-	21	-	-	18
Custom Area*	183	31	73	29	-	10	-	3	13	17	2	19	-	-	27
CGOA Total, All RP NPT Fisheries	18,263	16,392	20,721	20,599	23,941	17,406	18,274	15,551	14,867	19,073	18,880	17,219	15,591	18,259	18,217
525702 Total	164	22	84	51	129	64	132	51	53	149	176	74	46	2	86
Custom Area Total	281	172	214	128	540	231	216	203	163	241	191	101	61	2	196
RP Nonpelagic Trawl Ex-Vessel Value (millions of 2024 dollars)															
Rockfish	\$ 15.1	\$ 11.1	\$ 12.6	\$ 11.6	\$ 14.0	\$ 12.0	\$ 12.3	\$ 8.3	\$ 6.1	\$ 8.2	\$ 9.5	\$ 6.6	\$ 5.8	\$ 5.0	\$ 9.9
Sablefish	\$ 1.8	\$ 1.4	\$ 0.9	\$ 1.4	\$ 1.1	\$ 1.0	\$ 1.0	\$ 0.4	\$ 0.5	\$ 1.2	\$ 1.0	\$ 0.5	\$ 0.7	\$ 1.1	\$ 1.0
Other Targets*	\$ 1.6	\$ 0.6	\$ 2.0	\$ 1.2	\$ 0.5	\$ 0.7	\$ 0.2	\$ 0.8	\$ 0.5	\$ 0.8	\$ 0.5	\$ 0.6	\$ 0.3	\$ 0.8	\$ 0.8
CGOA Total, All RP NPT Fisheries	\$ 18.5	\$ 13.0	\$ 15.5	\$ 14.1	\$ 15.7	\$ 13.7	\$ 13.5	\$ 9.6	\$ 7.0	\$ 10.1	\$ 11.0	\$ 7.6	\$ 6.8	\$ 6.8	\$ 11.6
525702 Total	\$ 0.2	\$ 0.0	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.1	\$ 0.5	\$ 0.4	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1
Custom Area Total	\$ 0.3	\$ 0.1	\$ 0.1	\$ 0.1	\$ 0.3	\$ 0.2	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.5	\$ 0.4	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.2
RP Nonpelagic Trawl Wholesale Value (millions of 2024 dollars)															
Rockfish	\$ 38.2	\$ 28.8	\$ 32.5	\$ 32.4	\$ 41.1	\$ 32.3	\$ 34.0	\$ 21.5	\$ 17.4	\$ 22.1	\$ 26.2	\$ 18.6	\$ 17.8	NA	\$ 27.9
Sablefish	\$ 2.1	\$ 1.9	\$ 1.3	\$ 2.0	\$ 1.9	\$ 1.4	\$ 1.8	\$ 1.1	\$ 1.5	\$ 2.0	\$ 2.3	\$ 1.4	\$ 2.1	NA	\$ 1.8
Other Targets*	\$ 3.5	\$ 1.4	\$ 4.6	\$ 2.7	\$ 1.3	\$ 1.8	\$ 0.5	\$ 1.8	\$ 1.0	\$ 1.7	\$ 1.3	\$ 1.8	\$ 1.1	NA	\$ 1.9
CGOA Total, All RP NPT Fisheries	\$ 43.8	\$ 32.1	\$ 38.4	\$ 37.1	\$ 44.3	\$ 35.6	\$ 36.4	\$ 24.4	\$ 19.9	\$ 25.8	\$ 29.9	\$ 21.8	\$ 21.0	NA	\$ 31.6
525702 Total	\$ 0.4	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.3	\$ 0.1	\$ 0.4	\$ 0.1	\$ 0.2	\$ 0.8	\$ 1.0	\$ 0.3	\$ 0.1	NA	\$ 0.3
Custom Area Total	\$ 0.6	\$ 0.3	\$ 0.4	\$ 0.2	\$ 1.1	\$ 0.5	\$ 0.5	\$ 0.3	\$ 0.5	\$ 1.0	\$ 1.0	\$ 0.3	\$ 0.1	NA	\$ 0.5

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

*Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Note: Other targets category primarily comprised of Arrowtooth Flounder (64% of Other Target volume) and Pacific cod (33%).
80.5% of Rockfish Program utilized Nonpelagic Trawl.

OA Fisheries

The areas considered for closure are of highest relative importance to GOA flatfish fisheries. For the pollock and Pacific cod fisheries, the areas of interest were historically important prior to the Pacific cod collapse, but activity in the areas has declined significantly in the past 10 years.

Arrowtooth flounder are highly abundant in the CGOA, and make up the majority of OA NPT harvest volumes in the CGOA as well as in the areas considered for closure. As shown in Table 3-15, nonpelagic trawl groundfish harvests from area 525702 and the custom closure area are primarily comprised of catch in the arrowtooth flounder target (~40% of NPT harvest volumes from these areas) and shallow-water flatfish target (~25%). Harvest volumes from all other targets comprised the remaining ~30% of NPT harvests from areas 525702 and the custom closure area.

The areas of interest contain high concentrations of GOA shallow-water flatfish, and are highly utilized by the shallow-water flatfish fishery. In this fishery, over half of all CGOA harvest volumes originate from area 525702 and the custom closure area. Between 2021 and 2025, 58% of all shallow water flatfish target volumes caught in the CGOA were harvested from area 525702, and 53% were harvested from the custom area. Most of the shallow-water flatfish harvested in the CGOA, and within the areas considered for closure, are rock sole. Shallow-water flatfish target harvests have generally declined since 2009, and total catch in the CGOA in the years shown is well below ABCs and TACs (see Section 5.2.1.4 for additional info). Though harvest volumes are declining, the relative importance of these areas to the

shallow-water flatfish fishery has increased over time. In years where CGOA vessels targeted flatfish at a higher rate (when flatfish fetched higher prices), overall CGOA shallow-water flatfish catch volumes were more equally distributed across productive flatfish fishing grounds outside of area 525702.

As described in Section 5.2.1.4, directed fishing opens for flatfish fisheries on 1/20 and remains open by regulation until 12/31. Landings across the CGOA are lowest between December and January, and ramp up in February and March before reaching the April peak. Harvest then slows between May and August, before picking up again in September and October.

Table 3-15 Central Gulf Nonpelagic Trawl Open Access Catch, Ex-Vessel Value, and Wholesale Value, by Area and Fishery, 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
OA Nonpelagic Trawl Catch (mt)															
Arrowtooth Flounder	16,400	18,971	35,252	17,408	19,191	27,487	18,845	26,907	21,760	5,955	7,799	7,690	18,044	13,219	254,926
525702	1,754	1,761	2,761	1,356	4,046	3,076	2,612	4,707	2,853	145	206	324	2,847	2,504	30,954
Custom*	2,265	2,796	3,645	1,453	3,977	3,635	3,001	5,106	3,005	133	192	385	2,997	2,547	35,138
Pacific Cod	11,052	12,261	11,447	11,803	6,888	4,468					1,185		5,150	946	65,200
525702	1,013	1,013	1,998	2,032	845	52					0		219	131	7,302
Custom*	1,059	1,285	2,100	2,153	788	58					4		226	126	7,799
Pollock	3,814	8,599	11,050	7,104	4,088	6,481	7,469	5,412	6,567	4,095	4,057	4,342	511	3,106	76,697
525702	1,173	646	1,568	2,212	1,832	546	657	2,424	1,141	891	406	265	261	208	14,231
Custom*	1,143	628	1,526	2,120	1,787	521	747	2,280	1,143	905	397	324	235	234	13,991
Shallow Water Flatfish - GOA	4,303	5,990	4,304	2,929	3,672	1,512	2,666	2,412	4,939	1,936	1,142	771	858	1,480	38,913
525702	1,699	2,412	1,746	2,395	2,354	992	1,755	1,422	2,364	1,586	665	483	604	1,273	21,750
Custom*	1,542	2,176	1,565	2,139	2,108	889	1,565	1,277	2,130	1,412	593	430	537	1,155	19,518
Other Targets*	3,151	3,815	2,715	2,152	1,186	934	1,029	1,772	896	1,488	1,883	195	676	602	22,493
525702	815	260	75	50	0	33	98	73	64	43	25	-	-	-	1,536
Custom*	803	270	68	45	3	29	87	65	57	39	24	-	-	5	1,496
CGOA Total, All OA NPT Fisheries	38,719	49,635	64,768	41,395	35,025	40,882	30,008	36,502	34,162	13,475	16,067	12,999	25,239	19,353	458,230
525702 OA NPT Total	6,454	6,092	8,148	8,046	9,077	4,699	5,122	8,626	6,423	2,665	1,303	1,073	3,930	4,116	75,774
Custom Area OA NPT Total	6,812	7,155	8,904	7,909	8,664	5,132	5,400	8,729	6,336	2,490	1,210	1,139	3,995	4,067	77,942
OA Nonpelagic Trawl Ex-Vessel Value (millions of 2024 dollars)															
Arrowtooth Flounder	\$ 6.4	\$ 6.4	\$ 10.8	\$ 5.7	\$ 7.4	\$ 11.7	\$ 7.0	\$ 8.4	\$ 6.0	\$ 1.0	\$ 1.8	\$ 1.1	\$ 3.4	\$ 3.1	\$ 5.7
Pacific Cod	\$ 10.0	\$ 8.1	\$ 8.6	\$ 7.9	\$ 5.0	\$ 3.7	\$ -	\$ -	\$ -	\$ -	\$ 1.1	\$ -	\$ 2.6	\$ 0.6	\$ 3.4
Pollock	\$ 2.3	\$ 4.3	\$ 5.4	\$ 3.2	\$ 2.3	\$ 3.0	\$ 3.4	\$ 2.4	\$ 2.4	\$ 2.7	\$ 3.6	\$ 2.9	\$ 0.2	\$ 2.3	\$ 2.9
Shallow Water Flatfish - GOA	\$ 2.9	\$ 3.6	\$ 2.6	\$ 1.7	\$ 1.7	\$ 0.7	\$ 1.1	\$ 1.1	\$ 2.1	\$ 0.2	\$ 0.2	\$ 0.2	\$ 0.2	\$ 0.4	\$ 1.4
Other Targets*	\$ 2.0	\$ 2.6	\$ 1.9	\$ 1.3	\$ 0.6	\$ 0.6	\$ 0.7	\$ 1.1	\$ 0.4	\$ 0.2	\$ 0.5	\$ 0.0	\$ 0.1	\$ 0.1	\$ 0.9
CGOA Total, All OA NPT Fisheries	\$ 23.6	\$ 25.0	\$ 29.3	\$ 19.8	\$ 17.1	\$ 19.7	\$ 12.3	\$ 12.9	\$ 10.9	\$ 4.1	\$ 7.2	\$ 4.3	\$ 6.4	\$ 6.6	\$ 14.2
525702 Total	\$ 3.9	\$ 3.1	\$ 4.3	\$ 4.2	\$ 4.1	\$ 2.0	\$ 2.0	\$ 3.2	\$ 2.3	\$ 0.7	\$ 0.5	\$ 0.4	\$ 0.9	\$ 1.2	\$ 2.3
Custom Area Total	\$ 4.1	\$ 3.5	\$ 4.6	\$ 4.1	\$ 3.9	\$ 2.2	\$ 2.1	\$ 3.2	\$ 2.2	\$ 0.6	\$ 0.5	\$ 0.4	\$ 1.0	\$ 1.2	\$ 2.4
OA Nonpelagic Trawl Wholesale Value (millions of 2024 dollars)															
Arrowtooth Flounder	\$ 20.9	\$ 19.1	\$ 39.5	\$ 18.0	\$ 22.9	\$ 45.7	\$ 19.8	\$ 25.0	\$ 18.3	\$ 5.4	\$ 8.8	\$ 9.0	\$ 20.5	NA	\$ 21.0
Pacific Cod	\$ 20.9	\$ 23.2	\$ 20.8	\$ 18.6	\$ 11.6	\$ 7.7	\$ -	\$ -	\$ -	\$ -	\$ 3.2	\$ -	\$ 10.4	NA	\$ 8.9
Pollock	\$ 5.1	\$ 11.6	\$ 13.0	\$ 7.9	\$ 5.6	\$ 7.4	\$ 8.3	\$ 5.7	\$ 6.9	\$ 7.7	\$ 10.5	\$ 10.2	\$ 0.7	NA	\$ 7.7
Shallow Water Flatfish - GOA	\$ 6.5	\$ 9.1	\$ 5.4	\$ 3.9	\$ 5.0	\$ 1.7	\$ 3.5	\$ 3.0	\$ 5.4	\$ 2.0	\$ 0.9	\$ 1.0	\$ 1.0	NA	\$ 3.7
Other Targets*	\$ 6.5	\$ 8.9	\$ 5.4	\$ 3.5	\$ 2.1	\$ 2.0	\$ 2.1	\$ 2.9	\$ 1.3	\$ 1.3	\$ 2.2	\$ 0.2	\$ 0.8	NA	\$ 3.0
CGOA Total, All OA NPT Fisheries	\$ 59.8	\$ 71.9	\$ 84.0	\$ 51.8	\$ 47.1	\$ 64.5	\$ 33.6	\$ 36.6	\$ 31.7	\$ 16.4	\$ 25.7	\$ 20.4	\$ 33.4	NA	\$ 44.4
525702 Total	\$ 9.8	\$ 7.7	\$ 10.0	\$ 10.0	\$ 10.9	\$ 6.2	\$ 5.8	\$ 8.3	\$ 6.0	\$ 3.0	\$ 1.6	\$ 1.5	\$ 4.4	NA	\$ 6.5
Custom Area Total	\$ 10.2	\$ 9.0	\$ 10.7	\$ 9.8	\$ 10.4	\$ 6.9	\$ 5.9	\$ 8.2	\$ 5.9	\$ 2.9	\$ 1.5	\$ 1.6	\$ 4.5	NA	\$ 6.7

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

*Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information. Other Targets primarily comprised of Rex sole (51% of Other Target volumes), Rockfish (34%) and Flathead Sole (13%).

3.1.4.3 CGOA NPT Catch Distribution

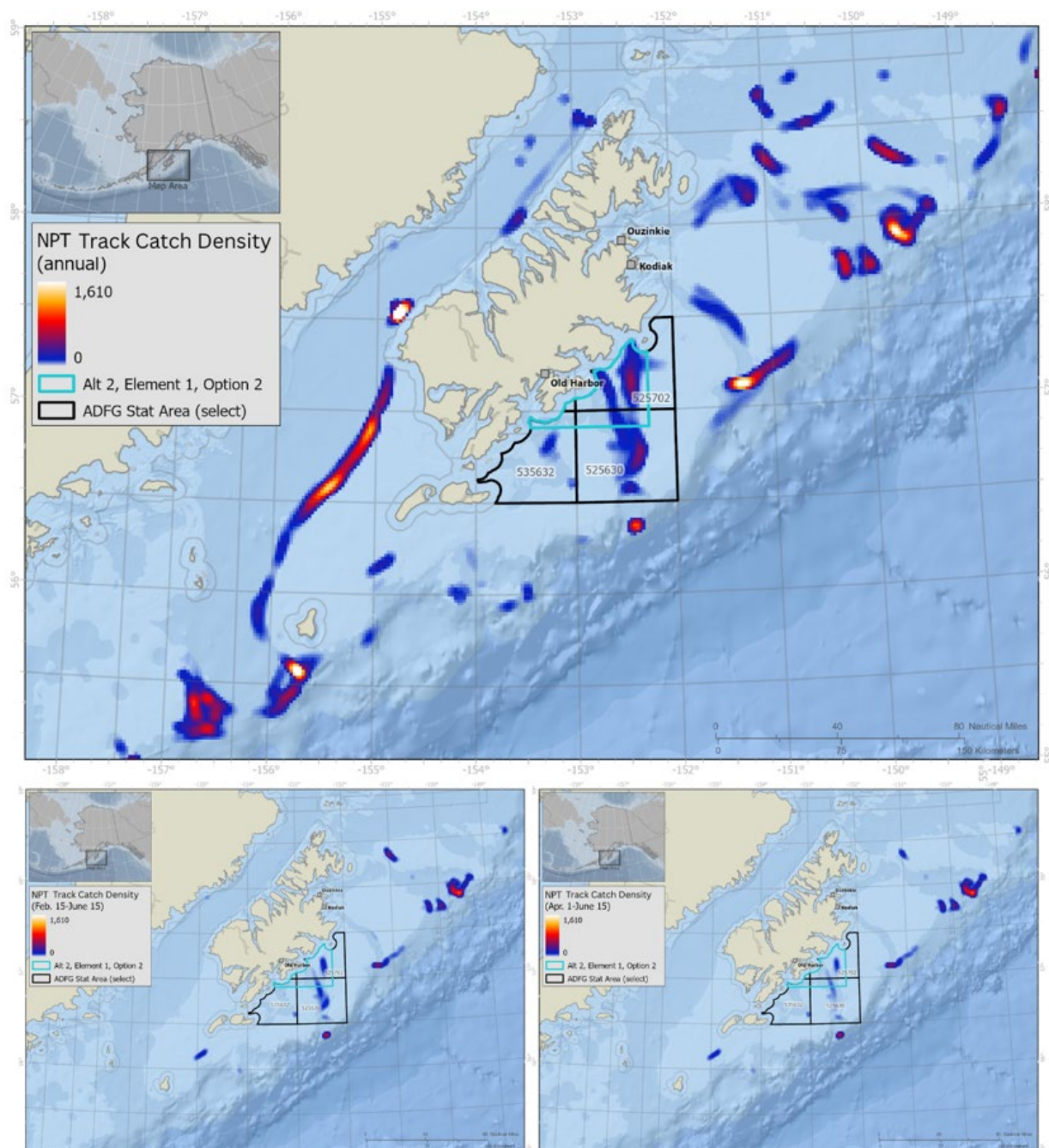


Figure 3-2 Track catch density maps for nonpelagic trawl gear catch, 2012-2025. The scale ranges from low to high density (blue to yellow). Data included in these maps are derived only from observed hauls. The top map represents the year-round closure duration (Alt. 2, Element 2, Option 1); the bottom-left map represents the seasonal closure duration option of Feb 15-June 1 (Alt. 2, Element 2, Option 2a); the bottom-right map represents the seasonal closure duration option of Apr 1-June 15 (Alt. 2, Element 2, Option 2b).

In lieu of CIA data, catch density maps were produced to visualize nonpelagic trawl fishing activities around Kodiak Island from 2012-2025 through a line (or track) density function, where observed catch and track lines were translated to catch density based on the amount of fishing and catch that occurred in

a specific 1 nm grid cell, with a search radius of 2 nm (Figure 3-2). The scale ranges from cooler colors representing low catch density, to warmer colors representing higher catch density. These maps do not represent all fishing activities with this gear type as only observed fishing is included; however, the spatial distribution and density is representative of where historical fishing has occurred and is densest.

For the year-round option, fishing is widespread, with the highest catch densities in both proposed closure areas (Alt. 2, Element 1, Options 1 and 2), in Chiniak Gully to the northeast (statistical area 515700), and along bathymetric contours to the west. Fishing activity is much reduced and less widespread in either seasonal closure option (bottom-left and bottom-right maps), with the least activity in the Apr1-Jun15 timeframe (Alt. 2, Element 2, Option 2b). In either seasonal closure option, NPT fishing still occurs in both proposed closure area options and in the adjacent statistical area, 525630.

3.1.5 Groundfish Pot and Trawl Fisheries, Combined

To provide further context on the groundfish pot and trawl fishing activity occurring in the areas considered for closure, the information within this section provides a high-level summary and comparison by gear type and season. Details on catch, value, and vessel activity occurring within the proposed area closures, by gear type, is included in detail within the preceding sections—this section focuses solely on comparing the activity occurring by gear type, and provides total catch, ex-vessel value, and wholesale values across all groundfish pot and trawl harvests from the areas of interest, combined.

Table 3-16 describes the annual groundfish pot and trawl catch from the statistical areas of interest, as a proportion of the total CGOA catch for each gear type. As shown in the table, annual catch and associated revenues in the CGOA from 2012 through 2025 were primarily generated by the PTR and NPT gear, with pot gear accounting for a smaller share of total activity. The annual average catch for all gears (PTR, NPT, and POT) from 2012 through 2025 was 14,924 mt for area 525702 and 17,423 mt for the custom area, which is 8.8% and 10% of the CGOA annual average total catch, respectively. The average annual ex-vessel value of this combined gear catch was \$5.8 million for area 525702 and \$6.5 million for the custom area and the first wholesale value was \$15.8 million for the area 525702 and \$18.1 million for the custom area.

Table 3-17 and Table 3-18 describe the catch, value, and vessel activity in the proposed area closures occurring during the seasonal time closure windows outlined in Element 2 of Alternative 2. Within either seasonal time closure window, nearly all groundfish fishing activity in the proposed area closures occurs using nonpelagic trawl gear. As noted in Table 3-17, the annual average catch for all gears (PTR, NPT, and POT) from 2012 through 2025 during the seasonal time closure A (2/15-6/15) was 2,157 mt for area 525702 and 2,469 mt for the custom area, which is 2.7% and 3% of the CGOA annual average total catch, respectively. The average annual ex-vessel value of this combined gear catch during the proposed time closure A was \$0.9 million for area 525702 and \$1.0 million for the custom area and the first wholesale value was \$2.6 million for the area 525702 and \$3.0 million for the custom area. As for the proposed closure area B (4/1-6/15) shown in Table 3-18, the annual average catch for all gears (PTR, NPT, and POT) from 2012 through 2025 was 1,406 mt for area 525702 and 1,575 mt for the custom area, which is 5.5% and 6.1% of the CGOA annual average total catch, respectively. The average annual ex-vessel value of this combined gear catch during the proposed time closure B was \$0.5 million for area 525702 and \$0.6 million for the custom area and the first wholesale value was \$1.6 million for the area 525702 and \$1.8 million for the custom area.

Vessel counts by gear type provided in Table 3-16, Table 3-17, and Table 3-18 below are not additive; many CGOA groundfish pot & trawl vessels utilize more than one of these gear types in a given year, with the majority of crossover occurring within vessels utilizing trawl gear. Additional information on vessel crossover between these gear types, and gear flexibility, is described in Section 4.3, and within Table 4-1.

Table 3-16 Annual Central Gulf Catch, Ex-Vessel Value, and Wholesale Value, by Gear Type & Area, 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Catch Volume, mt															
NPT	56,982	66,027	85,489	61,994	58,966	58,289	48,282	52,053	49,029	32,547	34,947	30,218	40,830	37,612	50,947
525702	6,618	6,114	8,233	8,097	9,206	4,763	5,254	8,677	6,476	2,814	1,478	1,146	3,976	4,119	5,498
Custom*	7,093	7,326	9,119	8,038	9,203	5,363	5,617	8,932	6,499	2,731	1,401	1,240	4,056	4,069	5,763
PTR	68,871	74,939	117,994	130,815	111,062	132,157	120,131	91,650	87,553	87,582	112,384	112,464	100,873	130,269	105,625
525702	8,013	6,497	13,022	15,494	25,230	9,960	10,445	7,848	3,048	3,493	4,472	3,231	6,922	8,344	9,001
Custom*	8,066	8,369	17,709	21,910	34,637	14,798	13,237	8,114	3,384	3,941	5,071	3,611	6,994	8,784	11,330
POT	23,035	15,658	21,493	23,442	20,789	11,937	3,750	4,443	3,587	9,592	12,762	9,508	11,571	13,214	13,199
525702	1,344	896	997	1,364	589	370	-	-	-	*	*	*	107	81	425
Custom*	1,227	780	718	879	423	250	-	-	1	107	30	70	85	49	330
CGOA Total, NPT+PTR+POT	148,888	156,624	224,976	216,251	190,817	202,383	172,163	148,146	140,169	129,721	160,093	152,190	153,274	181,095	169,771
525702	15,975	13,507	22,252	24,955	35,025	15,093	15,699	16,525	9,524	6,307	5,950	4,377	11,005	12,544	14,924
Custom	16,386	16,475	27,546	30,827	44,263	20,411	18,854	17,046	9,884	6,779	6,502	4,921	11,135	12,902	17,423
Ex-Vessel Value, millions of 2024 dollars															
NPT	\$42.1	\$38.0	\$44.8	\$33.9	\$32.7	\$33.3	\$25.8	\$22.5	\$17.9	\$14.2	\$18.2	\$12.0	\$13.3	\$13.4	\$25.9
525702	\$4.1	\$3.1	\$4.4	\$4.3	\$4.2	\$2.1	\$2.1	\$3.3	\$2.4	\$1.1	\$0.9	\$0.5	\$1.0	\$1.2	\$2.5
Custom*	\$4.4	\$3.6	\$4.7	\$4.2	\$4.2	\$2.4	\$2.3	\$3.3	\$2.4	\$1.2	\$0.9	\$0.5	\$1.0	\$1.2	\$2.6
PTR	\$37.4	\$37.6	\$44.6	\$42.2	\$25.6	\$31.4	\$42.1	\$34.9	\$28.1	\$26.0	\$43.4	\$33.1	\$20.8	\$31.2	\$34.2
525702	\$4.3	\$3.3	\$4.9	\$5.1	\$5.7	\$2.3	\$3.6	\$2.9	\$1.0	\$1.0	\$1.7	\$0.9	\$1.4	\$2.0	\$2.9
Custom*	\$4.3	\$4.2	\$6.8	\$7.1	\$7.9	\$3.4	\$4.6	\$3.0	\$1.1	\$1.2	\$2.0	\$1.0	\$1.4	\$2.1	\$3.6
POT	\$25.0	\$12.4	\$19.8	\$21.4	\$18.5	\$17.3	\$8.9	\$11.9	\$13.5	\$34.6	\$45.9	\$24.3	\$24.0	\$41.1	\$22.8
525702	\$1.5	\$0.7	\$1.0	\$1.3	\$0.5	\$0.4	\$0.0	\$0.0	\$0.0	*	*	*	\$0.1	\$0.1	\$0.4
Custom*	\$1.3	\$0.6	\$0.7	\$0.8	\$0.4	\$0.3	\$0.0	\$0.0	\$0.0	\$0.1	\$0.0	\$0.2	\$0.1	\$0.1	\$0.3
CGOA Total, NPT+PTR+POT	\$104.5	\$88.1	\$109.1	\$97.5	\$76.9	\$82.0	\$76.9	\$69.2	\$69.5	\$74.8	\$107.6	\$69.3	\$58.0	\$85.7	\$82.8
525702	\$9.9	\$7.1	\$10.3	\$10.6	\$10.4	\$4.8	\$5.7	\$6.2	\$3.4	\$2.1	\$2.6	\$1.4	\$2.5	\$3.3	\$5.8
Custom	\$10.0	\$8.4	\$12.1	\$12.2	\$12.5	\$6.1	\$6.9	\$6.4	\$3.5	\$2.5	\$2.9	\$1.7	\$2.5	\$3.3	\$6.5
Wholesale Value, millions of 2024 dollars															
NPT	\$103.7	\$104.0	\$122.5	\$88.9	\$91.4	\$100.1	\$69.9	\$61.0	\$51.7	\$42.2	\$55.5	\$42.2	\$54.4	NA	\$76.0
525702	\$10.1	\$7.8	\$10.1	\$10.1	\$11.2	\$6.4	\$6.1	\$8.4	\$6.2	\$3.9	\$2.6	\$1.8	\$4.5	NA	\$6.9
Custom*	\$10.8	\$9.3	\$11.1	\$10.0	\$11.5	\$7.4	\$6.5	\$8.5	\$6.4	\$3.9	\$2.5	\$1.9	\$4.6	NA	\$7.3
PTR	\$83.6	\$100.8	\$117.9	\$110.4	\$89.5	\$94.6	\$107.8	\$84.5	\$74.0	\$77.5	\$117.5	\$108.7	\$78.4	NA	\$95.8
525702	\$9.3	\$8.6	\$12.9	\$13.0	\$20.0	\$6.8	\$9.0	\$7.0	\$2.5	\$2.9	\$4.4	\$3.0	\$5.0	NA	\$8.0
Custom*	\$9.3	\$11.1	\$17.6	\$18.3	\$27.5	\$10.3	\$11.5	\$7.3	\$2.7	\$3.2	\$5.1	\$3.4	\$5.1	NA	\$10.2
POT	\$45.5	\$31.1	\$41.9	\$39.7	\$38.5	\$28.4	\$14.4	\$19.8	\$20.4	\$47.1	\$65.7	\$36.0	\$40.3	NA	\$36.1
525702	\$2.7	\$1.8	\$1.9	\$2.3	\$1.1	\$0.7	\$0.0	\$0.0	\$0.0	\$0.2	\$0.1	\$0.5	\$0.2	NA	\$0.9
Custom*	\$2.4	\$1.6	\$1.4	\$1.5	\$0.8	\$0.5	\$0.0	\$0.0	\$0.0	\$0.3	\$0.1	\$0.3	\$0.2	NA	\$0.7
CGOA Total, NPT+PTR+POT	\$232.8	\$235.9	\$282.2	\$239.0	\$219.4	\$223.1	\$192.1	\$165.4	\$146.1	\$166.9	\$238.7	\$186.9	\$173.0	NA	\$207.8
525702	\$22.1	\$18.2	\$25.0	\$25.4	\$32.3	\$13.9	\$15.1	\$15.4	\$8.7	\$6.9	\$7.1	\$5.2	\$9.8	NA	\$15.8
Custom	\$22.6	\$22.0	\$30.1	\$29.8	\$39.8	\$18.2	\$18.0	\$15.8	\$9.1	\$7.4	\$7.7	\$5.6	\$9.9	NA	\$18.1
Vessels, CVs and C/Ps combined															
NPT	66	67	68	52	51	48	45	49	43	35	47	33	46	35	49
525702	41	33	29	31	35	21	21	24	19	16	12	11	17	10	23
PTR	82	76	57	66	74	78	39	51	85	117	123	111	97	114	84
525702	11	9	6	7	9	4	-	-	-	2	2	2	3	3	4
POT	61	49	50	55	55	47	55	55	56	47	43	41	39	37	49
525702	33	31	39	35	40	23	33	25	16	19	21	16	19	19	26
CGOA Total, NPT+PTR+POT	158	149	131	133	140	139	104	119	153	172	180	159	148	160	146

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

*Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-17 Central Gulf Catch, Ex-Vessel Value, and Wholesale Value, by Gear Type & Area, within Seasonal Time Closure Option A (2/15 to 6/15), 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Seasonal Time Closure Option A (2/15 to 6/15) Catch Volume, mt															
NPT	24,790	28,515	35,423	25,421	27,207	23,223	17,997	26,408	28,065	10,348	12,483	11,391	15,094	11,865	21,302
525702	2,154	2,729	1,980	2,022	3,491	2,760	1,386	3,689	3,667	357	479	537	1,682	1,650	2,042
Custom*	2,639	3,864	2,894	2,118	3,732	3,356	1,754	4,159	3,726	367	455	558	1,668	1,528	2,344
PTR	40,062	22,458	68,378	82,193	45,001	50,832	56,137	34,389	39,252	48,985	63,255	68,628	67,641	86,776	54,105
525702	-	*	-	867	*	*	-	-	*	*	*	*	-	-	95
Custom*	-	*	-	877	94	8	*	-	*	*	51	257	-	4	112
POT	9,458	8,084	8,995	9,858	8,934	5,769	1,679	1,329	1,754	4,264	6,259	5,256	4,785	6,208	5,902
525702	-	-	-	-	-	170	-	-	-	-	*	*	-	-	20
Custom*	-	-	-	-	-	103	-	-	*	*	7	63	*	-	13
CGOA Total, NPT+PTR+POT	74,309	59,057	112,796	117,472	81,143	79,823	75,813	62,125	69,071	63,597	81,997	85,274	87,520	104,849	81,310
525702	2,154	2,729	1,980	2,888	3,491	2,930	1,386	3,689	3,667	357	479	537	1,682	1,650	2,157
Custom*	2,639	3,864	2,894	2,996	3,826	3,467	1,754	4,159	3,726	367	512	878	1,668	1,532	2,469
Seasonal Time Closure Option A (2/15 to 6/15) Ex-Vessel Value, millions of 2024 dollars															
NPT	\$18.1	\$16.0	\$19.1	\$12.7	\$15.7	\$13.7	\$8.6	\$11.8	\$9.5	\$4.8	\$7.0	\$4.6	\$5.0	\$5.6	\$10.9
PTR	\$21.5	\$10.8	\$24.9	\$25.6	\$9.9	\$11.8	\$19.3	\$13.0	\$12.4	\$14.1	\$23.7	\$19.9	\$13.6	\$20.9	\$17.2
POT	\$10.2	\$6.4	\$8.0	\$8.7	\$7.9	\$7.3	\$4.0	\$4.6	\$5.3	\$16.9	\$22.1	\$13.9	\$11.4	\$21.2	\$10.6
CGOA Total, NPT+PTR+POT	\$49.7	\$33.2	\$52.1	\$47.1	\$33.4	\$32.7	\$31.9	\$29.4	\$27.1	\$35.8	\$52.8	\$38.5	\$30.1	\$47.7	\$38.7
525702	\$1.5	\$1.3	\$0.9	\$1.2	\$1.6	\$1.3	\$0.5	\$1.4	\$1.2	\$0.2	\$0.4	\$0.2	\$0.4	\$0.5	\$0.9
Custom*	\$1.7	\$1.7	\$1.3	\$1.3	\$1.7	\$1.5	\$0.7	\$1.5	\$1.3	\$0.2	\$0.4	\$0.4	\$0.4	\$0.5	\$1.0
Seasonal Time Closure Option A (2/15 to 6/15) Wholesale Value, millions of 2024 dollars															
NPT	\$45.8	\$47.3	\$53.5	\$35.5	\$43.0	\$39.7	\$26.4	\$30.9	\$28.8	\$15.1	\$22.9	\$18.2	\$21.6	NA	\$33.0
PTR	\$47.9	\$29.3	\$66.0	\$67.0	\$34.6	\$35.6	\$50.3	\$31.5	\$32.8	\$43.0	\$64.6	\$65.7	\$50.9	NA	\$47.6
POT	\$18.6	\$16.0	\$17.5	\$16.7	\$16.5	\$12.4	\$6.3	\$7.0	\$8.8	\$22.5	\$31.7	\$20.2	\$18.2	NA	\$16.4
CGOA Total, NPT+PTR+POT	\$112.4	\$92.6	\$137.0	\$119.2	\$94.1	\$87.7	\$82.9	\$69.4	\$70.4	\$80.6	\$119.3	\$104.2	\$90.7	NA	\$97.0
525702	\$3.4	\$3.6	\$2.1	\$2.9	\$4.2	\$4.2	\$1.6	\$3.4	\$3.4	\$0.7	\$1.1	\$1.4	\$1.8	NA	\$2.6
Custom	\$4.1	\$5.0	\$3.2	\$3.1	\$4.7	\$5.0	\$2.2	\$3.7	\$3.3	\$0.7	\$1.1	\$1.4	\$1.8	NA	\$3.0
Seasonal Time Closure Option A (2/15 to 6/15) Vessels, CVs and C/Ps combined															
NPT	57	52	57	44	40	38	33	37	37	32	36	28	38	31	40
525702	28	23	19	19	21	17	17	21	17	12	8	7	4	7	16
PTR	38	39	43	50	42	40	50	45	45	40	38	41	38	36	42
525702	-	1	-	9	1	2	-	-	2	1	1	4	-	-	2
POT	77	64	50	59	61	64	28	25	39	74	86	82	68	83	61
525702	-	-	-	-	-	3	-	-	-	-	1	2	-	-	0
CGOA Total, NPT+PTR+POT	172	155	150	153	143	142	111	107	121	146	160	151	144	150	143

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

*Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

Table 3-18 Central Gulf Catch, Ex-Vessel Value, and Wholesale Value, by Gear Type & Area, within Seasonal Time Closure Option B (4/1 to 6/15), 2012-2025

Statistical Areas	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Seasonal Time Closure Option B (4/1 to 6/15) Catch Volume, mt															
NPT	14,947	15,126	25,617	19,153	22,228	17,607	14,477	17,429	24,345	8,195	10,183	9,611	12,423	10,073	15,815
525702	1,198	1,505	1,513	1,291	2,341	2,518	758	1,800	2,841	*	*	436	1,682	1,491	1,393
Custom*	1,419	2,044	2,122	1,329	2,664	2,680	949	1,812	2,859	62	114	450	1,668	1,370	1,539
PTR	2,161	279	3,796	22,989	6,283	3,174	4,234	4,175	6,294	9,581	13,270	13,287	12,026	19,726	8,663
525702	-	-	-	-	-	*	-	-	-	-	-	*	-	-	14
Custom*	-	-	-	-	-	4	*	-	-	-	*	257	-	*	29
POT	-	152	226	134	1,085	1,381	251	504	835	2,672	3,150	2,544	2,613	2,940	1,320
525702	-	-	-	-	-	*	-	-	-	-	-	54	-	-	*
Custom*	-	-	-	-	-	*	-	-	1	1	1	34	4	-	7
CGOA Total, NPT+PTR+POT	17,108	15,557	29,640	42,276	29,596	22,163	18,962	22,108	31,474	20,448	26,603	25,442	27,062	32,739	25,798
525702	1,198	1,505	1,513	1,291	2,341	2,518	758	1,800	2,841	-	-	490	1,682	1,491	1,406
Custom	1,419	2,044	2,122	1,329	2,664	2,684	949	1,812	2,859	63	115	741	1,672	1,370	1,575
Seasonal Time Closure Option B (4/1 to 6/15) Ex-Vessel Value, millions of 2024 dollars															
NPT	\$9.9	\$8.4	\$12.6	\$9.2	\$12.5	\$10.8	\$7.0	\$8.9	\$8.3	\$3.2	\$4.8	\$3.3	\$3.8	\$4.2	\$7.6
PTR	\$1.8	\$0.2	\$1.5	\$7.4	\$1.6	\$1.2	\$2.2	\$2.2	\$2.1	\$3.1	\$5.0	\$4.0	\$2.5	\$5.1	\$2.8
POT	\$0.0	\$0.1	\$0.2	\$0.1	\$0.9	\$2.7	\$2.1	\$3.2	\$4.1	\$14.7	\$16.9	\$10.8	\$9.5	\$16.4	\$5.8
CGOA Total, NPT+PTR+POT	\$11.6	\$8.7	\$14.3	\$16.7	\$15.0	\$14.7	\$11.4	\$14.2	\$14.5	\$20.9	\$26.7	\$18.0	\$15.8	\$25.8	\$16.3
525702	\$0.6	\$0.6	\$0.6	\$0.4	\$0.9	\$1.0	\$0.3	\$0.8	\$1.0	\$0.0	\$0.0	\$0.3	\$0.4	\$0.4	\$0.5
Custom	\$0.7	\$0.8	\$0.8	\$0.5	\$1.1	\$1.1	\$0.4	\$0.7	\$1.0	\$0.0	\$0.1	\$0.3	\$0.4	\$0.4	\$0.6
Seasonal Time Closure Option B (4/1 to 6/15) Wholesale Value, millions of 2024 dollars															
NPT	\$28.1	\$25.4	\$36.7	\$26.7	\$35.5	\$30.8	\$22.6	\$23.3	\$25.5	\$10.5	\$16.5	\$13.8	\$16.5	NA	\$24.0
PTR	\$5.3	\$0.5	\$4.1	\$19.6	\$5.5	\$4.0	\$7.6	\$5.4	\$7.4	\$11.9	\$17.0	\$16.0	\$12.0	NA	\$8.9
POT	\$0.0	\$0.3	\$0.4	\$0.2	\$2.0	\$3.9	\$2.4	\$4.3	\$5.4	\$17.9	\$21.0	\$12.5	\$13.1	NA	\$6.4
CGOA Total, NPT+PTR+POT	\$33.4	\$26.2	\$41.3	\$46.5	\$43.0	\$38.8	\$32.6	\$33.0	\$38.2	\$40.3	\$54.5	\$42.3	\$41.7	NA	\$39.4
525702	\$1.6	\$1.6	\$1.4	\$1.1	\$2.6	\$3.6	\$1.0	\$1.8	\$2.6	\$0.0	\$0.2	\$1.0	\$1.8	NA	\$1.6
Custom	\$1.9	\$2.2	\$1.9	\$1.2	\$3.2	\$3.9	\$1.4	\$1.8	\$2.5	\$0.1	\$0.3	\$1.0	\$1.8	NA	\$1.8
Seasonal Time Closure Option B (4/1 to 6/15) Vessels, CVs and C/Ps combined															
NPT	41	33	43	38	38	33	32	36	35	26	33	27	28	30	34
525702	17	19	15	11	18	16	14	15	15	3	3	6	4	7	12
PTR	13	3	19	46	22	23	17	18	22	23	28	27	32	30	23
525702	-	-	-	-	-	1	-	-	-	-	-	4	-	-	0
POT	-	17	7	8	12	42	7	13	25	61	65	58	46	54	30
525702	-	-	-	-	-	2	-	-	-	-	-	1	-	-	0
CGOA Total, NPT+PTR+POT	54	53	69	92	72	98	56	67	82	110	126	112	106	114	87

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

*Custom area is a portion of 525630, 525702, 535632 and 535704 – see Table 3-2 for additional information.

3.2 Kodiak Tanner Crab Fisheries

Tanner crab fisheries are important in the Kodiak region, and the species is harvested through commercial, sport, and subsistence fisheries. The section below describes harvest efforts in these fisheries, including information on the volume, value, and spatial distribution of efforts. Information about the abundance, biology, and spatial distribution of Tanner crab in the Kodiak area is provided separately, in Section 5.3.

3.2.1 Kodiak District Commercial Tanner Fishery

Figure 3-3 shows ADF&G Kodiak Tanner crab management sections, it is provided for context given the purpose and need statement for this action (see Section 1.1). The statistical areas of interest lie within the Eastside & Southeast Tanner Crab Commercial sections.

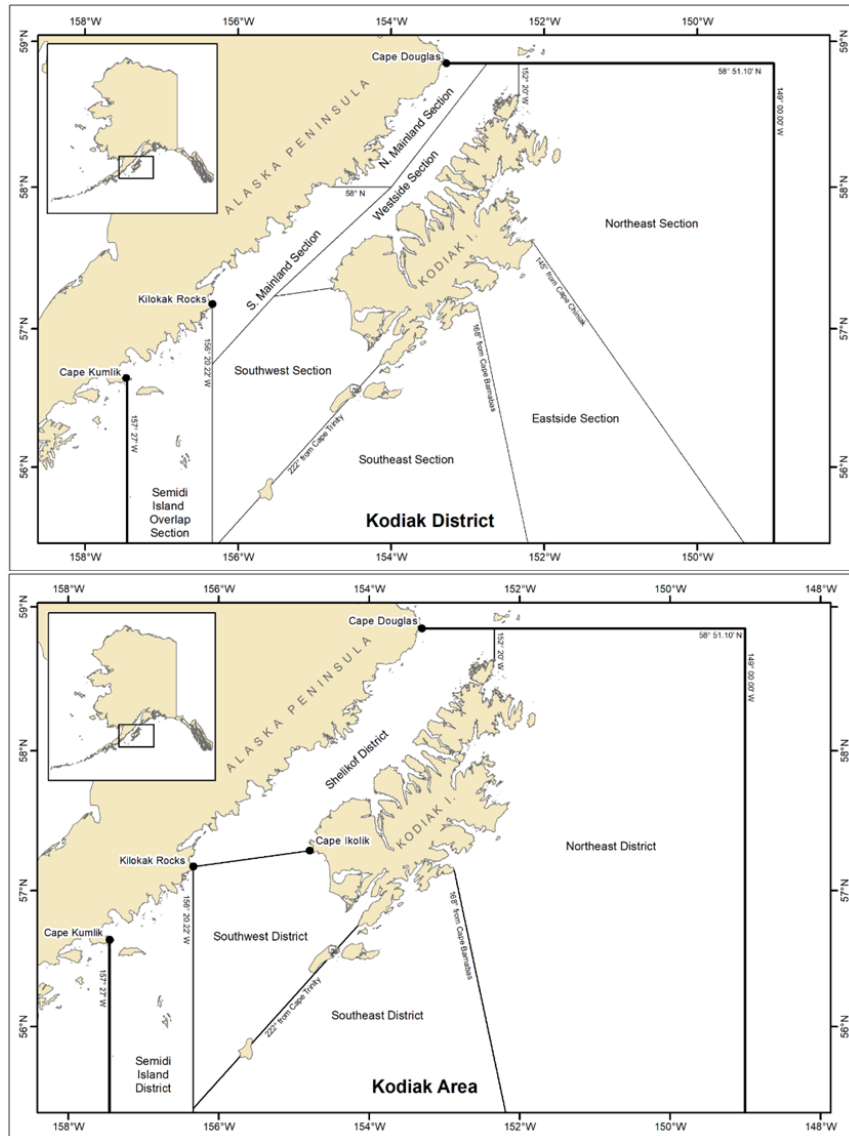


Figure 3-3 ADF&G Kodiak District Tanner crab management Sections (top panel), and red king crab management Districts (bottom panel). Source: Whiteside, 2024

During the 14-year period included in this analysis (2012-2025), the Tanner crab commercial fishery in the Kodiak District was open in nine years. Harvest data for these years is shown in Table 3-19 and Table 3-20 below. Of the eight Sections in the Kodiak District, only four have opened since 2012: Eastside, Southeast, Southwest, and Semidi Island Overlap (abbreviated Semidi). The Eastside and Southeast sections have been open every commercial fishery year in this period except for 2018. The total GHL was fully utilized every year, with the lowest in 2018 and 2020 (400,000 lbs) and the highest in 2023 (5,800,000 lbs). In this same period, the Eastside section had the highest GHLS, ranging from 260,000 lbs in 2018 to 4,000,000 lbs in 2023.

As described further in Section 5.3.1.2 and within the Annual Management Report published by ADF&G (Nichols, et al., 2025), GHLS are set by section, and vessel operators must register to fish in a particular section and may not be registered for, or fish in, more than one section at a time. Of the eight sections in the Kodiak district, only four have opened since 2012: Eastside, Southeast, Southwest, and Semidi Island Overlap. The Eastside and Southeast sections (which encapsulate the areas evaluated for closure in this

action) have been open every commercial fishing year (not including years closed to commercial fishing: 2014-2017, and 2021) except 2018, where the Southeast section was not open.

Figure 15 in the ADF&G 2025 Tanner crab bottom trawl survey results (ADF&G, 2025) shows 2025 Tanner crab harvest by statistical area from Eastside and Southeast Sections. The harvest reported in the blue areas are those areas included in this analysis (525702, 526630, and 535632).

Table 3-19 and Table 3-20 below describe the harvest volume & ex-vessel value of the Kodiak district commercial Tanner crab fishery, from 2012 to 2025. Data is not shown for 2014-2017 and 2021, as the fishery was closed during those years. Within the period shown, Tanner crab harvests from the statistical areas of interest accounted for at least 10% of the harvest in all years, and over 50% of the harvest in two years. Variations in the proportion of harvest coming from these areas can occur for a number of reasons, with a primary driver being the sections open to fishing in a given year. In both years where the harvest from the statistical areas of interest exceeded 50% of total Kodiak district commercial Tanner crab harvest volumes, only the Eastside and Southeast sections were open to fishing. In 2023, the highest commercial harvest volume in the series, harvest from the statistical areas of interest accounted for 22.9% of total Kodiak district harvests.

Table 3-19 Harvest Volume of the Kodiak Commercial Tanner crab fishery, 2012 – 2025, in statistical areas of interest

Statistical Area	2012	2013	2018	2019	2020	2022	2023	2024	2025
525630	7,445	66,486	952	15,178	173,798	21,131	42,894	5,189	101,837
525702	161,362	169,678	49,694	179,993	71,441	105,738	1,214,904	818,909	100,519
535632	62,048	26,346	-	9,108	15,294	36,941	77,710	24,217	146,499
Total, stat areas of interest*	230,855	262,510	50,646	204,279	260,533	163,810	1,335,508	848,315	348,855
Eastside + Southeast Volume	934,436	658,196	272,289	620,729	400,994	921,121	4,893,596	2,992,045	577,953
Kodiak District Volume	1,072,211	658,196	431,993	620,729	400,994	1,250,702	5,843,504	3,135,526	577,953
% from stat areas of interest	21.5%	39.9%	11.7%	32.9%	65.0%	13.1%	22.9%	27.1%	60.4%

Source: ADF&G CFEC fish tickets. Data compiled by AKFIN in Comprehensive_FT and Shellfish eLandings data.

Note: All values estimated by CFEC, except for 2025 - the price per pound in 2025 is preliminary. Totals may differ slightly from those reported in CFEC FMPs. Eastside & Southeast value calculated by apportioning total district value by the percent of harvest occurring in those sections.

* Statistical area 535704 is fully encompassed in Option 2 but is not included as there is minimal to no Tanner crab fishing.

Table 3-20 Nominal ex-vessel value of the Kodiak Commercial Tanner crab fishery, 2012 – 2025, in statistical areas of interest

Statistical Area	2012	2013	2018	2019	2020	2022	2023	2024	2025
525630	\$22,264	\$177,030	\$4,236	\$65,424	\$720,877	\$175,134	\$138,941	\$19,079	\$562,141
525702	\$479,327	\$451,572	\$223,617	\$783,780	\$302,279	\$867,823	\$3,949,636	\$2,991,223	\$554,839
535632	\$183,227	\$54,890	-	\$40,074	\$64,638	\$305,258	\$257,085	\$89,147	\$808,674
Total, stat areas of interest*	\$684,819	\$683,492	\$227,853	\$889,279	\$1,087,794	\$1,348,215	\$4,345,662	\$3,099,449	\$1,925,654
Eastside + Southeast Exvessel Value*	\$2,759,320	\$1,740,029	\$1,217,364	\$2,685,374	\$1,673,710	\$7,532,600	\$15,904,099	\$10,912,788	\$3,190,278
Kodiak District Exvessel Value	\$3,166,158	\$1,740,029	\$1,931,375	\$2,685,374	\$1,673,710	\$10,227,794	\$18,991,284	\$11,436,102	\$3,190,278
% from stat areas of interest	21.6%	39.3%	11.8%	33.1%	65.0%	13.2%	22.9%	27.1%	60.4%

Source: ADF&G CFEC fish tickets. Data compiled by AKFIN in Comprehensive_FT and Shellfish eLandings data.

Note: All values estimated by CFEC, except for 2025 - the price per pound in 2025 is preliminary. Totals may differ slightly from those reported in CFEC FMPs. Eastside & Southeast value calculated by apportioning total district value by the percent of harvest occurring in those sections.

* Statistical area 535704 is fully encompassed in Option 2 but is not included as there is minimal to no Tanner crab fishing.

3.2.2 Kodiak Subsistence and Sport Tanner Fisheries

Tanner crab are an important sport and subsistence species in the Kodiak region, and residents and visitors of the region are significantly engaged in subsistence and sport fishing efforts. The areas of interest for this action lie adjacent to Ugak Bay (accessible through the Kodiak road system), and the community of Old Harbor, both of which have been hotspots for Tanner crab sport harvest efforts within the past decade.⁹ Readily-available data on subsistence harvest distribution was not available for this analysis, however it is assumed that these areas are also hotspots for subsistence harvests given that subsistence anglers face similar operational constraints to sport anglers. Sport and subsistence harvests both tend to be concentrated around Kodiak communities, or areas accessible through the road system.

Tanner crab are a customary and traditional subsistence stock in the Kodiak area, and likely support household food security, particularly in smaller communities where pounds harvested per capita are high. Tanner crab comprise the highest proportion of marine invertebrate harvests in the Kodiak area in terms of pounds of usable weight. An estimated 16.8% of households in the Kodiak area used Tanner crab in 2021. A higher percentage of households receive Tanner crab (12.8%) than those that harvest (4.7%), indicating that the sharing of Tanner crab resources in the area is common (Keating, et al. 2021).

Historical subsistence and sport harvests of Tanner crab in the Kodiak Management area are shown Table 3-21 below. Generally, subsistence harvest totals are reflective of Alaska resident harvests, and sportfish harvest totals are reflective of nonresident harvests.¹⁰ Annual counts returned subsistence crab permits are also shown below, which describe the number of Kodiak crab subsistence harvesters. However sportfish harvests are not shown; these cannot be broken out by species groups and are therefore not reflective of Tanner crab sport harvest participation. Subsistence permit counts offer a better proxy, as they can be broken out to include only harvesters of Kodiak crab species; however this may include individuals who

⁹ Spatial sport harvest distribution data is available through the ADF&G Sport Harvest Survey. The Sport Fish Division has conducted a mail survey to estimate sport fishing total harvest (fish kept) since 1977 and total catch (fish kept plus fish released) since 1990. Households where at least one person acquired some type of sport fishing license are included in the surveyed pool.

¹⁰ Under State law, all Alaska residents qualify for participation in subsistence harvests. Additional information for Kodiak area subsistence shellfish fishery regulations are available at 5 AAC 02.400 through 5 AAC 02.466. Non-residents must obtain a non-resident sportfish license to harvest Tanner crab.

harvested only Dungeness or king crab, and are therefore also likely to overstate Tanner subsistence fishery engagement to some degree. With that disclaimer in mind, the total number of returned subsistence crab permits has generally followed a downward trend since 2015. A total of 1,019 subsistence crab harvest permits were returned in 2024, the lowest shown in the time series.

In 2024, an estimated 576 Tanner crab were harvested in the 2024 Kodiak sport fishery, and 3,064 Tanner crab were harvested in the Kodiak subsistence fishery. Sport harvests varied widely within the 10-year period shown. While subsistence harvests generally followed similar patterns, subsistence harvest totals were less variable.

Table 3-21 Kodiak Subsistence and Sport Tanner Crab Harvests, 2015 – 2024

Year	Kodiak Subsistence Crab Permits Returned	Total Kodiak Subsistence Tanner Crab Harvest (count)	Estimated Kodiak Sport Tanner Crab Harvest (count)
2015	1,596	3,388	800
2016	1,592	2,472	338
2017	1,539	3,368	84
2018	1,406	4,215	463
2019	1,259	2,599	553
2020	1,196	3,146	837
2021	1,156	4,078	1,108
2022	1,120	4,693	1,047
2023	1,047	4,258	1,903
2024	1,019	3,064	576
Average	1,293	3,528	771

Source: ADF&G Division of Commercial Fisheries, and ADF&G Division of Sport Fish—Sport Fishing Survey Database.

3.3 Products and Markets

The 2025 Groundfish Economic SAFE provides information on groundfish production products by species, between 2020 and 2024. Table 3-22 summarizes this information, including only the total round weight of products from all groundfish species. Additional detail by species can be found in the source document. Non-groundfish species, including salmon, herring, and crab, are not included in this table. Therefore, these data are not representative of all processed product weights in the GOA.

Head and gut (H&G) comprises the majority of processed groundfish products, by first wholesale production weight. Between 2020 and 2024 H&G products represented between 56% and 67% of the total wholesale production weight of GOA groundfish products. Other fillets (which includes fillets with or without skin, with or without ribs, and skinless/boneless fillets) comprised the second highest proportion by first wholesale production weight, representing between 9% and 14% of the total wholesale production weight of GOA groundfish products.

Table 3-22 Total round weight of product forms, 2020-2024

	2020	2021	2022	2023	2024
Whole Fish	11.6	4.14	2.6	6.28	5.18
Head and Gut	50.81	45.33	56.25	51.46	65.09
Salted/Split	*	-	-	*	-
Kirimi	*	*	-	*	-
Roe	1.74	1.56	2.23	2.51	2.23
Fillets	1.12	2.7	3.85	3.03	2.72
Deep-Skin Fillets	0.23	*	*	*	*
Other Fillets	7.6	8.65	11.77	13.19	9.75
Surimi	5.43	5.93	6.48	9.59	5.43
Minced Fish	1.8	0.76	0.66	0.95	1.28
Fishmeal	*	0.5	*	1.36	1.3
Other Products	1.71	3.16	5.13	3.97	4.57
All Products	82.05	72.74	88.97	92.34	97.55

Source: Table 4.34, 2025 Groundfish Economic SAFE.

Note: These estimates are for catch from both federal and state of Alaska groundfish fisheries. "***" indicates a confidential value; "-" indicates no applicable data or value.

3.4 Groundfish Fishery Participation by Community

A series of tables based on existing quantitative fishery information from 2012 through 2024 were developed to identify patterns of engagement (or participation) in the GOA groundfish fishery in statistical area 525702. The distribution and relative magnitude of community engagement in the groundfish fishery in statistical area 525702 for vessels was measured by using catch accounting data.

Some caution in how this information is interpreted is warranted because it is not unusual for vessels to have complex ownership structures that involve more than one entity in more than one community or region. Additionally, the community identified by ownership address may not directly indicate where a vessel spends most of its time, purchases services, or hires its crew from. However, what community ownership address information does provide is an approximate indicator of the distribution and magnitude of ownership ties to a particular community and region. In this way, it is a proxy for some economic activity in the community that is associated with the fishery. The listed ownership address was also used in this section as a way to connect vessels to communities rather than other indicators, such as vessel homeport information, because other SIAs conducted for FMP amendment analysis for the Council have indicated the problematic nature of the existing vessel homeport data.

To understand the distribution and relative magnitude of community engagement in the groundfish fishery in statistical area 525702 through the shorebased processing component, shorebased processors were identified in data provided by the AFKIN using the intent to operate shorebased processor codes. This approach provides information based on the operating location of the plant, rather than other indicators such as company ownership address, a relative indicator of the local volume of fishery-related activity, and a rough proxy for the relative level of associated employment and local government revenues.

The portion of the review focusing on communities linked to the groundfish fishery in statistical area 525702 also includes a series of tables based on existing quantitative fishery information to identify patterns of economic dependence on the fishery for communities affiliated with the various sectors by ownership address and those Alaska communities where shorebased processing occurs. “Dependence” is a complex concept with economic and social dimensions, and it can be measured in multiple ways. This portion of the section addresses the economic dimension of communities’ dependence on the groundfish fishery in statistical area 525702. For communities affiliated with the fishery by vessel ownership address, economic dependence is characterized by comparing the gross ex-vessel or first wholesale revenues earned from the groundfish fishery in statistical area 525702 to the total revenues generated by the same vessels in all other fisheries (species, gear, and areas). The same general procedure is used for the shorebased processing component.

Community-level engagement and dependence on a fishery can be characterized in different ways, whether it is by being a community listed as the ownership address of a vessel, being the location of a shore-based processing facility, being the base of CP’s economic activity during port calls, being the location of fishery support sector businesses, or being the primary residence of individuals engaging in sport or subsistence harvests for the species of interest.

Some information concerning the impacts of fisheries on the community can be gleaned from examining the residency information of participants in the fisheries. Participation by residency estimates can be generated for each of the primary participating sectors: catcher vessels (CVs), catcher processors (CPs), and processors. In each case, care should be taken in evaluating the importance of the estimates, as the information available to estimate participation by residence will not fully reflect the distribution of regional and local impacts. For example, a vessel owner may not reside in the community that is used as a registered mailing address. In addition, participants in all sectors likely purchase inputs and hire crew from outside of their communities of residence. In addition, impacts of similar magnitudes will have

differing importance with the size of the local and regional economy. Small communities could be greatly affected by impacts that are likely to go unnoticed in large, more diversified communities.

This section contains a quantitative evaluation for the four communities that were most substantially engaged in and/or dependent upon the impacted fisheries (CGOA groundfish pot and trawl fisheries, and Kodiak Tanner crab fisheries) over the period 2012-2024, organized by their geographic location and sector mode of engagement in the fisheries. These evaluations are based on fishing in statistical area 525702 due to data limitations in generating vessel counts by custom areas.

The 4 communities identified as being engaged in or economically dependent on the fisheries impacted by this action are Kodiak, Newport, Seattle, and Homer. Table 3-23 below summarizes the ways in which these communities are engaged in or economically dependent on the fisheries impacted by this action.

Table 3-23 Type of community engagement identified with harvesters and processors associated with fishing in statistical area 525702

Community	Harvesting Engagement					Processing Engagement	
	PTR vessel owners	NPT vessel owners	Groundfish pot vessel owners	Kodiak commercial Tanner crab vessel owners	Sport or Subsistence Tanner crab harvesters	Groundfish pot & trawl harvest from 525702	Kodiak Commercial Tanner Crab
Kodiak	X	X	X	X	X	X	X
Other Kodiak Island Communities				X	X		
Homer			X	X			
Newport	X	X					
Seattle MSA	X	X					

3.4.1 Groundfish Nonpelagic Trawl Community Engagement

Table 3-24 provides a count of nonpelagic trawl catcher vessels and catcher-processors harvesting groundfish from statistical area 525702, summarized by the community associated with each vessel's historic ownership address, 2012–2024. The table shows that an average of approximately 22 vessels participate annually, with ownership distributed primarily across Alaska and Washington communities, and smaller numbers from Oregon and other states. Of those communities, Kodiak is the single largest source of nonpelagic vessels active in statistical area 525702, averaging 11.2 vessels per year. Other communities contribute far fewer vessels annually (e.g. Newport 1.8 vessels, Seattle 2.5 vessels, other Washington at 3.1 vessels).

Table 3-24 Nonpelagic Trawl Catcher Vessels & Catcher Processors Harvesting Groundfish from Statistical Area 525702 by Community of Vessel's Historic Ownership Address, 2012-2024 (number of vessels)

Community	Annual Average													Annual Average 2012-2024 (percent)	Unique Vessels 2012-2024 (number)
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2012-2024 (number)	
Alaska (Kodiak)	13	12	12	15	16	9	11	15	12	10	5	7	9	11.2	22
Newport	4	3	2	3	1	2	1	1	0	0	2	2	2	1.8	6
Other Oregon*	7	6	5	4	4	4	4	4	4	2	1	0	1	3.5	11
Oregon	11	9	7	7	5	6	5	5	4	2	3	2	3	5.3	14
Seattle MSA	6	5	2	4	7	1	2	1	0	1	1	1	1	2.5	13
Other Washington**	5	5	6	4	4	3	2	2	2	2	2	1	2	3.1	6
Washington	11	10	8	8	11	4	4	3	2	3	3	2	3	5.5	19
Other States***	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	1
Total	35	31	27	30	32	19	20	23	18	15	11	11	15	22.1	49

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other Oregon includes: Astoria, Brookings, Charleston, Florence, Independence, Keizer, Port Orford, Siletz and South Beach

** Other Washington includes: Bellingham, Camas, East Wenatchee, and South Bend

*** Other States includes: Rockland (ME)

Table 3-25 provides ex-vessel value earned by nonpelagic trawl catcher vessels while harvesting groundfish from statistical area 525702, reported by vessel ownership community and expressed in millions of 2024 dollars. Kodiak vessels generate the majority of ex-vessel value from NPT harvests in 525702, earning an annual average of \$1.2 million, which represents 53% of all revenue generated in the area (\$1.2 of \$2.3 million). No other community contributes more than \$0.6 million annually.

Table 3-25 Nonpelagic Trawl Catcher Vessels' Ex-Vessel Value while Harvesting Groundfish from Statistical Area 525702 by Community of Vessel's Historic Ownership Address, 2012-2024 (in Millions of 2024 dollars)

Community	Annual Average 2012-2024													Annual Average 2012-2024 (dollars)	Annual Average 2012-2024 (percent)
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
Alaska (Kodiak)	1.5	1.1	1.7	2.1	1.9	1.0	1.0	2.0	1.0	.8	.5	.3	.8	1.2	52.96%
Newport	.3	.1	*	.4	*	*	*	*	.0	.0	*	*	*	.1	5.91%
Other Oregon/Other States	.8	.5	*	.7	.8	*	*	*	*	*	.0	.0	*	.4	16.69%
Oregon/Other States	1.2	.5	1.1	1.1	.9	.3	.4	.5	*	*	.3	*	.0	.5	22.60%
Seattle	.4	.2	*	.1	.1	*	*	*	.0	*	*	*	*	.1	2.80%
Other Washington	1.0	1.2	*	.6	.7	*	*	*	*	*	*	*	*	.5	21.64%
Washington	1.4	1.4	.8	.7	.7	.4	.3	.3	*	*	.2	*	.0	.6	24.44%
Total	4.1	3.0	3.5	3.9	3.5	1.6	1.8	2.8	1.9	1.2	.9	.4	.8	2.3	100.00%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-26 provides total ex-vessel revenue and statistical area 525702-specific ex-vessel revenue for nonpelagic trawl catcher vessels, summarized by vessel ownership community, 2012–2024 (millions of 2024 dollars). The table shows that most communities—including Kodiak—maintain diversified revenue portfolios across multiple areas and species. Kodiak's nonpelagic trawl vessels earn an annual average of \$23.2 million in total ex-vessel revenue across all fisheries, of which \$1.2 million (5.2%) comes from 525702. This indicates that while Kodiak has the largest number of vessels active in the area, 525702 contributes only a small share of their overall earnings. Other communities show similar or lower dependence (e.g., Newport 2.1%, Seattle 1.0%), with the exception of Other Washington communities (12.7%).

Table 3-26 Nonpelagic Trawl Catcher Vessels 525702 Ex-vessel Revenue Diversification by Community of Vessel Historic Ownership Address, 2012-2024* (millions of 2024 real dollars)

Community	Annual Average Number of Vessels Active in Statistical Area 525702	525702 Vessels' Annual Average Ex-Vessel Gross Revenues from Statistical Area 525702	525702 Vessels' Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries	525702 Ex-Vessel Value as a Percentage of Vessel's Total Ex-Vessel Gross Revenue Annual Average
Alaska (Kodiak)	11.2	1.2	23.2	5.2%
Newport	1.8	.1	6.4	2.1%
Other Oregon/Other States	3.6	.4	7.1	5.3%
Oregon/Other States	5.4	.5	12.0	4.3%
Seattle	2.5	.1	6.4	1.0%
Other Washington	3.1	.5	3.9	12.7%
Washington	5.5	.6	10.3	5.4%
Total	22.2	2.3	45.5	5.0%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-27 provides the number of nonpelagic trawl vessels active in Statistical Area 525702 and their associated ex-vessel revenue, compared to the total number of vessels and total ex-vessel revenue associated with each ownership community, 2012–2024 (millions of 2024 dollars). The table shows that 525702 harvests represent a small share of total community fishing activity for all communities, including Kodiak. Kodiak’s nonpelagic trawl vessels active in statistical area 525702 generate \$1.2 million annually, compared to \$132.8 million in total annual ex-vessel revenue earned by all Kodiak commercial vessels. Thus, statistical area 525702 nonpelagic trawl harvests account for only 0.9% of Kodiak’s total commercial fishing revenue. While this is a small share, Kodiak still has the largest number of vessels participating in statistical area 525702 (11.2 vessels annually), meaning that although community-level revenue exposure is low, Kodiak remains the community with the greatest operational connection to the area.

Table 3-27 Statistical area 525702 Nonpelagic Trawl Vessels and Ex-Vessel Revenue compared to Number of Vessels in the Community and Total Ex-Vessel Revenue of Community Vessels, 2012-2024* (millions of 2024 dollars)

Community	Annual Average Number of Non-Pelagic Trawl Vessels Active in Statistical Area	525702 Non-Pelagic Trawl Vessels' Annual Average Ex-Vessel Gross Revenues from Statistical Area 525702	Annual Average Number of All Commercial Fishing Vessels in those Same Communities (the "Community Fleet") 2012-2024	All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species Fisheries 2012-2024 (\$ millions)	525702 Non-Pelagic Trawl Ex-Vessel Revenue as a Percentage of Annual Average Total Community Ex-Vessel Revenue
Alaska (Kodiak)	11.2	1.2	237.0	132.8	0.9%
Newport	1.8	.1	13.8	32.4	0.4%
Other Oregon/Other States	3.6	.4	42.1	16.2	2.3%
Oregon/Other States	5.4	.5	55.9	48.6	1.1%
Seattle	2.5	.1	209.0	639.7	0.0%
Other Washington	3.1	.5	96.2	28.3	1.7%
Washington	5.5	.6	305.2	667.9	0.1%
Total	22.2	2.3	598.2	849.3	0.3%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

3.4.2 Groundfish Pelagic Trawl Community Engagement

Table 3-28 shows pelagic trawl catcher vessels harvest of groundfish from statistical area 525702, summarized by the community associated with each vessel’s historic ownership address, 2012–2024. As noted in the table, Kodiak has the largest number of pelagic trawl vessels that harvested groundfish in statistical area 525702, averaging 11.5 vessels per year, or 43% of all participating vessels (11.5 of 26.9). Kodiak also has the highest number of unique vessels over the period (24 unique vessels). Washington communities contribute an average of 10.1 vessels, and Oregon communities 5.0, both well below Kodiak’s level.

Table 3-28 Pelagic Trawl Catcher Vessels Harvesting Groundfish from Statistical Area 525702 by Community of Vessel's Historic Ownership Address, 2012-2024(number of vessels)

Community	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annual Average 2012-2024 (number)	Annual Average 2012-2024 (percent)	Unique Vessels 2012-2024 (number)
Alaska (Kodiak)	11	11	16	15	17	10	13	10	9	7	9	8	14	11.5	42.86%	24
Newport	4	3	2	3	2	2	2	2	2	2	3	3	1	2.4	8.86%	6
Other Oregon*	5	4	5	3	4	3	3	2	2	1	1	0	1	2.6	9.71%	8
Oregon	9	7	7	6	6	5	5	4	4	3	4	3	2	5.0	18.57%	21
Seattle MSA	8	9	11	10	12	6	10	7	2	7	6	4	3	7.3	27.14%	19
Other Washington**	5	4	4	4	5	1	4	3	1	2	2	1	0	2.8	10.29%	6
Washington	13	13	15	14	17	7	14	10	3	9	8	5	3	10.1	37.43%	21
Other States***	0	0	1	0	0	1	1	1	0	0	0	0	0	0.3	1.14%	2
Total	33	31	39	35	40	23	33	25	16	19	21	16	19	26.9	100.00%	55

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other Oregon includes: Astoria, Charleston, Florence, Independence, Siletz and South Beach

** Other Washington includes: Bellingham, Camas, East Wenatchee and South Bend

*** Other States includes: Kailua Kona(HI) and Las Vegas(NV)

Table 3-29 provides Ex-vessel value earned by pelagic trawl catcher vessels while harvesting groundfish from statistical area 525702, reported by vessel ownership community and expressed in millions of 2024 dollars. Kodiak vessels generate the largest share of ex-vessel value from pelagic trawl harvests in statistical area 525702, earning an annual average of \$1.2 million, or 42% of all revenue generated in the area (1.2 of 2.8 million). Washington communities collectively contribute about \$1.1 million, and Oregon communities about \$0.5 million.

Table 3-29 Pelagic Trawl Catcher Vessels' Ex-Vessel Value while Harvesting Groundfish from Statistical Area 525702 by Community of Vessel's Historic Ownership Address, 2012-2024 (millions of 2024 dollars)

Community	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annual Average 2012-2024 (dollars)	Annual Average 2012-2024 (percent)
Alaska (Kodiak)	1.5	1.5	2.1	2.1	2.5	1.1	1.2	.9	.4	.1	.5	.3	.9	1.2	42.02%
Newport	.6	.3	.3	.4	*	*	*	*	*	*	.3	.1	*	.3	9.70%
Other Oregon/Other States	.4	.4	.5	.3	*	*	*	*	*	*	.0	.0	*	.3	9.82%
Oregon/Other States	1.0	.7	.8	.7	.9	.7	.7	.4	.3	.1	.4	.1	.2	.5	19.52%
Seattle MSA	1.1	.9	1.4	1.7	1.6	*	1.2	.8	*	*	*	*	.2	.9	30.78%
Other Washington	.6	.3	.6	.4	.4	*	.3	.1	*	*	*	*	.0	.2	7.68%
Washington	1.7	1.1	2.0	2.1	2.0	.5	1.5	1.0	.1	.7	.6	.4	.2	1.1	38.46%
Total	4.3	3.3	4.8	4.8	5.5	2.3	3.4	2.3	.8	.9	1.5	.8	1.3	2.8	100.00%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other Oregon includes: Astoria, Charleston, Florence, Independence, Siletz and South Beach

** Other Washington includes: Bellingham, Camas, East Wenatchee and South Bend

*** Other States includes: Kailua Kona(HI) and Las Vegas(NV)

Table 3-30 shows total ex-vessel revenue and 525702-specific ex-vessel revenue for pelagic trawl catcher vessels, summarized by vessel ownership community, 2012–2024 (millions of 2024 dollars). Kodiak's pelagic trawl vessels earn an annual average of \$22.6 million in total ex-vessel revenue across all fisheries, of which \$1.2 million (5.2%) comes from statistical area 525702. This indicates that although Kodiak has the largest number of vessels active in the statistical area 525702, ex-vessel revenue from statistical area 525702 contributes only a small share of their overall earnings. Other communities show similar or slightly lower dependence (e.g., Seattle 4.7%, Oregon 4.5%).

Table 3-30 Pelagic Trawl Catcher Vessel's statistical area 525702 Ex-vessel Revenue Diversification by Community of Vessel Historic Ownership Address, 2012-2024* (millions of 2024 real dollars)

Community	Annual Average Number of Vessels Active in Statistical Area 525702	525702 Vessels' Annual Average Ex-Vessel Gross Revenues from Statistical Area 525702	525702 Vessels' Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries	525702 Ex-Vessel Value as a Percentage of Vessel's Total Ex-Vessel Gross Revenue Annual Average
Alaska (Kodiak)	11.5	1.2	22.6	5.2%
Newport	2.4	.3	6.3	4.3%
Other Oregon/Other States	2.9	.3	5.8	4.7%
Oregon/Other States	5.3	.5	12.1	4.5%
Seattle MSA	7.3	.9	18.1	4.7%
Other Washington	2.8	.2	3.7	5.7%
Washington	10.1	1.1	21.9	4.9%
Total	26.9	2.8	56.6	4.9%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other Oregon includes: Astoria, Charleston, Florence, Independence, Siletz and South Beach

** Other Washington includes: Bellingham, Camas, East Wenatchee and South Bend

*** Other States includes: Kailua Kona(HI) and Las Vegas(NV)

Table 3-31 provides the number of pelagic trawl vessels active in Statistical Area 525702 and their associated ex-vessel revenue, compared to the total number of vessels and total ex-vessel revenue associated with each ownership community, 2012–2024 (millions of 2024 dollars). Kodiak's pelagic trawl vessels active in statistical area 525702 generate \$1.2 million annually, compared to \$132.8 million in total annual ex-vessel revenue earned by all Kodiak commercial vessels. Thus, statistical area 525702 pelagic trawl harvests account for only 0.9% of Kodiak's total commercial fishing revenue.

Table 3-31 Statistical area 525702 Pelagic Trawl Vessels' and Ex-Vessel Revenue compared to Number of Vessels in the Community and Total Ex-Vessel Revenue of Community Vessels, 2012-2024* (millions of 2024 dollars)

Community	Annual Average Number of Pelagic Trawl Vessels Active in Statistical Area 525702	525702 Pelagic Trawl Vessels' Annual Average Ex-Vessel Gross Revenues from Statistical Area 525702	Annual Average Number of All Commercial Fishing Vessels in those Same Communities (the "Community Fleet") 2012-2024	All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species Fisheries 2012-2024 (\$ millions)	525702 Pelagic Trawl Ex-Vessel Revenue as a Percentage of Annual Average Total Community Ex-Vessel Revenue
Alaska (Kodiak)	0.5	1.2	237.0	132.8	0.9%
Newport	3.5	.3	13.8	32.4	0.8%
Other Oregon/Other States	0.8	.3	44.5	17.6	1.6%
Oregon/Other States	4.3	.5	58.4	50.0	1.1%
Seattle MSA	7.3	.9	208.0	626.8	0.1%
Other Washington	2.8	.2	96.2	28.3	0.8%
Washington	10.1	1.1	304.2	655.0	0.2%
Total	26.9	2.8	600.0	837.8	0.3%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other Oregon includes: Astoria, Charleston, Florence, Independence, Siletz and South Beach

** Other Washington includes: Bellingham, Camas, East Wenatchee and South Bend

*** Other States includes: Kailua Kona(HI) and Las Vegas(NV)

3.4.3 Groundfish Pot Community Engagement

Table 3-32 describes the number and distribution of pot catcher vessels harvesting groundfish in statistical area 525702 by community from 2012–2024. Participation in the groundfish fishery in statistical area 525702 is low and intermittent, averaging 4.3 vessels annually, with activity concentrated in the earlier years (2012–2017), absent from 2018–2020, and resuming at low levels after 2021. Kodiak accounts for the majority of participation, averaging 3.2 vessels per year and representing most of the 23 unique vessels observed over the period. Homer contributes limited and sporadic participation, while Anchorage, Petersburg, Oregon (Waldport), and Washington (Bremerton) show only minimal involvement. Overall,

vessel activity is highly concentrated in Kodiak, with other communities playing a minor and inconsistent role.

Table 3-32 Pot Catcher Vessels Harvesting Groundfish from Statistical Area 525702 by Community of Vessel's Historic Ownership Address, 2012-2024(number of vessels)

Community														Annual Average 2012- 2024 (number)	Annual Average 2012- 2024 (percent)	Unique Vessels 2012-2024 (number)
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024			
Anchorage	1	0	0	1	0	0	0	0	0	0	0	0	0	0.2	3.57%	1
Homer	2	1	0	2	0	0	0	0	0	1	0	1	0	0.5	12.50%	3
Kodiak	7	6	5	4	9	5	0	0	0	1	2	1	2	3.2	75.00%	16
Petersburg	0	1	0	0	0	0	0	0	0	0	0	0	0	0.1	1.79%	1
Alaska	10	8	5	7	9	5	0	0	0	2	2	2	2	4.0	92.86%	21
Oregon (Waldport)	1	1	1	0	0	0	0	0	0	0	0	0	0	0.2	5.36%	1
Washington (Bremerton)	0	0	0	0	0	0	0	0	0	0	0	0	1	0.1	1.79%	1
Total	11	9	6	7	9	5	0	0	0	2	2	2	3	4.3	100.00%	23

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-33 his table presents the ex-vessel value (in 2024 dollars) generated by pot catcher vessels harvesting groundfish in statistical area 525702 by community from 2012–2024. Total annual ex-vessel value averages approximately \$0.5 million and is highly variable over time, with higher values in the early years followed by a decline to near zero during 2018–2020 and a modest recovery thereafter. Kodiak generates the majority of this value, averaging about \$0.3 million annually, while Oregon/Washington/Other Alaska contributes a much smaller share and Homer's contribution is negligible.

Table 3-33 Pot Catcher Vessels' Ex-Vessel Value while Harvesting Groundfish from Statistical Area 525702 by Community of Vessel's Historic Ownership Address, 2012-2024 (millions of 2024 dollars)

Community														Annual Average 2012-2024 (dollars)	Annual Average 2012-2024 (percent)
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024		
Homer	*	.0	.0	*	.0	.0	.0	.0	.0	*	.0	*	.0	.0	9.36%
Kodiak	1.4	.5	*	.5	.5	.4	.0	.0	.0	*	.1	*	.1	.3	73.38%
Oregon/Washington/Other Alaska	*	.2	*	*	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	17.26%
Total	1.6	.7	1.0	1.3	.5	.4	.0	.0	.0	.1	.1	.2	.1	.5	100.00%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-34 shows the extent to which pot vessels active in statistical area 525702 rely on this fishery relative to their total ex-vessel revenues across all fisheries. On average, vessels derive only 8.8% of their total revenue from statistical area 525702 pot fishing, indicating that it is a supplemental rather than primary fishery. Dependence is similar across communities, with Kodiak vessels deriving 9.2% of revenues from the area, Oregon/Washington/Other Alaska vessels 9.4%, and Homer vessels 5.9%. Despite Kodiak's higher absolute earnings, reliance on this fishery remains modest across all communities.

Table 3-34 Pot Vessel's statistical area 525702 Ex-vessel Revenue Diversification by Community of Vessel Historic Ownership Address, 2012-2024* (millions of 2024 dollars)

Community	Annual Average Number of Pot Vessels Active in Statistical Area 525702	525702 Pot Vessels' Annual Average Ex-Vessel Gross Revenues from Statistical Area 525702	525702 Pot Vessels' Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries	Pot 525702 Ex-Vessel Value as a Percentage of Vessel's Total Ex-Vessel Gross Revenue Annual
Homer	0.5	.0	.7	5.9%
Kodiak	3.5	.3	3.6	9.2%
Oregon/Washington/Other Alaska	0.8	.1	.8	9.4%
Total	4.3	.5	5.2	8.8%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-35 compares statistical area 525702 pot vessel activity and revenue to the overall scale of commercial fishing fleets and revenues by community. The fishery represents a very small share of total community fishing activity, accounting for just 0.1% of combined ex-vessel revenues across all communities. Even in Kodiak, where participation is highest, statistical area 525702 pot revenue makes up only 0.3% of total community fishing revenue, while in Homer and Oregon/Washington/Other Alaska it is effectively negligible. This demonstrates that the fishery has minimal economic significance at the broader community level.

Table 3-35 Statistical area 525702 Pot Vessels' and Ex-Vessel Revenue compared to Number of Vessels in the Community and Total Ex-Vessel Revenue of Community Vessels, 2012-2024* (millions of 2024 dollars)

Community	Annual Average Number of Pot Vessels Active in Statistical Area 525702	525702 Pot Vessels' Annual Average Ex-Vessel Gross Revenues from Statistical Area 525702	Annual Average Number of All Commercial Fishing Vessels in those Same Communities (the "Community Fleet") 2012-2024	All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species Fisheries 2012-2024 (\$ millions)	525702 Pot Ex-Vessel Revenue as a Percentage of Annual Average Total Community Ex-Vessel Revenue
Homer	0.5	.0	393.6	108.4	0.0%
Kodiak	3.5	.3	237.0	132.5	0.3%
Oregon/Washington/Other Alaska	0.8	.1	474.8	161.5	0.0%
Total	4.3	.5	1105.4	402.4	0.1%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

3.4.4 Kodiak Tanner Crab Fishery Community Engagement

Table 3-36 describes the number and community distribution of catcher vessels participating in the Kodiak District Tanner crab fishery from 2012–2024. Participation is substantial when the fishery is open, averaging 82 vessels annually, but is interrupted by closures in 2014–2017 and 2021. Kodiak overwhelmingly dominates participation, accounting for about 71% of vessels (57.9 vessels annually), followed by Homer (8.1 vessels, 9.9%) and smaller contributions from Chiniak/Larsen Bay/Port Lions/Old Harbor/Ouzinkie and other Alaska communities. Participation increased notably in recent open years, reaching 131 vessels in 2023 and 134 in 2024. Overall, the fishery is highly concentrated in Kodiak, with meaningful but smaller involvement from other Gulf of Alaska communities.

Table 3-36 Catcher Vessels Harvesting Kodiak District Tanner Crab by Community of Vessel's Historic Ownership Address, 2012-2024(number of vessels)

Community	2012 2013		2018 2019 2020			2022 2023 2024			Annual Average		Unique Vessels 2012-2024 (#)
									2012-2024 (#)	2012-2024 (%)	
Anchorage/Kasilof/Seward/Sterling/Wasilla	1	1	1	2	2	0	4	4	1.9	2.29%	6
Chiniak/Larsen Bay/Port Lions/Old Harbor/Ouzinkie	7	8	5	6	2	4	5	5	5.3	6.40%	12
Homer	1	3	1	8	5	11	17	19	8.1	9.91%	32
Kodiak	43	43	43	58	35	64	91	86	57.9	70.58%	134
Other AK*	4	2	1	5	3	3	8	12	4.8	5.79%	21
Alaska	56	57	51	79	47	82	125	126	77.9	94.97%	198
Washington**	1	0	0	0	0	2	3	3	1.1	1.37%	5
Oregon/Other States***	2	1	3	2	1	1	2	3	1.9	2.29%	9
Total	60	59	55	82	49	86	131	134	82.0	100.00%	211

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other AK includes: Chignik Lagoon, Cordova, Delta Junction, Haines, King Cove, Nome, Petersburg, Ruby, and Ward Cove

**Washington includes: Bremerton, Chinook, Mill Creek, Mt Vernon and Woodway

***Oregon/Other States includes: Depoe Bay OR, Waldport OR, Warrenton OR, Forest Hills CA, Trinidad CA, Waikoloa HI, Las Vegas NV, and Columbia TN

Table 3-37 presents ex-vessel value generated by catcher vessels in the Kodiak District Tanner crab fishery by community from 2012–2024. Average annual ex-vessel value is about \$7.0 million, with strong growth in recent years following reopening in 2022, peaking at \$19.4 million in 2023. Kodiak produces the vast majority of value (73.9%, or \$5.2 million annually), reflecting the highest participation, while Homer (8.4%) and other Alaska communities (6.2%) contribute smaller shares. Chiniak-area communities account for about 4.8%, and all other regions (Washington and Oregon/Other States) contribute minimal amounts. The value distribution closely mirrors vessel participation and highlights Kodiak as the economic center of the fishery.

Table 3-37 Catcher Vessels' Ex-Vessel Value while Harvesting Kodiak District Tanner Crab by Community of Vessel's Historic Ownership Address, 2012-2024(in Millions of 2024 dollars)

Community	2012 2013		2018 2019 2020			2022 2023 2024			Annual Average 2012-2024	Annual Average 2012-2024
									(dollars)	(percent)
Anchorage/Kasilof/Seward/Sterling/Wasilla	*	*	*	*	*	.0	.6	.2	.2	2.17%
Chiniak/Larsen Bay/Port Lions/Old Harbor/Ouzinkie	.5	.3	.2	*	*	.5	.5	.4	.3	4.80%
Homer	*	.2	*	.3	.1	.8	2.1	1.1	.6	8.39%
Kodiak	3.0	1.7	1.9	2.3	1.6	8.5	14.5	7.9	5.2	73.90%
Other AK*	.3	*	*	.2	.1	.7	.9	1.2	.4	6.23%
Alaska	4.0	2.2	2.3	3.1	2.0	10.5	18.7	10.8	6.7	95.48%
Washington**	*	*	.0	*	*	*	*	.3	.1	2.07%
Oregon/Other States***	*	*	.1	*	*	*	*	.4	.2	2.45%
Total	4.3	2.3	2.4	3.2	2.0	10.9	19.4	11.4	7.0	100.00%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

* Other AK includes: Chignik Lagoon, Cordova, Delta Junction, Haines, King Cove, Nome, Petersburg, Ruby, and Ward Cove

**Washington includes: Bremerton, Chinook, Mill Creek, Mt Vernon and Woodway

***Oregon/Other States includes: Depoe Bay OR, Waldport OR, Warrenton OR, Forest Hills CA, Trinidad CA, Waikoloa HI, Las Vegas NV, and Columbia TN

Table 3-38 shows the importance of Kodiak District Tanner crab revenues relative to total fishing revenues for participating vessels. On average, vessels participating in the Kodiak District Tanner crab fishery derive about 17.0% of their total ex-vessel revenue from this fishery. Dependence varies moderately across communities, ranging from 12.6% in Homer to 23.3% for Anchorage-area vessels, with Kodiak vessels at 17.8%. Most communities cluster between roughly 15% and 20%, suggesting that

while the Kodiak District Tanner crab fishery is an important seasonal component of earnings, vessels remain diversified across other fisheries.

Table 3-38 Kodiak District Tanner Crab Ex-vessel Revenue Diversification by Community of Vessel Historic Ownership Address, 2012-2024* (millions of 2024 real dollars)

Community	Annual Average Number of Kodiak Tanner Vessels	Kodiak District Tanner Crab Vessels' Annual Average Ex-Vessel Gross Revenues from Kodiak Tanner Only	Kodiak District Tanner Crab Vessels' Annual Average Total Ex-Vessel Gross Revenues from All Area, Gear, and Species Fisheries	Kodiak District Tanner Crab Ex-Vessel Value as a Percentage of Total Ex-Vessel Gross Revenue Annual Average
Anchorage/Kasilof/Seward/Sterling/Wasilla	1.9	2	7	23.3%
Chiniak/Larsen Bay/Port Lions/Old Harbor/Ouzinkie	5.3	.3	1.9	17.5%
Homer	8.1	.6	4.7	12.6%
Kodiak	57.9	5.2	29.0	17.8%
Other AK*	4.8	4	2.8	15.4%
Alaska	77.9	6.7	39.1	17.1%
Washington**	1.1	.1	.7	19.9%
Oregon/Other States***	1.9	2	1.3	13.2%
Total	82.0	7.0	41.1	17.0%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Note: Only for years when Kodiak District Tanner Crab fishery was open

* Other AK includes: Chignik Lagoon, Cordova, Delta Junction, Haines, King Cove, Nome, Petersburg, Ruby, and Ward Cove

**Washington includes: Bremerton, Chinook, Mill Creek, Mt Vernon and Woodway

***Oregon/Other States includes: Depoe Bay OR, Waldport OR, Warrenton OR, Forest Hills CA, Trinidad CA, Waikoloa HI, Las Vegas NV, and Columbia TN

Table 3-39 compares participation in and revenues from the Kodiak District Tanner crab fishery to the overall scale of commercial fishing fleets and total ex-vessel revenues within each community. Across all communities, Kodiak District Tanner crab generates an annual average of \$7.0 million, representing about 1.5% of total combined community ex-vessel revenues. Kodiak accounts for the largest share of this activity, with 57.9 vessels and \$5.2 million annually, representing 4.1% of the community's total fishing revenue—making it the most economically significant location for this fishery. Chiniak/Larsen Bay/Port Lions/Old Harbor/Ouzinkie shows the highest relative dependence, with Tanner crab accounting for 8.3% of total community revenue, despite a smaller fleet and lower absolute earnings. In contrast, larger fishing communities such as Homer and the Anchorage-area communities have much lower proportional dependence (0.5% and 0.1%, respectively), reflecting their more diversified fishing economies. Other Alaska communities, Washington, and Oregon/Other States also show relatively small shares, generally under 3%. Overall, while the fishery contributes modestly to total revenues at the statewide level, it plays a more meaningful role in specific Kodiak-area communities.

Table 3-39 Kodiak District Tanner Crab Vessels and Ex-Vessel Revenue compared to Number of Vessels in the Community and Total Ex-Vessel Revenue of Community Vessels, 2012-2024* (millions of 2024 dollars)

Community	Annual Average Number of Kodiak Tanner Vessels	Kodiak District Tanner Crab Vessels' Annual Average Ex-Vessel Gross Revenues from Kodiak Tanner	Annual Average Number of All Commercial Fishing Vessels in those Same Communities (the "Community Fleet")	All Commercial Fishing CVs Annual Average Total Ex-Vessel Gross Revenues from All Areas, Gears, and Species	Kodiak District Tanner Crab Annual Average Ex-Vessel Revenue as a Percentage of Total Community Annual Average Ex-Vessel
Anchorage/Kasilof/Seward/Sterling/Wasilla	1.9	.2	346.0	117.1	0.1%
Harbor/Ouzinkie	5.3	.3	22.4	4.0	8.3%
Homer	8.1	.6	390.4	108.8	0.5%
Kodiak	57.9	5.2	231.2	126.5	4.1%
Other AK*	4.8	.4	537.3	79.2	0.5%
Alaska	77.9	6.7	1527.4	435.7	1.5%
Washington**	1.1	.1	25.9	21.3	0.7%
Oregon/Other States***	1.9	.2	12.9	5.5	3.1%
Total	82.0	7.0	1566.2	462.5	1.5%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Note: Only for years when Kodiak District Tanner Crab fishery was open

* Other AK includes: Chignik Lagoon, Cordova, Delta Junction, Haines, King Cove, Nome, Petersburg, Ruby, and Ward Cove

**Washington includes: Bremerton, Chinook, Mill Creek, Mt Vernon and Woodway

***Oregon/Other States includes: Depoe Bay OR, Waldport OR, Warrenton OR, Forest Hills CA, Trinidad CA, Waikoloa HI, Las Vegas NV, and Columbia TN

Table 3-40 summarizes how dependent individual vessels are on Kodiak District Tanner crab fishery as a share of their total annual revenue. Most vessels fall in the lower-to-moderate dependence categories, particularly 1–10% (26.8 vessels annually) and 10–20% (16.6 vessels). However, a meaningful number of vessels derive a larger share of income from Tanner crab, including 20–40% categories and an average of 7 vessels annually in the 90–100% category. This distribution shows that while many vessels have a low-to-moderate dependency on the fishery, a subset relies on it heavily making it economically important for certain operators.

Table 3-40 Vessels Harvesting Kodiak District Tanner Crab by Kodiak District Tanner Crab Revenue as a Percent of Total Revenue, 2012-2024 (number of vessels)

Kodiak District Tanner Crab Rev as a % of Total	2012	2013	2014-2017	2018	2019	2020	2021	2022	2023	2024	Annual Average 2012-2024
<1%	0	2		0	1	2		0	0	0	0.6
1-10%	21	44		27	54	28		15	3	22	26.8
10-20%	28	5		12	13	9		17	17	32	16.6
20-30%	7	5		3	4	4		19	33	18	11.6
30-40%	1	1		3	4	3		14	26	17	8.6
40-50%	0	0		2	2	1		5	14	7	3.9
50-60%	0	0		1	0	1		1	7	10	2.5
60-70%	1	0		0	0	1		5	4	3	1.8
70-80%	0	0		2	1	0		0	6	3	1.5
80-90%	1	0		0	0	0		1	6	1	1.1
90-100%	1	2		5	3	0		9	15	21	7.0
Grand Total	60	59		55	82	49		86	131	134	82.0

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Note: Annual average only includes years that the Kodiak District Tanner Crab Fishery was open.

3.4.5 Shore-Based Processor Community Engagement

In addition to the economic activity generated from the spending of exvessel revenue in communities such as Kodiak, economic activity also occurs from the processing of groundfish harvested from the proposed closure areas, and from commercially-harvested Tanner crab.

For shore-based processors, regional or community designation was based on the location of the plant itself (rather than ownership address) to provide a relative indicator of the local volume of fishery-related economic activity.

Table 3-41 describes the number and distribution of shore-based processors handling groundfish from statistical area 525702 by community from 2012–2024. Processing activity averages 6.2 processors annually and is heavily concentrated in Kodiak, which accounts for 92.5% of all processors (5.7 processors per year) and 12 of the 17 unique processors observed. Participation in other communities—Akutan, Homer, King Cove, and Sand Point—is minimal and sporadic, typically involving one processor in isolated years. Overall, processing capacity for this fishery is overwhelmingly centered in Kodiak, with only limited and inconsistent activity elsewhere.

Table 3-41 Shore-Based Processors Accepting Groundfish from 525702 by Community of Operation, 2012-2024 (number of processors)

Community	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Average 2012- 2024 (number)	Annual Average 2012-2024 (percent)	Unique Processors 2012-2024 (number)
Akutan	0	1	0	0	0	0	0	0	0	0	0	0	0	0.1	1.25%	1
Homer	0	0	0	0	0	0	0	0	0	0	0	2	0	0.2	2.50%	2
King Cove	0	0	0	0	0	0	0	0	0	1	0	0	0	0.1	1.25%	1
Kodiak	8	7	7	9	7	5	5	4	4	5	4	5	4	5.7	92.50%	12
Sand Point	0	1	1	0	0	0	0	0	0	0	0	0	0	0.2	2.50%	1
Grand Total	8	9	8	9	7	5	5	4	4	6	4	7	4	6.2	100.00%	17

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-42 describes the number and distribution of shore-based processors handling Kodiak District Tanner crab by community from 2012–2024. Processing activity is limited but consistent during open years, averaging 4.4 processors annually, with interruptions corresponding to fishery closures. Kodiak overwhelmingly dominates processing participation, accounting for 88.6% of processors (3.9 processors annually) and hosting 6 of the 9 unique processors observed over the period. Other communities—including Dutch Harbor, King Cove, and Sand Point—show only minimal and intermittent participation, typically one processor in occasional years. Overall, processing capacity is highly concentrated in Kodiak, with very limited involvement elsewhere.

Table 3-42 Shore-Based Processors Accepting Kodiak District Tanner Crab by Community of Operation, 2012-2024 (number of processors)

Community	2013	2014	Closed 2014-2017	2018	2019	2020	Closed 2021	2022	2023	2024	Average 2012-2024 (number)	Annual Average 2012-2024 (percent)	Unique Processors 2012-2024 (number)
Dutch Harbor	0	0	Closed 2014-2017	0	0	0	Closed 2021	0	1	1	0.3	5.71%	1
King Cove	0	0		0	0	0		0	1	0	0.1	2.86%	1
Kodiak	5	5		3	3	3		4	4	4	3.9	88.57%	6
Sand Point	0	0		0	0	0		0	1	0	0.1	2.86%	1
Grand Total	5	5		3	3	3		4	7	5	4.4	100.00%	9

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Note: Annual average only includes years that the Kodiak District Tanner Crab Fishery was open.

Table 3-43 presents first wholesale revenues (in 2024 dollars) generated by processors handling groundfish from statistical area 525702. Total annual first wholesale revenue averages approximately \$18.7 million, with variability across years but generally sustained activity throughout the period. Kodiak generates nearly all of this value (99.7%, or \$18.68 million annually), while all other communities combined contribute only about 0.3%.

Table 3-43 Shore-Based Processors Accepting Groundfish from 525702 by Community of Operation, 2012-2024 (millions of real 2024 first wholesale dollars)

Community	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Annual Average	Annual Average	Unique
														2012-2024 (thousands)	2012-2024 (percent)	2012-2024 Processors
Kodiak	\$24.30	*	*	\$30.86	\$42.60	\$19.05	\$18.08	\$21.22	\$8.88	*	\$8.85	*	\$13.31	\$18.68	99.7%	12
Akutan/Homer/King Cove/Sand Point	0	*	*	0	0	0	0	0	0	*	0	*	0	\$0.06	0.3%	5
Total	\$24.30	\$15.22	\$28.36	\$30.86	\$42.60	\$19.05	\$18.08	\$21.22	\$8.88	\$6.67	\$8.85	\$6.24	\$13.31	\$18.74	100.00%	17

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-44 presents first wholesale revenues (in 2024 dollars) generated by shore-based processors handling Kodiak District Tanner crab by community. Total annual first wholesale revenue averages approximately \$9.9 million, with higher values in recent open years, including peaks in 2022–2024. Kodiak accounts for the vast majority of this value (87.2%, or \$8.6 million annually), reflecting its dominance in processing activity, while Dutch Harbor/King Cove/Sand Point collectively contribute a much smaller share (12.8%). The distribution of value closely mirrors processor participation, with Kodiak serving as the primary hub of economic activity.

Table 3-44 Shore-Based Processors Accepting Kodiak District Tanner Crab by Community of Operation, 2012-2024 (millions of real 2024 first wholesale dollars)

Community	2012	2013	Closed 2014-2017	2018	2019	2020	Closed 2021	2022	2023	2024	Annual Average	Annual Average	Unique
											2012-2024 (thousands)	2012-2024 (percent)	2012-2024 Processors
Kodiak	\$5.75	\$3.65		\$3.08	\$4.62	\$3.03		\$13.23	*	*	\$8.64	87.2%	6
Dutch Harbor/King Cove/Sand Point	0	0		0	0	0		0	*	*	\$1.27	12.8%	3
Total	\$5.75	\$3.65		\$3.08	\$4.62	\$3.03		\$13.23	\$27.52	\$18.37	\$9.91	100.00%	9

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Note: Annual average only includes years that the Kodiak District Tanner Crab Fishery was open.

Table 3-45 shows the contribution of statistical area 525702 groundfish processing to total first wholesale revenues for processors. On average, processors derive 4.2% of their total revenues from this fishery, indicating it is a relatively minor component of overall operations. Dependence is higher in Kodiak (4.7%) but remains modest, while processors in other communities derive a negligible share (0.12%).

Table 3-45 Revenue Diversification for Shore-Based Processors Accepting Groundfish from 525702 by First Wholesale Revenue Diversification, 2012-2024*

Geography	Annual Average Number of Processors	Annual Average First Wholesale Revenues from	Annual Average Total First Wholesale Revenues from All	First Wholesale Revenues from
		Groundfish in Statistical Area 525702 (millions 2024 real \$)	Area, Gear, and Species Fisheries (millions 2024 real \$)	Groundfish in Statistical Area 525702 as a Percentage of Total First Wholesale Revenue Annual Average
Kodiak	5.7	\$18.7	\$397.3	4.70%
Akutan/Homer/King Cove/Sand Point	0.5	\$0.1	\$50.4	0.12%
Total	6.2	\$18.7	\$447.7	4.19%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-46 shows the importance of Kodiak District Tanner crab relative to total first wholesale revenues for processors. On average, Tanner crab accounts for 26.4% of total first wholesale revenue across all processors, indicating it is a significant revenue source. Dependence is notably higher in Kodiak, where processors derive 32.4% of their revenues from Tanner crab, compared to 11.7% in Dutch Harbor/King Cove/Sand Point. This suggests that Kodiak-based processors are more reliant on the fishery, while processors in other regions are more diversified across species and fisheries.

Table 3-46 Revenue Diversification for Shore-Based Processors Accepting Kodiak District Tanner Crab by First Wholesale Revenue Diversification, 2012-2024*

Geography	Annual Average Number of Processors	Annual Average First Wholesale Revenues from Kodiak District Tanner Crab (\$ millions, 2024 dollars)	Annual Average First Wholesale Revenues from All Area, Gear, and Species Fisheries (\$ millions, 2024 dollars)	Kodiak District Tanner Crab First Wholesale as a Percentage of Total First Wholesale Revenue Annual Average
Kodiak	3.9	\$8.6	\$26.7	32.39%
Dutch Harbor/King Cove/Sand Point	0.5	\$1.3	\$10.8	11.74%
Total	4.4	\$9.9	\$37.5	26.44%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

*Only for years when Kodiak District Tanner Crab fishery was open

Table 3-47 compares first wholesale revenues from statistical area 525702 groundfish to total processing revenues within each community. Across all communities, the fishery accounts for about 1.8% of total first wholesale revenue. In Kodiak, where nearly all activity occurs, the fishery represents 4.3% of community processing revenue, while in other communities it is effectively negligible (0.01%). Overall, although Kodiak serves as the central processing hub, groundfish from Statistical Area 525702 plays a relatively small role in the broader seafood processing economy at the community level.

Table 3-47 Revenue Diversification for Communities with Shore-Based Processors Accepting Groundfish from 525702 by First Wholesale Gross Revenue Diversification, 2012-2024*

Geography	Annual Average Number of Processors	Annual Average Number of All Commercial Fishing Processors in those Same Communities	Annual Average First Wholesale Revenues from Groundfish in Statistical Area 525702 (millions 2024 real \$)	Annual Average Total First Wholesale Revenues from All Areas, Gears, and Species Fisheries for the Community Fleet (millions 2024 real \$)	Groundfish in Statistical Area 525702 as a Percentage of Total Community First Wholesale Revenue Annual Average
Kodiak	5.7	14.2	\$18.7	\$434.0	4.30%
Akutan/Homer/King Cove/Sand Point	0.5	24.5	\$0.1	\$625.5	0.01%
Total	6.2	38.7	\$18.7	\$1,059.5	1.77%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

Table 3-48 compares Kodiak District Tanner crab first wholesale revenues to total processing revenues within each community. Despite its importance to individual processors, the fishery represents a relatively small share of total community-level processing revenue, accounting for 0.64% overall. In Kodiak, Kodiak District Tanner crab contributes 2.15% of total community processing revenue, the highest among communities, while Dutch Harbor/King Cove/Sand Point show minimal dependence at just 0.16%. These results indicate that although Kodiak District Tanner crab is an important component of processor revenue—especially in Kodiak—it represents only a small fraction of broader community-wide seafood processing economies.

Table 3-48 Revenue Diversification for Communities with Shore-Based Processors Accepting Kodiak District Tanner Crab by First Wholesale Gross Revenue Diversification, 2012-2024*

Geography	Annual Average Number of Processors	Annual Average Number of All Commercial Fishing Processors in those Same Communities	Annual Average First Wholesale Revenues from Kodiak District Tanner Crab (\$ millions, 2024 dollars)	Annual Average Total First Wholesale Revenues from All Areas, Gears, and Species Fisheries for the Community Fleet (\$ millions, 2024 dollars)	Kodiak District Tanner Crab First Wholesale Revenue as a Percentage of Total Community First Wholesale Revenue Annual Average
Kodiak	3.9	13.6	\$8.6	\$402.1	2.15%
Dutch Harbor/King Cove/Sand Point	0.5	16.5	\$1.3	\$814.5	0.16%
Total	4.4	30.1	\$9.9	\$1,557.7	0.64%

Source: ADF&G/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

*Only for years when Kodiak District Tanner Crab fishery was open

3.5 Kodiak Processing Sector

Kodiak has historically been, and remains, the center of seafood processing for the Central GOA region. Seafood processors play a central role in Kodiak's economy, providing employment for residents and non-resident workers that support the livelihoods of local community members, contribute to the local economy through wages, benefits, taxes, and the purchase of goods, and provide stability through support of other industries like cold storage and equipment maintenance. The Kodiak Island borough has the largest resident seafood processing workforce in the State of Alaska.

Kodiak's processing sector operates within a set of shared structural constraints that shape both day-to-day operations and long-term planning. Given the numerous and diverse processing operations available in Kodiak, and the location of the proposed closure areas in relation to the community of Kodiak, processing information in this section and within the impacts section (4.3.2) focus on the processor environment within the Kodiak Island Borough. While not specific to solely the processing activity occurring in Kodiak, the 2025 Groundfish Economic SAFE (Dame, et al. 2026) and Section 3.3 of this document provides additional GOA-level information on groundfish production by species. Non-groundfish species, including salmon, herring, and crab, are not included in the SAFE—therefore data within the SAFE are not representative of all processed product weights in the GOA.

This section describes the seasonality of Kodiak processing operations, patterns in processing employment, and summarizes the major processing operations in Kodiak.

3.5.1 Patterns in Seasonal Operations

Kodiak shore-based processing facilities have been designed to use economies of scale in production and move an optimal volume of fish through the processing plant at the most efficient and cost-effective rate, given the capacity of the facility and expectations of catch and delivery rates from the various fleets that deliver to the plants. This efficiency depends on closely matching plant capacity with delivery rates from vessels. Interannual variability in season timing, fishery volumes (i.e., even versus odd year pink salmon volumes), fleet participation, and market conditions all introduce uncertainty and necessitate ongoing coordination efforts between harvesters and processors.

Processing operations in the region are highly seasonal due to the seasonal nature of GOA fisheries. Processors in the region buy and process multiple species across many gear groups and fisheries to remain economically viable; no single fishery in the region could support processing operations alone. High-volume fisheries, like pollock and Pacific cod, typically provide the throughput necessary to cover fixed operating costs, while smaller-volume or seasonal fisheries contribute additional revenue to use towards annual operating and capital expenditures. Tanner crab processing in the early part of the year has been sporadic based on harvest limits and fishery openings. In addition, crab processing requires less labor than groundfish so while the Tanner crab fishery does boost processing in the early part of the year it requires different processing lines and fewer crew than for groundfish (J Bonney, Pers. Comm). Diversifying operations by processing multiple species across the year allows processors to manage fluctuations in harvest and markets.

Figure 3-4 summarizes Kodiak shore-based processing activities, by species, month, and relative volume. This information is summarized from personal communications with Kodiak processing representatives in August of 2025.

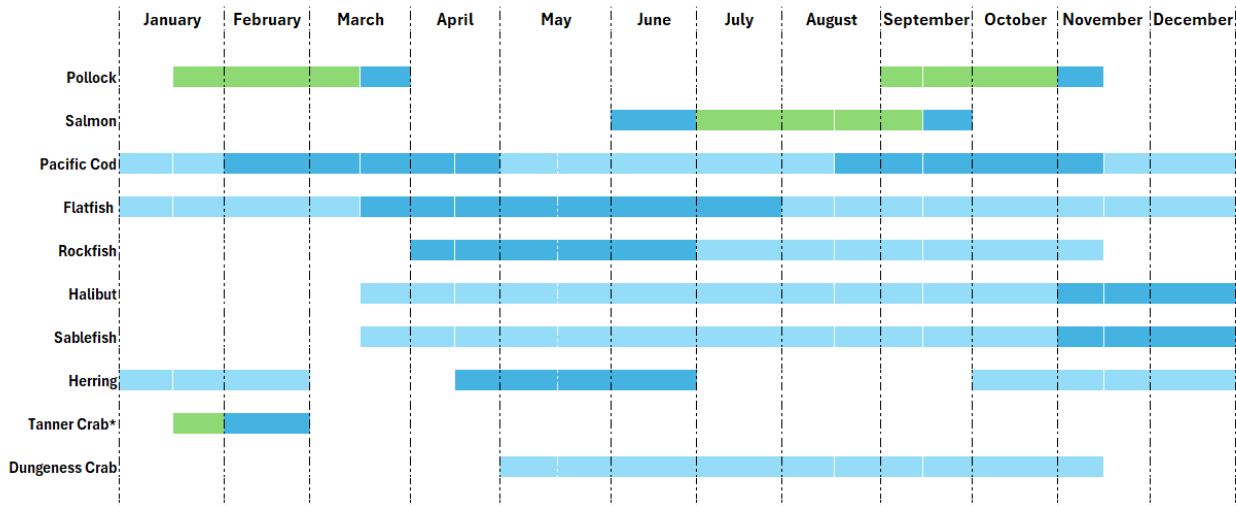


Figure 3-4 Summary of all Kodiak shore-based processing activities by species and month. Green = high volume, employment drivers; dark blue = mid-volume, employment supporters; light blue = low-volume.

Source: Personal Communication with Kodiak Processing Representatives (Clayton Healy, Alaska Pacific Seafoods; Chelsae Radell & Jed Skidmore, Pacific Seafoods; Mark Fina & Chris Pugmire, Silver Bay Seafoods).

Notes: Flatfish includes deep-water flatfish and shallow-water flatfish species complexes combined, with Arrowtooth flounder being the primary flatfish species processed by volume. Tanner crab processing is highly volatile and dependent on fishery openings and GHL volumes. Tanner crab processing activity depicted in this graphic represents years where the Kodiak commercial Tanner crab fishery is open.

Figure 3-5 describes the seasonality of processing operations, in terms of the nominal wholesale value of species processed, by week. This data shows the average total nominal wholesale value of products processed by Kodiak shore-based processing plants between 2022 and 2024. As previously described, harvesting and processing efforts in Kodiak are highly seasonal. Processor earnings are widely distributed across the entirety of the year, and across species groups.

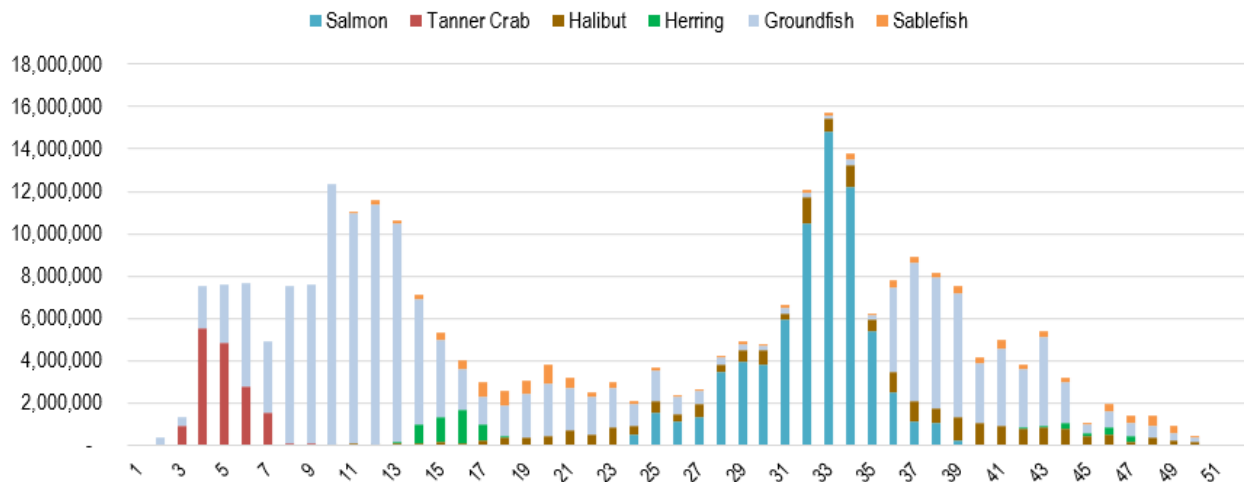


Figure 3-5 Nominal Wholesale Value of Fish Processed by Kodiak Shore-Based Processors, 2022 – 2024 Average of All Processors. By species of interest, and statistical week.

3.5.2 Processing Employment

While the highest employment months are during the summer, Kodiak's seafood processing industry provides year-round jobs for locals, who live and spend their incomes in Kodiak. The Kodiak Island Borough's seafood processing sector employs the highest proportion of resident workers of any region in

the state. According to ADOLWD worker residency data¹¹, in 2023 39.1% of seafood processing workers were local residents, 2.3% were non-local residents (Alaska residents residing in another region of the state), and 58.6% were non-residents. Comparatively, across Alaska in 2023, 15.1% of seafood processing workers were local residents, 4.5% were non-local residents, and 81.1% were nonresidents. Kodiak processing workers earned a total of \$80.8 million in wages, 52% of which was earned by local workers.

The Borough also has one of the highest rates of worker longevity, defined as having worked in the seafood processing sector for 5 or more years. As of 2023, 35% of the seafood processing workers in the Kodiak Borough worked in the sector for 5 or more years; comparatively, 29.3% of all statewide seafood processing workers across Alaska worked in the sector for 5 or more years.

The seasonal nature of the fisheries in the GOA is reflected in monthly employment levels over the course of the year. Additional detail on the seasonal nature of operations and employment are shown in Section 6.2.2.2, gleaned from information provided by each major processor. Table 3-49 provides detailed monthly statistics reported by ADOWLD. Inshore processing plants report their number of employees by month on a quarterly basis to ADOWLD. This data is aggregated using business operation classification codes. The most granular information for seafood processing employment in the Kodiak Island Borough is included as part of the Food Manufacturing sector employment totals. The Food Manufacturing NAICS sector (NAICS code 311000) including seafood product preparation and packaging subsector (311700), among other subsectors. Therefore, the monthly employment totals in Table 3-49 may therefore include some employment from other, non-seafood food manufacturing businesses in Kodiak (such as breweries).

The ADOLWD data below shows that, in general, employment levels in the food manufacturing sector follow the ebb and flow of peak processing activities. Minimum annual employment occurs in December annually, and biannual peaks occur across the A season, the summer salmon season, and B season.

As discussed within Sections 5.2.1.1 and 5.2.1.2, peak pollock and Pacific cod A season volumes occur between February and March. Between peak A season activity and the beginning of the summer salmon season, employment dips slightly but remains well above annual minimums. This period often referred to as the ‘gap season,’ and spans between April and June. Employment typically dips by 20-35% between peak A season employment levels (occurring in March), and minimum employment levels during the ‘gap season’ (occurring in either April or May).

Table 3-49 Kodiak Island Borough Food Manufacturing Employment by Month, 2016 - 2025

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average Annual
2016	1,389	1,961	1,909	1,454	1,419	1,566	2,066	1,974	1,680	1,508	1,126	828	1,573
2017	1,045	1,701	1,754	1,333	1,261	1,442	1,829	2,063	1,692	1,472	1,059	561	1,434
2018	842	1,556	1,590	1,186	1,206	1,450	1,737	1,782	1,515	1,261	962	396	1,290
2019	650	1,464	1,471	1,040	1,065	1,290	1,897	1,882	1,648	1,271	900	427	1,250
2020	714	1,558	1,509	1,147	1,304	1,591	1,593	1,506	1,279	1,173	844	382	1,217
2021	983	1,137	1,188	962	817	1,289	1,864	1,516	1,239	1,066	681	347	1,091
2022	863	1,232	1,254	1,074	1,022	1,198	2,124	1,597	1,232	967	640	312	1,126
2023	872	1,344	1,396	1,088	1,049	1,582	2,024	1,631	1,375	1,220	733	289	1,217
2024	856	1,396	1,426	1,042	926	1,281	1,573	1,150	1,017	928	558	293	1,037
2025	870	1,306	1,360	1,240	883	1,020	1,930	1,521	1,240				

Source: Alaska Department of Labor, Quarterly Census of Employment and Wages.

Note: Monthly employment represents a count of jobs as opposed to individual workers. It is not an unduplicated count of the number of individuals because workers holding more than one job or who change jobs during the measuring timeframe (the pay period that includes the 12th of the month) may be reported by more than one employer.

¹¹ Available at <https://live.laborstats.alaska.gov/basic-page/fishing-and-seafood-industry-data>

3.5.3 Major Processing Operations in Kodiak

All plants in the Kodiak Island Borough are multi-species plants that participate in a variety of fisheries.

There has been a considerable amount of ownership change and consolidation of Kodiak shoreside processing plants over the last 15 years, and Kodiak based shoreplant ownership has continued to be relatively unstable. Much of the instability in the Kodiak processing sector can be attributed to challenges facing the overall Alaska seafood market (described in detail within Section 4.2.1.3 of the Bering Sea Chum Salmon Bycatch DEIS—NPFMC 2026). Many of these challenges leave the markets for many Alaskan seafood products more vulnerable to marginal changes in operational costs, product quality and value, and net revenues.

Changes in the Kodiak-based shoreside processing ownership were described in the 2017 Rockfish Program Review and are summarized and updated here to provide additional information on processing in Kodiak.

Instability in the processing sector could lead to continued changes in the future.

- In December 2014, Trident Seafoods acquired Western Alaska Fisheries.
- In June 2016, Silver Bay Seafoods acquired some of International Seafoods of Alaska (ISA) assets in Kodiak. In February 2020, Silver Bay acquired the ISA Kodiak shoreside processing plant.
- In 2017, Global Seafoods went out of business.
- In October 2024, Pacific Seafoods acquired Trident's Kodiak operations.
- In May 2025, Silver Bay Seafoods acquired the interest in OBI Seafoods formerly owned by Icicle Seafoods and, as previously announced, they will be managing all OBI facilities and operations, including the OBI shoreside processing plant in Kodiak, which in recent years has been affiliated with the OBSI Rockfish Cooperative.

As of 2025, five major shore-based processors operated in the Kodiak Island Borough: North Pacific Seafoods, Silver Bay Seafoods/OBI Seafoods, Pacific Seafood, Kodiak Island Wildsource¹², and Kodiak Fishmeal. Analysts initiated discussions with each of the major seafood processors in the region in order to gather additional information about operations, employment, seasonality, and the importance of various species over the course of a year. Table 3-50 below provides a summary of this information, including the fisheries processors participate in, the timing of when these fisheries occur, and an approximate level of employment during these periods. The information in the table is current as of 2025. This information depicts general information on species composition, seasonality, and employment, and is not meant to indicate or depict future activities or trends.

¹² Limited information is available on Kodiak Island Wildsource, but according to the Sun'aq Tribe of Kodiak website, they are a subsidiary and described as a "small tribally-owned business specializing in a variety of fresh, frozen, and specialty smoked Alaska seafood products". Further description of their operations is not available at this time, and therefore they are not included in the summary tables.

Table 3-50 Kodiak shore-based processor summary by month of species processed and approximate employment trends.

		January	February - March	April - May	June - August	September - October	November	December
Pacific Seafood	Species	P. Cod, Tanner crab	Pollock, P. cod	Herring (sak roe), shallow-water flatfish, arrowtooth flounder, rockfish, halibut, sablefish	Salmon, Dungeness, rockfish, halibut, sablefish	Pollock, P. cod, salmon (tail-end of season), Dungeness, halibut, sablefish	Halibut, sablefish, rockfish, red king crab (sporadic)	Halibut, sablefish
	Employment	Ramp up to ~600 employees	Annual maximum: ~600 employees	~300-350 employees	Second annual ramp-up in Aug.	~420-500	Begin annual ramp-down	Annual minimum: ~250 employees
Silver Bay Seafoods - East Facility	Species	P. cod	Pollock, P. cod	flatfish, rockfish, herring	Salmon, Pollock, P. cod, halibut, sablefish	Pollock (Oct/Early Nov), P. cod, rockfish, halibut, sablefish	Halibut, sablefish, flatfish, rockfish	Halibut, sablefish
	Employment	Ramp-up in mid-Jan.	Peak A season employment	Ramp-down post-A season; non-resident workforce leaves	Ramp-up in July for salmon season; Peak annual employment	Peak annual employment continues	Begin annual ramp-down	Annual minimum
Silver Bay Seafoods - West Facility (formerly OBI Seafoods)	Species	P. cod, Tanner crab	Pollock, P. cod, Tanner crab	flatfish, rockfish, P. cod, Dungeness	Salmon, Pollock, P. cod, Dungeness	Pollock, P. cod, rockfish, halibut, sablefish	Halibut, sablefish, flatfish, rockfish	Halibut, sablefish
	Employment	Ramp up in mid-Jan	Peak A season employment	Ramp-down post-A season, non-resident workforce leaves	Ramp-up in July for salmon season; Peak annual employment	Peak annual employment continues	Begin annual ramp-down	Annual minimum
Alaska Pacific Seafoods/ North Pacific Seafood	Species	P. cod, Tanner crab, flatfish, rockfish	Pollock A season, P. cod, rockfish, halibut & sablefish	Flatfish, rockfish, P. cod, halibut & sablefish	Salmon (all types), rockfish, flatfish, halibut & sablefish	Pollock B season, P. cod, flatfish, halibut, sablefish	Herring, halibut & sablefish, P.cod	Halibut & sablefish, P. cod
	Employment	Annual ramp-up begins, ~150-200 employees	~200-220 employees	~200-220 employees	~200-220 employees	~200-220 employees	Begin annual ramp-down	Ramp down to annual minimum of ~35
Kodiak Fishmeal	Species	Byproducts from groundfish/whitefish, Tanner crab	Byproducts from groundfish/whitefish	Byproducts from groundfish/whitefish, Dungeness	Byproducts from groundfish/whitefish, salmon, Dungeness	Byproducts from groundfish/whitefish	Byproducts from groundfish/whitefish	Byproducts from groundfish/whitefish
	Employment	25	25	Ramp down to ~2/3 employment	25	25	Begin annual ramp-down	Annual minimum, ~1/2 staffed

Source: Personal Communication with Kodiak Processing Representatives (Clayton Healy, Alaska Pacific Seafoods; Chelsae Radell & Jed Skidmore, Pacific Seafoods; Mark Fina & Chris Pugmire, Silver Bay Seafoods; Dan James, Kodiak Fishmeal).

Pacific Seafood is the largest processing operation in Kodiak, acquiring Trident's former facilities in 2024. The company maintains a core workforce of local, full-time, benefited employees, supplemented by several hundred seasonal workers during peak periods, with staffing reduced significantly during late-year slowdowns. Operations and staffing are structured around high-volume fisheries, particularly pollock and sockeye and pink salmon, which are essential for covering fixed costs. Fish are generally processed as soon as they arrive at the plant, with narrow windows for acceptable holding times to protect product quality and market access, reinforcing the importance of coordinated vessel deliveries and flexible production scheduling. While the company is capable of pivoting among species and product forms, doing so can be costly and disruptive, particularly for smaller or highly volatile fisheries.

Silver Bay Seafoods acquired OBI Seafoods in 2025. Both Silver Bay facilities emphasize local employment and year-round workforce stability, relying on a mix of fisheries to fill seasonal gaps and maintain consistent operations. Staffing levels remain relatively steady throughout the year, with additional workers brought in during specific fisheries such as A season pollock and summer pink and sockeye salmon season. Both plants work closely with their associated fleets to align processing capacity with harvest timing, including rotating delivery schedules to manage quality and avoid bottlenecks. Product forms (some consequent quality requirements) differ between the two plants: the Silver Bay West (formerly OBI) facility transitioned entirely to fillet block production in 2023, necessitating strict shorter freshness windows, while the Silver Bay East facility retains greater flexibility by producing headed-and-gutted products alongside fillets. Additionally, the Silver Bay West (formerly OBI) facility processes both Dungeness and Tanner crab, while the Silver Bay East facility does not process any crab.

Alaska Pacific Seafoods, a North Pacific Seafoods plant, processes a wide range of species, including pollock, pacific cod, Tanner crab, halibut, sablefish, bait herring, salmon, rockfish, and flatfish. The company maintains a core workforce of local employees and offers 401k and health insurance benefits to all its employees throughout the year. The facility is designed for operational flexibility, with production lines capable of handling multiple species simultaneously and segregated processing areas for halibut and sablefish, crab, and salmon filleting. Additional workers are brought in as production volume ramps up during A-season pollock and are retained to process a mix of fisheries through most of the year.

The Kodiak Fishmeal plant is unique in that it receives deliveries from other plants, rather than from harvesters directly. It also makes Kodiak unique, in that much of the fish waste from shoreside processors in the area are turned into oils, meal, and fertilizer, rather than simply grinding and discharging waste products (Fried, 2022) This plant is owned by three Kodiak processors. Permits require all plants to send applicable byproducts to the facility, which processes the screened outflow into salmon and whitefish meal, oil, and fishbones. Products from the facility are primarily used in aquaculture feeds, starter feeds, farm animal feed, and pet food. Annual volumes are generally stable, and peak seasons align with pollock A and B season, as well as the summer salmon season. While the plant processes any screened material received from other plants, high-fat and yield species such as salmon, pollock, and cod are preferred. The plant employs a largely year-round workforce, with reduced staffing during winter and early summer maintenance periods.

4 Economic and Social Impacts

4.1 Methods

4.1.1 Cost and Benefit Impact Analysis

The evaluation of impacts in the RIR (Section 4) is designed to meet the requirement of E.O. 12866, which dictates that an RIR evaluate the costs and benefits of the alternatives, to include both quantifiable and qualitative considerations. Additionally, the analysis should provide information for decision makers “to maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.” The costs and benefits of this action with respect to these attributes are described within Section 4.3, comparing the baseline conditions under Alternative 1, with expected effects under Alternative 2.

This analysis was prepared using data from the NMFS CAS, which are the best available data to estimate total catch in the groundfish fisheries off Alaska. Total catch estimates are generated from information provided through a variety of required industry reports of harvest and at-sea discard, and data collected through an extensive fishery observer program. Estimates of catch within the custom closure area were also utilized within the RIR to evaluate fleet engagement and fishing activity occurring within the boundaries of the custom closure. The methodology used to apportion catch to the custom closure area is included in Section 3.1.1.

Under Alternative 2, CGOA groundfish pot and trawl vessels would be restricted from fishing in area 525702 or the custom closure area (as defined in Section 2.2.1). **The impact on any groundfish vessels directly regulated by the action will be proportional to the extent that they rely on the area for target fishing, the degree to which displaced catch can be made up in the remaining open areas, and the net costs associated with adjusting their fishing behavior.** Changes in the fishing behavior of vessels, as well as the potential economic impacts, are also expected to differ based on the options selected within Alternative 2. Assessing the effects of Alternative 2 on the groundfish fleets directly regulated by this action involves some degree of speculation because fleet behavior is dynamic and influenced by a range of factors, including future stock conditions, market prices, operational costs, regulatory responses, and individual vessel decision-making, all of which affect how fishermen may adjust their effort, target species, and participation under Alternative 2. Though the direction of impacts can be inferred with some certainty, the large number of factors at play results in uncertainty in the magnitude of impacts that may occur under this action. Section 4.3 provides a qualitative discussion of the potential impacts on the fleets, based on the information and data described above. These data are used to infer the magnitude of displaced effort and make general statements on expected impacts to the fleets.

The reliance of groundfish sectors, by gear type, on the closure areas considered by Alternative 2 are described within Section 3.1. Within this section, the proportion of historical catch and gross value derived from the areas of interest during the seasons considered for closure, are referred to as each fleet’s dependence on the area. This is also referenced within the analysis as the displaced catch, or displaced effort that would occur under Alternative 2. Estimates of displacement impacts were made using the historical distribution of species catch, ex-vessel value, and fleet activity by area of interest, gear, and season. Vessel-specific dependence information are included within the RIR section where appropriate and available, however most impact discussions are generalized by fleet, and are based on fleet-wide historic dependency information. Information on effort displacement by fleet and species is supplemented with discussion of operational impacts, including how vessels may shift effort across time and space, and how those shifts may interact with other constraints, such as optimal timing of fishing effort or competition in alternative fishing areas. Fleet behavior and catch redistribution patterns are also constrained by existing closures around the CGOA, as detailed within Section 2.1.1.

Predicting individual actions and their effects is constrained by incomplete information concerning the fisheries, including the absences of complete economic information and well-tested models of behavior under different institutional structures. In addition, exogenous factors, such as stock fluctuations, changes in market dynamics, and macro conditions in the global economy will influence the response of the participants under each of the alternatives and options.

4.1.2 Social Impact Assessment

This community-level SIA of the proposed action is guided largely by National Standard 8 – Communities under the provisions of the Magnuson-Stevens Act, as well as the National Environmental Policy Act (NEPA). NOAA Fisheries guidance on conducting social impact assessments (SIAs) (NMFS 2007b) states that “In the context of marine fisheries conservation and management, SIAs focus on the human environment of the fisheries. That is, SIAs consider the effects of changes in resource availability or fishing practices on fishermen, communities, fishing-related businesses and employment, families and other social institutions, regulations and social norms of behavior, and cultural values.”

In addition to this general guidance, NOAA Fisheries has also prepared a Practitioners Guide to Conducting Social Impact Assessments (Clay and Colburn, 2020). This guide identifies categories of regulatory actions to consider for Social Impact Assessments, including closed areas/seasons and gear restrictions, which are being considered under Alternative 2 of this action. Further, this guidance instructs analysts to consider potential impacts on fisheries/fleets, fishermen, and fishing communities.

This analysis consists of an RIR that provides the economic impact analysis required by the guidance, and information describing these entities within Chapter 3. Impacts on fisheries/fleets, fishermen, and fishing communities are discussed within the effects sections below.

4.2 Baseline Conditions, under Alternative 1

The No Action alternative would allow GOA groundfish pot and trawl fisheries to operate under status quo regulations. Under the No Action alternative, no new area closures for protecting GOA Tanner crab would be implemented. GOA groundfish pot and trawl fisheries would continue to operate under status quo regulations. Chapter 3 of this analysis characterizes the economic and social conditions that have coincided with the existing groundfish regulations, referred to as the “baseline” or “status quo” regulations. This baseline informs decision-makers of the state-of-the-world as it is today, and is the benchmark used to compare the relative differences in the alternatives, as well as their implications and their magnitude, against.

The conditions that characterize the status quo may change in the future—therefore, the reader should not interpret the baseline conditions described in Chapter 3 to mean “static,” because the conditions that characterized historical fishing activity and harvest patterns may change in the future. The relative attractiveness and thus importance of the areas considered for closure under Alternative 2 is likely to evolve, or move through cycles over time. The natural environment will continue to play an important role in how fisheries occur – from stock status to fish aggregations (and CPUE). For example, the CGOA trawl fishery may see more PSC in these areas than they currently do, and thus could avoid the area under the No Action alternative without the implementation of a closure. By contrast, higher aggregations of Pacific cod, flatfish, or pollock in the area may result in increased fishing efforts in that area. Any number of variations in ocean conditions and species distribution (target, non-target, and PSC alike) may result in variations in future harvest distribution. Because of the large number of factors at play that impact vessel behavior, impact discussions are characterized as comparative to Alternative 1.

4.3 Expected Effects of Alternative 2

Alternative 2 considers multiple specific time/area closure combinations that apply to all fishing with groundfish pot and trawl gear. Groundfish vessels that are subject to the closures will be required to forego fishing in the proposed areas, during the proposed time closures.

Distributional effects may accumulate to processing entities or communities, and potentially Tanner crab users, as a result of this action—the effects on non-regulated entities are discussed separately, in Section 4.3.2 below. Any distributional impacts that this action may have are dependent on the extent and magnitude of the impacts on the directly regulated entities, and the impacts this action may have on Tanner crab (as detailed within Section 5.3).

4.3.1 Impacts to Directly Regulated Entities

Under the closures proposed within Alternative 2, groundfish vessels will be required to forego fishing with certain gear types in the proposed area & time closures. The degree and nature of impacts vary by fishery and gear type, depending on the options and suboptions selected under Alternative 2. The impact on groundfish vessels directly regulated by the action will be proportional to 1) the extent that they rely on the area for target fishing, 2) the degree to which displaced catch can be made up in the remaining open areas, and 3) the net costs associated with adjusting their fishing behavior.

The groundfish sector activity occurring within the closure areas considered by Alternative 2 are described within Section 3.1, organized by gear type. Data on groundfish activities in the areas considered for closure include historical distribution of species catch, ex-vessel value, and fleet activity by area of interest, gear, and season. These data are used to infer the magnitude of displaced effort and make general statements on expected impacts to the fleets. Displacement impacts are summarized and described further in Section 4.3.1 below. The subsections within Section 4.3.1 below also describe the likelihood that displaced catch volumes will be redistributed elsewhere. The magnitude of impacts by sector are uncertain due to the large number of factors at play that influence vessel-level decision making; however the direction of impacts by sector are more certain.

Costs of Adjusting Fishing Behavior

Though the magnitude of impacts vary by fleet and gear type, and are therefore discussed separately in subsections below, the net costs associated with adjusting fishing behavior are not fleet-specific and are therefore summarized here. Any vessels directly impacted by Alternative 2 may incur increases to operating costs if current fishing effort patterns within the closure/zones times are optimal for that vessel and/or gear type, and if comparable alternative patterns are not found. There is an incentive for sectors to make up the catch that would be redistributed from closed areas; however, there may be physical and practical constraints associated with finding comparable fishing grounds, as well as risks associated with fishing in unknown or new areas. Adjusting fishing strategy and behavior in response to a time/area closure can decrease operational efficiency by increasing travel and fuel costs, if comparable and desirable fishing grounds are located further from port. Vessels may be more sensitive to increases in fuel requirements during period of high fuel costs. Operational efficiency may also decrease because alternate fishing grounds may have lower CPUE than the areas considered for closure, which could result in increases to PSC counts. Lower CPUE could also extend fishing trips and/or seasons, which may reduce fish quality. Depending on the magnitude of these operational costs, this can add stress and uncertainty to captains and crew, and may result in reduced compensation, morale, and/or reductions to crew retention and recruitment. When faced with choosing alternative fishing grounds, constraints such as vessel capacity (fish hold, fuel tanks), fuel prices, and horsepower both influence vessel-level decision-making. These considerations are particularly important for smaller CVs, which have tighter operational constraints. Smaller vessels are more limited by speed, travel distance, and hold capacity to meet delivery requirements - while balancing operational costs and safety - than larger vessels.

CGOA Fleet and Vessel Flexibility across Gears and Fisheries

Due to the high rates of cross-gear utilization in the CGOA fleets, the cohorts of impacted entities are not distinct, and vessels may be impacted by this action through multiple dimensions.

Three cohorts of groundfish vessels could be directly impacted by Alternative 2: vessels utilizing groundfish pot gear (under Element 3, Option 1), vessels utilizing pelagic trawl gear (under Element 3, Option 1), and vessels utilizing nonpelagic trawl gear (under Element 3, Options 1 and 2). Although impacts are characterized based on the gear type, Kodiak and CGOA fleets are primarily composed of multigear and multispecies boats. Most vessels prosecute multiple fisheries and fall into more than one fleet, changing the gear type used throughout the year and fishing season based on the target fishery they are participating in.

The majority of gear crossover occurs between pelagic and nonpelagic gear users. It is relatively simple for vessel operators to switch between these gear types, and most use both types of trawl gear over the course of a year. Crossover also occurs between the groundfish pot and trawl gear users, but typically vessels stick to one or the other annually because of the labor involved in changing the setup on their vessel. As shown in Table 4-1, significant crossover occurs between NPT and PTR gear users in the CGOA. Most CGOA CVs use both nonpelagic trawl and pelagic trawl gear over the course of a year, while most CGOA CPs use only pelagic trawl gear.

Table 4-1 Trawl CVs and CPs active in CGOA, by trawl gear type used, 2016 – 2025

Year	Trawl CPs active in CGOA			Trawl CVs active in CGOA			
	Total	NPT & PTR	NPT only	Total	NPT & PTR	NPT only	PTR only
2016	7	1	6	56	35	2	19
2017	6		6	52	31	5	16
2018	6		6	55	33		22
2019	7		7	55	35		20
2020	7	1	6	55	29		26
2021	6	1	5	46	23		23
2022	8	1	7	42	31		11
2023	5	1	4	40	23		17
2024	7	1	6	39	31	1	7
2025	5	1	4	36	25		11

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

Significant gear and fishery crossover also occurs between the groundfish pot sector and the Kodiak Tanner crab commercial fishery. As shown in Table 4-2, half of the 2012-2024 Kodiak commercial Tanner crab fleet participated in a CGOA groundfish pot fishery in at least one of the years between 2012 and 2024. Nearly the same proportion applies to all subgroups of participation levels within the Kodiak commercial Tanner crab fleet. Minimal crossover occurs between the Kodiak Tanner and CGOA trawl fleets; six of the 212 commercial Tanner vessels participated in a CGOA groundfish trawl fishery.

Table 4-2 Kodiak Commercial Tanner Crab Fleet Vessel Counts, 2012-2024, by Number of Years of Kodiak Tanner Participation & Participation in CGOA Groundfish Pot or Groundfish Trawl Fisheries

	Total, 2012-2024	1-2 years of Kodiak Tanner Participation	3-5 years of Kodiak Tanner Participation	6 + years of Kodiak Tanner Participation
Count of Kodiak Commercial Tanner Vessels	212	106	71	35
1+ year of CGOA Groundfish Pot Fishery participation	106	48	40	18
1+ year of CGOA Groundfish Trawl Fishery participation	6	5	1	0

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

Flexibility across gear types and fisheries directly affect how a vessel can respond to a spatial closure, both operationally and economically. Because the closure applies to specific gear types, vessels capable of deploying alternative gear (e.g., NPT versus PTR) may be able to maintain access to alternate fishing opportunities, and it may be easier for vessels to pivot to other fisheries or fishing strategies under the time/area closures considered under Alternative 2. However, this cross-utilization of gear types also means that vessels may be impacted by this action through multiple dimensions. If operators actively fish in the areas considered for closure using a combination of groundfish pot, PTR, and NPT gear, their dependency on these areas would be higher. In contrast, vessels that utilize only one of these gear types (either annually or seasonally) have more limited operational flexibility. Under an NPT-specific closure, or a seasonal closure that occurs outside peak PTR harvest seasons, vessels that only use NPT would be more likely to respond by relocating fishing effort to areas outside the closure area, which may involve changes in fishing patterns, increased travel distances, and potential shifts in catch composition. The extent of these impacts would depend on the Elements and Options selected under Alternative 2, as well as variation in dependency, displacement, and operational costs associated with displacing fishing effort, as described within the below subsections.

4.3.1.1 Groundfish Pot Gear

Groundfish pot gear would be restricted from use in the closure area under Element 3, Option 1. Vessels use groundfish pot gear in the CGOA in the OA Pacific cod and IFQ sablefish fisheries. As described in Section 3.1.2, very little groundfish pot fishing activity has occurred in the areas considered for closure within the last decade. Less than 5% of all vessels using groundfish pot gear in the CGOA annually were active in area 525702 (0-4 groundfish pot vessels, out of 39-117 total in the CGOA), and less than 4% of all groundfish caught with pot gear in the CGOA came from either area (see Section 3.1.2.1).

Impacts of Time/Area Selection under Elements 1 & 2

A closure of area 525702 would be more impactful to the groundfish pot fleet than a selection of the custom area. As described in Section 3.1.2.1, area 525702 historically yielded a higher volume of groundfish pot harvests than the custom closure area. Between 2012 and 2025, a maximum of 1,364 mt of groundfish were harvested in Area 525702 using groundfish pot gear (in 2015), which comprised 5.8% of total CGOA groundfish pot catch volumes (Table 3-3). Comparatively, the custom closure area yielded a maximum of 1,227 mt of groundfish pot harvests (in 2012), comprising 5.3% of CGOA groundfish pot catch volumes.

The impacts of a seasonal closure, as is true for all CGOA groundfish sectors, would be lower than the impacts of an annual closure on both the sablefish and Pacific cod pot fisheries. Information on seasonal participation and catch volumes are detailed in Table 3-4. As shown in Table 3-4, there is very low groundfish pot activity in the areas of interest within the seasonal time closure windows; the same is true for groundfish pot fishing activity throughout the entire CGOA. Though activity in the sablefish fishery spans across the seasonal time closure windows, very little sablefish activity occurs in the areas of

interest. The Pacific cod pot fishery occurs largely outside the seasonal time closure windows. Some displacement could occur in this fishery under an annual closure, however a seasonal closure would greatly minimize the volume of displaced Pacific cod pot harvest volumes. Pacific cod pot A season begins on January 1 and ends in regulation on June 10 (50 CFR 679.23(d)(3)—however it is often closed via inseason management action prior to the June 10 regulatory closure date. Within 8 of the last 15 years, the CGOA Pacific cod pot A season closed prior to February 15 (in 2013, 2014, 2018, 2019, 2021, 2023, 2024, and 2026), per NOAA AKRO’s Status of Fisheries query tool. In these years (which include both low- and high-TAC years), all activity occurred entirely outside the seasons considered for closure in this action. If this continues to be a regular occurrence in future years, a seasonal closure is likely to have very minimal impacts on the Pacific cod pot sector.

Catch Redistribution and Displacement Effects, by Target Fishery

For pot vessels, the implementation of any of the time/area closures considered by this action appear to have a small impact on groundfish fishing. Any impacts to groundfish pot fishery participants would primarily be seen by participants in the Pacific cod pot fishery. Very minimal impacts would arise for the sablefish fishery, as activity in this fishery primarily occurs in deep waters, outside of the areas considered for closure. Less than 1% of CGOA sablefish pot harvests have come from the areas considered for closure since 2017 (Table 3-6). Therefore, the impacts of Alternative 2 on the groundfish pot sector would primarily be seen by Pacific cod fishery participants.

Historical trends in fishery activity in the areas imply that the Pacific cod pot fishery’s dependence on the areas appear to be correlated with CGOA-wide trends in fishery activity and harvest volumes. Before 2016, the areas considered for closure yielded as much as 12% of total CGOA Pacific cod pot fishery volumes, and ~12% of the groundfish pot fleet were active in area 525702 (Table 3-3 and Table 3-6). However, after CGOA-wide TACs began declining in 2017, Pacific cod pot fishery harvests from these areas comprised less than 2% of the fishery’s total CGOA harvest volumes, and less than 5% of the fleet were active in the areas. Analysts assume the decline in fleet activity in these areas can be attributed to the Pacific cod collapse.

Based on these historical activity and dependence trends, it is likely that impacts to the Pacific cod pot fishery under this action would vary during high-TAC versus low-TAC years. Within the last decade, revenue and harvest dependence on these areas has been low—therefore, impacts to the groundfish pot fleet are likely to be minimal if Pacific cod activity levels remain low in future years. However, if Pacific cod pot fishery activity were to increase again in the future, the activity and revenue dependence on these areas may more closely align with levels from 2012 to 2017 (as shown in Table 3-5), and a higher volume of catch would be displaced.

Under either future scenario, it is highly likely that any displaced Pacific cod pot catch volumes could be easily recovered. Groundfish pot efforts are widely distributed around Kodiak, and the areas considered for closure have not historically yielded a high volume of CGOA Pacific cod pot catch. It appears that there are many comparable areas for Pacific cod pot fishing activity to occur under a closure of either area 525702, or the custom area. Therefore, any catch that was displaced under Alternative 2 is highly likely to be recovered in surrounding statistical areas, creating minimal impacts on crew and vessel owners.

Vessel-Level Dependency and Impacts

As shown in Table 3-5, the groundfish pot fleet’s dependence on these areas has been low within the last decade—therefore, impacts to vessels participating in the Pacific cod pot fishery are likely to be minimal if CGOA-wide Pacific cod activity levels remain low in future years. However, if Pacific cod pot fishery activity were to increase again in the future, the revenue dependence vessels have on groundfish pot harvests from these areas may more closely align with levels from 2012 to 2017 (as described further in Section 3.1.2.1 and 3.4.3).

As shown in Table 3-5, most vessels derive a small portion of their income from groundfish pot activities from 525702, with the largest number falling in the 1–10% category, followed by those earning less than 1%. Only a few vessels reach moderate dependence levels (10–30%), and very few exceed 30%, with almost none above 50%. Between 2012 and 2015, revenues earned from 525702 groundfish pot harvests comprised more than 10% of annual revenues for an average of 2.7 vessels.

There is significant crossover between groundfish pot vessels and the Kodiak Tanner crab commercial fleet. As shown in Table 4-2, half of the 2012-2024 Kodiak commercial Tanner crab fleet participated in a CGOA groundfish pot fishery in at least one of the years between 2012 and 2024. The ability to pivot to other fisheries, including the Kodiak commercial Tanner fishery, directly affect how vessels can respond and recoup any costs associated with spatial closures. This crossover indicates that vessels may be impacted by this action through multiple dimensions—as both groundfish pot fishery participants, and Kodiak commercial Tanner participants. Information on impacts to Kodiak Tanner crab users is included in Section 4.3.2 below.

Groundfish pot vessels active in the areas of interest are connected to Homer and Kodiak in particular through vessel ownership (see Section 3.4). While Kodiak may be impacted through other means of this action, minimal impacts are expected for these communities based on their groundfish pot associations. Community-level impacts that may accumulate based on community-level engagement in one or more of the impacted sectors are discussed separately, within Section 4.4.

4.3.1.2 Pelagic Trawl Gear

Pelagic trawl gear would be restricted from use in the closure area under Element 3, Option 1.

Vessels primarily use PTR in the CGOA to target pollock. Because this gear type is almost exclusively used in the pollock target fishery (especially when looking solely at PTR fishing activity within the areas considered for closure), the impacts on PTR vessels and the impacts on targeted pollock fishing activity are largely interchangeable. The impacts of Alternative 2 on PTR vessels, and on the pollock fishery, would be greatest under an annual closure of the custom closure area, followed by an annual closure of area 525702.

Impacts of Time/Area Selection under Elements 1 & 2

The selection of either seasonal time closure (2/15 to 6/15, or 4/1 to 6/15) would minimize impacts on the pollock fishery versus an annual closure. PTR fishing activities in the areas considered for closure occurs almost exclusively in the fall, during pollock B season (see Section 3.1.3.1 and Table 3-8). Within the seasonal time closure windows, very little PTR harvest activity occurs in the areas; therefore under a seasonal closure, a very small volume of PTR harvests would be displaced.

Under an annual closure, however, the use of pelagic trawl gear would be prohibited in the closure area throughout the year, resulting in a persistent loss of access to any fishing grounds within an area that has historically supported B season pelagic trawl activity. Annual PTR catch volumes in the areas considered for closure, shown in Table 3-7, reflect impacts on B season harvests due to the low level of activity occurring within the proposed time closure windows shown in Table 3-8. At an annual average level, area 525702 and the custom area accounted for approximately 8.5% and 10.7% of the CGOA PTR catch volume (Table 3-7), while the proposed 2/15 to 6/15 closure period accounted for 0.1% for area 525702 and custom area and the proposed 4/1 to 6/15 closure period accounted for 0% for both proposed closure areas (Table 3-8). Overall, an annual closure of these areas would impact half of the vessels using PTR in the CGOA, with an annual average ex-vessel revenue for these PTR vessels of \$2.9 million from area 525702 and \$3.6 million from the custom area.

Both proposed closure areas are of importance to the pollock fishery, however the custom closure area has yielded a slightly higher volume of PTR harvests than area 525702. As described in Table 3-7, between 2012 and 2025 approximately 8.5% of PTR harvests from the CGOA came from area 525702,

and approximately 10.7% came from the custom closure area. When compared to PTR harvests from federal reporting area 630 (CGOA pollock TACs are apportioned spatially, and area 630 has a separate TAC allocation), area 525702 harvests comprised 22.2% of area 630 PTR harvests, and harvests from the custom area comprised 28%.

Catch Redistribution and Displacement Effects

Pollock vessels that have historically depended on the areas would attempt to fully redistribute effort to adjacent areas or alternative fishing locations under Alternative 2. Based on catch distribution maps (Section 3.1.3), it appears that vessels may be able to fully redistribute PTR harvest volumes under the proposed area closures. Catch redistribution would also be constrained by factors such as existing closures (as described in Section 2.2.1), and spatial catch specifications (as described in Section 5.2.1.1). These constraints may increase the potential costs associated with redistributing catch. As further described within parent section 4.3, the implementation of a closure under Alternative 2 may result in changes in catch composition, increased competition in open areas, and possible increases in operating costs, if vessels are displaced to sub-optimal fishing grounds that are either further from port, or have lower CPUE than the proposed closure areas. Vessel capacity and horsepower influence will factor into individual decision-making if PTR vessel operators were faced with choosing an alternative fishing ground under Alternative 2.

Vessel and Community-Level Dependency and Impacts

Detail on the dependency and activity of PTR vessels in the times/areas considered for closure in this action are provided in Table 3-9, with additional fleet-level information organized by community within Section 3.4.2.

As shown in Table 3-9, PTR CV vessels active in 525702 have historically been highly diversified, across fisheries and/or outside of area 525702. Most vessels earn less than 10% of their total revenue from statistical area 525702. On average, 6.7 vessels per year earn <1%, and 12.5 vessels earn 1–10%. Only 1.8 vessels per year earn 10–20%, and fewer than one vessel per year earns more than 20%. The annual average ex-vessel gross revenues derived from PTR catch volumes from 525702 (averaging \$2.8 million between 2012 and 2024) accounted for an average of 4.9% of total ex-vessel gross revenues for all vessels deploying PTR in the areas of interest.

Community-level dependency is described further in Section 4.4. Section 3.4 provides information about community associations with PTR vessel owners, including primarily Newport, Seattle MSA and Kodiak. Limited impacts are expected on Newport and Seattle MSA from this action based on this connection. While Kodiak may be impacted through other means of this action, minimal impacts are expected as well based on groundfish PTR ownership associations.

4.3.1.3 Nonpelagic Trawl Gear

Nonpelagic trawl gear would be restricted from use in the closure area under both options in Element 3. It is the only sector that would be impacted regardless of option selection.

Vessels use NPT gear in the CGOA to target flatfish, rockfish, and Pacific cod, among other species. Although impacts would accrue to the sector under any combination of options under Alternative 2, the magnitude and nature of impacts to this sector vary based on the area restriction option selected under Element 1, and the time restriction option selected under Element 2.

Annual vs Seasonal

Overall, impacts to the NPT sector are expected to be greatest under an annual closure, which would result in continuous restrictions on access to preferred fishing grounds and require sustained changes in fishing behavior. However, the NPT sector would also see impacts under any of the seasonal closure

options considered, unlike other gear sectors, because the seasonal time closure windows overlap with a period of high NPT fishing activity.

Within these seasonal windows, most NPT fishing activity occurs in the targeted flatfish fisheries. Flatfish harvests are typically highest in April (see Section 3.1.4.2), which is included within both seasonal time closure windows considered in Alternative 2. The NPT sector relies on the areas of interest for a large proportion of their flatfish harvests. Within the window contained by the seasonal time closure options, the flatfish fishery is one of few fisheries occurring between peak pollock/Pacific cod A season harvests, and the summer salmon season. Flatfish species (as well as rockfish) act as ‘gap fillers’ for regional harvesting and processing operations, and participation and activity in these fisheries can help maintain employment opportunities in the period between the late-winter and summer peaks (see 3.5 for additional information).

Much of the NPT sector’s activity in the areas of interest currently occurs within the periods considered for seasonal closure. Of the total annual NPT groundfish harvests occurring within the areas considered for closure, 40% are harvested between 2/15 and 6/15, and 25% are harvested between 4/1 and 6/15 (Table 3-12). Within the 2/15 to 6/15 window, harvests from the areas considered for closure comprise ~10% of total CGOA NPT groundfish harvests. Within the 4/1 to 6/15 window, harvests from these areas represent ~9% of total CGOA NPT groundfish harvests. If either area was closed to NPT fishing during one of the seasonal closure windows, approximately 10% of the CGOA NPT groundfish harvests would be displaced.

Catch could be displaced temporally under a seasonal closure, since vessels would retain the ability to access the closure area during the remainder of the year. This may allow for some redistribution of effort across seasons. By retaining the ability to access the closure area outside the restricted period, vessels may adjust the timing of fishing activity in order to reduce the extent of displacement and allow for greater flexibility in maintaining catch levels. However, to the extent that the closure overlaps with periods of peak availability for certain species, other types of operational adjustments may be preferred.

Area 525702 vs Custom Area

Between 2012 and 2025, total NPT catch volumes from area 525702 comprised 10.8% of total CGOA NPT harvests, and volumes from the custom closure comprised 11.3% (Table 3-11). The ex-vessel value of the catch from these areas averaged \$2.5 million and \$2.6 million annually between 2012 and 2025.

The impacts of closing area 525702 versus the custom area to NPT gear differ by species. For nearly all NPT target fisheries, a higher volume of catch comes from the custom closure area than area 525702. However, area 525702 is more important to the shallow-water flatfish fishery than the custom closure area. Between 2021 and 2025, 58% of all shallow water flatfish caught in the CGOA were harvested from area 525702, and 53% were harvested from the custom area (Table 3-15).

Catch Redistribution and Displacement Effects, by Target Fishery

Most species of economic importance to the NPT fleet (including arrowtooth flounder, POP, and pollock) are found in relatively high densities in other comparable areas on the Eastern side of Kodiak. Any displaced catch volumes in these target fisheries resulting from Alternative 2 are likely to be replaceable through redistribution of effort, either spatially or temporally. However, harvest in the GOA shallow-water flatfish target fishery may not be fully redistributed under Alternative 2, especially if an annual closure option was chosen for area 525702.

GOA shallow-water flatfish are unique in that they appear to be most concentrated within the closure area (specifically within area 525702, as shown in Table 3-15). This is driven by high concentrations of rock sole, English sole, and butter sole in the area. Prior to 2020, total CGOA catch volumes for GOA shallow-water flatfish were higher and more equally distributed across productive flatfish fishing grounds outside of area 525702. After 2020 however, area 525702 has become an outlier—the majority of CGOA catch

volumes for GOA shallow water flatfish have come from this area alone in recent years. The change of area 525702 as an outlier for GOA shallow-water flatfish harvests appears to correlate with the declines in prices and market interest for many flatfish species occurring in recent years. Other areas where GOA shallow-water flatfish occur may have become less attractive to vessels for a number of reasons: the operational costs required to access other areas may be higher, the areas may contain high concentrations of other, less desirable species, or area 525702 may simply be a productive area for other species, and operators opportunistically harvest GOA shallow-water flats while they are in the area. Regardless of the reason behind the trend, if values for flatfish species remain in future years, GOA shallow-water flatfish target fishery harvests may decrease under Alternative 2—especially under an annual closure of area 525702.

Vessel operators may seek to redistribute their fishing effort based on the productivity and CPUE of other, higher-value species, and the intrinsic encounter rate for GOA shallow-water flatfish species may be lower in these other areas. If so, overall catch volumes for the species may decrease. The magnitude and likelihood that this would occur depends on the degree to which displaced catch can, or will, be made up in remaining open areas, and the CPUE of GOA shallow-water flatfish in the alternate fishing grounds chosen by displaced NPT vessels. However, if market interest for flatfish species increases, NPT vessels are more likely to seek alternate fishing grounds based on flatfish productivity. In that case, it is expected that the harvest of CGOA shallow-water flatfish species are more likely to be fully redistributed under Alternative 2.

Vessel and Community-Level Dependency and Impacts

Detail on the extent to which vessels rely on the proposed closure area during the seasons considered for closure are provided in Section 3.1.4, with additional fleet-specific information included within Section 3.4.1.

Table 3-13 provides additional detail on vessel-level dependency on the earnings derived from groundfish harvested with NPT gear from 525702. NPT harvests from 525702 comprise <10% of total revenues for most NPT vessels active in the area annually (19.2 of 22.2 vessels, 2012-2024 average). An average of 3 vessels derived over 10% of their total exvessel revenue from the value of their 525702 NPT harvest volumes annually during this period, and 1.2 of these vessels derived >20% of their total ex-vessel revenues from their 525702 NPT catch volumes. These vessels would be more severely impacted than others by the proposed area closure. The magnitude of impacts to heavily reliant vessels depends on the extent to which their harvests can be redistributed elsewhere, if they could shift targets or gear types, and the operational costs associated with modifying their fishing behavior.

Particularly in recent years nearly all NPT CVs also participate in PTR fisheries (i.e., CGOA pollock), as shown in Table 4-1. Therefore vessel-level impacts may largely be mitigated by the fleet's ability to pivot between target species and gear types, especially if NPT gear alone was prohibited within the closure area.

Table 3-24 through Table 3-27 provide information about community associations with NPT vessel owners, including primarily Newport, Seattle MSA and Kodiak. Limited impacts are expected on Newport and Seattle MSA from this action based on this connection. While Kodiak may be impacted through other means of this action, minimal impacts are expected as well based on groundfish NPT ownership associations. In general, the magnitude of change expected due to the proposed action is not expected to extend to community spending patterns from vessel owners in a discernible way. These communities represent diverse economies, including in other fisheries. For instance, the NPT and PTR ex-vessel revenue derived from statistical area 525702 as a proportion of Newport, Seattle MSA, and Kodiak's total fishery ex-vessel revenue is less than 1%.

4.3.2 Potential Impacts to Non-Regulated Entities

In general, the types and magnitude of potential social impacts that may occur as a result of the proposed action vary by community under the different alternatives. The potential social and economic community-level impacts that could be realized depend on the community's level of dependence on each sector, historical reliance of each groundfish sector on the closure area, the ability of vessels to modify fishing behavior, the magnitude of potential benefits to Tanner crab abundance and subsequent impacts on Tanner crab users, and the options selected under each element of Alternative 2. Community dependence on the affected sectors is described further within Section 3.4.

Community-Level Impacts

In general, the magnitude of change expected due to the proposed action is not expected to extend to community spending patterns from vessel owners in a discernible way. These communities represent diverse economies, including in other fisheries. For instance, the NPT and PTR ex-vessel revenue derived from statistical area 525702 as a proportion of Newport, Seattle MSA, and Kodiak's total fishery ex-vessel revenue is less than 1% (Table 3-27 and Table 3-31).

From a community perspective, Kodiak communities (namely the City of Kodiak), are by far the most centrally engaged in and dependent on the fisheries impacted by this action, as measured by multiple indices (including groundfish pot and trawl harvesters, Tanner harvesters, shore-based processors, and fishery support sectors). Although an accurate estimate of total annual gross ex-vessel revenue generated from the proposed closure that is spent in the Kodiak economy is not known, it is likely that some portion of that revenue is spent in the community and, therefore, generates additional economic activity in the community. Therefore, discussions of impacts to other non-regulated entities focus on potential distributional impacts that may accrue to entities within the Kodiak Island Borough and City of Kodiak (including sport/subsistence users active in the Borough and shoreside processing facilities in Kodiak).

Shoreside Processors and Stationary Floating Processors

This sector's activity is described further in Section 3.4.5 and Section 3.5. As noted in Table 3-41, processing activity averages 6.2 processors annually and is heavily concentrated in Kodiak, which accounts for 92.5% of all processors (5.7 processors per year) and 12 of the 17 unique processors observed. Given the numerous and diverse processing operations available in Kodiak, and the location of the proposed closure areas in relation to the community of Kodiak, impacts to shoreside processors described in these sections are specific to the processor environment within the Kodiak Island Borough. Some indirect economic impacts may accrue to shoreside and stationary floating processors that receive landings from affected groundfish vessels.

For instance, operational changes and costs could extend to shore-based processors if distances traveled interrupts the flow of deliveries or results in smaller/ lower quality products. Vessels stagger their deliveries to processing plants so that a consistent flow of fish are able to move through the plant at any given point in time. As described within Section 3.5, the pace of deliveries are often coordinated in order to make plant operations efficient and cost effective. If vessels needed additional travel time to access alternate fishing grounds under Alternative 2, or otherwise shift the timing of their efforts, it could result in interrupted or inefficient processing. The likelihood or magnitude of this impact is unknown. All vessels would need to travel outside the closure, however speculations on the specific locations of effort displacement cannot be accurately gleaned from available information.

Additionally, catch volumes may be displaced temporally, which could increase the length of the season and extend processing efforts over a greater period of time. This could increase the variable costs of operation and potentially result in other tradeoffs associated with later harvests. For example, if flatfish catch were to be displaced temporally rather than spatially, the timing of peak flatfish delivery harvests may shift back. Under either seasonal closure option, catch volumes that may have otherwise occurred

within the seasonal window may be displaced after 6/15. This of course depends on optimal catch timing and location, including factors such as product size, quality, and value. If catch is displaced after 6/15, conflicts and interference with salmon processing efforts would arise.

Furthermore, temporal catch displacement could impact processing efforts occurring during the ‘gap’ between peak pollock A season and summer salmon volumes. Additional information on processor seasonality is included in Section 3.5, and Figure 3-4. During the ‘gap’ season, flatfish and rockfish processing is the primary activity occurring at Kodiak processing plants. In part due to lower total volumes (compared to A season or salmon season), maintaining sufficient staff and employment opportunities during this season is difficult due to the extended downtime. Kodiak processing employment typically declines by ~20-25% between peak A season levels and minimum ‘gap season’ levels (Table 3-49).

If production is substantially slowed in this season, processing activity and employment opportunities may decrease. The magnitude of these potential impacts are unknown and depend on the volume and value of the catch temporally displaced, and processor-specific operational constraints that occur during this season. If locally operating shoreside processors slow production during this season to a magnitude that leads to reductions in employment opportunities, the Kodiak labor force may need to increasingly rely on unemployment compensation during this period.

Another factor to consider in the likelihood of shoreside processor impacts is the recent implementation of Amendment 113 to the GOA Groundfish FMP, which took effect in September 2024¹³. This amendment is likely to help make processing operations more efficient for Kodiak shoreside processors engaged in the Rockfish Program (RP) fisheries by moving the start of the Central GOA RP fishery to April 1. This was implemented in response to the seasonality issues during the ‘gap’ season as noted above, which was exacerbated by decreases in flatfish volumes. Moving the start of the RP fishery date to April 1 will help even out seasonal processing peaks and valleys and will lower processor reliance on flatfish volumes in April. Considering this action in conjunction with likely impacts of Amendment 113, any impacts to shoreside processing operations that may occur as a result of this action are expected to be minimal.

Kodiak Tanner Crab Users

The closures are intended to provide protections for Tanner crab, however it is not known how the probability or timing of any increases in abundance will be affected by the closure, nor the magnitude to which the selection of options within Alternative 2 would affect outcomes. Chapter 5 and Section 5.3 provides additional information on this topic.

To the extent that this action provides additional opportunities and pathways for reductions in Tanner crab PSC, this action may increase the probability of increased Tanner crab abundance compared to the status quo alternative. The extent to which the proposed closures will enhance recovery or increase abundance cannot be accurately ascertained; however general assumptions and conclusions can be drawn about the impacts of any potential PSC reductions. To the extent that this action may decrease PSC and provide protections for Tanner crab stocks compared to the status quo alternative, Kodiak Tanner crab users may benefit from Alternative 2. Impacts to these user groups rely on the extent to which benefits to Tanner crab accrue to a level that impacts abundance or availability of legal-sized male crab. Although the closure areas proposed tend to provide protections for Tanner crab, it is unknown whether the probability or timing of population increases of these stocks would benefit at a magnitude that would result in tangible impacts to Tanner crab users. The extent to which proposed closures will enhance recovery or increase abundance cannot be accurately estimated or measured.

¹³ Available at <https://www.fisheries.noaa.gov/action/amendment-113-fmp-groundfish-gulf-alaska-central-gulf-alaska-rockfish-program-adjustments>

As discussed in Section 3.2, Tanner crab are harvested in Kodiak through subsistence, sport, and commercial fisheries. This analysis assumes that potential impacts to Tanner crab users would be seen by users harvesting from the waters adjacent to the areas considered for closure, or within the areas considered for closure.

Subsistence and sport harvests for Tanner crab tend to be concentrated around Kodiak communities due to operational constraints (Section 3.2). Therefore, it is assumed that subsistence and sport impacts are most likely to be seen by residents of Old Harbor (which lies adjacent to the areas of interest for this action), followed by Kodiak road system residents (via Ugak Bay, which also lies adjacent to the areas of interest). Subsistence and sport users that utilize areas around Old Harbor and the Kodiak Road system would also be included in these groups. The waters around Old Harbor, and Ugak Bay, have both historically been used by sport Tanner anglers, and it is assumed that subsistence users have historically harvested from these general areas as well.

For the commercial Tanner sector, participation in the commercial fishery is substantial when the fishery is open, averaging about 82 vessels annually (Table 3-36). The areas considered for closure have historically been important harvesting areas for the commercial sector, as described in Table 3-19 and Table 3-20. Within the period shown, Tanner crab harvests from statistical area 525702, 525630, and 535632 accounted for at least 10% of the harvest in all years, and over 50% of the harvest in two years. In 2023, the highest commercial harvest volume in the series, harvest from the statistical areas of interest accounted for 22.9% of total Kodiak district harvests.

Specifically for the commercial sector, if this action were to increase Tanner crab abundance and biomass to a significant degree, this could lead to additional Tanner crab seasonal openings in the future, and/or increased GHs and harvests, relative to status quo. However the magnitude of this is unknown, and depends on the ability of Tanner stocks to increase to levels that would either increase commercial opportunities, or result in season openings that would otherwise not come to fruition under Alternative 1. In general, there are high costs of forgone revenue when a stock is in a depressed state. A historical perspective of the value of the Tanner crab fishery in Kodiak implies that there would be benefits seen by vessels, owners, and crew should TAC increase relative to status quo, or should there be additional crab seasonal openings in the future.

4.4 Affected Small Entities (Regulatory Flexibility Act Considerations)

Section 603 of the Regulatory Flexibility Act (RFA) requires that an initial regulatory flexibility analysis (IRFA) be prepared to identify whether a proposed action will result in a disproportionate and/or significant adverse economic impact on the directly regulated small entities, and to consider any alternatives that would lessen this adverse economic impact to those small entities. NMFS prepares the IRFA in the classification section of the proposed rule for an action. Therefore, the preparation of a separate IRFA is not necessary for the Council to recommend a preferred alternative. This section provides information about the directly regulated small entities that NMFS will use to prepare the IRFA for this action if the Council recommends regulatory amendments.

This section also identifies the general nature of the potential economic impacts on directly regulated small entities, specifically addressing whether the impacts may be adverse or beneficial. The exact nature of the costs and benefits of each alternative is addressed in the impact analysis sections of the RIR and is not repeated in this section, unless the costs and benefits described elsewhere in the RIR differs between small and large entities.

This section will be completed for the final action draft if the Council moves forward with consideration of the action alternatives.

4.5 Alternatives with Respect to Net Benefit to the Nation

A qualitative assessment of the net benefit to the Nation of each alternative, compared to no action, will be completed for the final action draft if the Council moves forward with consideration of the action alternatives.

5 Environmental Impacts

This chapter evaluates the potentially affected environment and the degree of the effects of Alternatives 1 and 2, as well as associated elements and options, on identified resource components together with reasonably foreseeable environmental trends and planned actions in the area. **There are no environmental impacts that would result from an evaluation of existing closures around Kodiak Island, so no impact assessment was undertaken for Alternative 3. See Chapter 7 for a discussion overview of Alternative 3.**

This chapter relies heavily on the information and evaluation contained in previous environmental analyses, and these documents are incorporated by reference. These documents, described and listed in Section 1.5, contain information about the fishery management areas, fisheries, marine resources, and ecosystem elements of the groundfish fisheries. They also include comprehensive analysis of the effects of the fisheries on the human environment and are referenced throughout this section.

Recent and relevant information, necessary to understand the affected environment for each resource component, is summarized in the relevant section below. For each affected resource component, the analysis identifies the potential impacts of each alternative, and evaluates the significance of these impacts. If significant impacts are likely to occur, preparation of an Environmental Impact Statement (EIS) is required. Although an EA should evaluate economic and social impacts that are interrelated with natural and physical environmental effects, economic and social impacts by themselves are not sufficient to require the preparation of an EIS. Economic and social impacts are analyzed in Chapter 4.

5.1 Methods for Environmental Impact Analysis

5.1.1 Data

5.1.1.1 NMFS RACE GAP Tanner crab survey data

The Alaska Fisheries Science Center (AFSC) Resource Assessment and Conservation Engineering Division's Groundfish Assessment Program (RACE-GAP) summer bottom trawl surveys document the distribution and abundance of federally managed fish and invertebrate species across the eastern Bering Sea (EBS), Aleutian Islands (AI), and the GOA. These surveys adhere to standardized trawling protocols and provide species data for a large suite of fisheries management applications, including stock assessment indices and inputs into species distribution models (SDMs) to map essential fish habitat (EFH) for FMP species. Surveys in the GOA have followed a periodic schedule, with methodology becoming standardized and consistent in 1990. From 1990 to 1999 the GOA survey ran triennially before switching to a biennial, odd year schedule in 2001. The survey follows a stratified random design on a 5×5 km grid. Using the NMFS RACE GAP trawl survey for this analysis, years were selected from 2011-2025 to encompass the target years with an odd year survey. The ADF&G trawl survey occurs annually; therefore years from 2012-2025 were selected for the model fitting. As Tanner and king crab are not federally managed in the GOA, the NOAA RACE GAP survey does not prioritize individual sampling of captured crab in the survey. Thus, they do not record sex, maturity, or size in the GOA. They do record the number of crab per species caught and total weight of each crab species in a tow. Lastly, the NOAA RACE GAP survey uses a larger bottom trawl, which may be less suited in capturing various sizes of crab as the ADF&G survey, which uses a smaller otter trawl with smaller mesh. However, this is accounted for in integrating catchability as a survey term in our combined survey model (Section 5.1.2.1).

5.1.1.2 CIA database

Fishing effort for the fishing effects (FE) model is based on the legacy Catch-In-Areas (CIA) database produced by the NMFS AKRO. The CIA database is a GIS database that contains information on the spatial extent of all fishing activities in the North Pacific. It is derived from Vessel Monitoring System

(VMS) data automatically collected onboard nearly all commercial fishing vessels in the North Pacific. The VMS continually records GPS locations while a ship is at sea providing a continuous path of where that vessel has traveled. In the CIA database, the VMS paths are truncated to include only the portions of the path that correspond to fishing activity rather than activity such as steaming, searching, etc. For vessels that have onboard fisheries observers that record the time of fishing activity, the VMS paths are truncated based on the observers' records. For vessels that did not have observers onboard, a filtering process was used on the VMS data that identifies likely fishing activity based on the vessel's speed and location and are flagged in the CIA database as "unobserved" fishing. From 2016 – 2020, observed fishing accounted for 94%, 95%, and 45% of the total contact adjusted fishing area for AI, EBS, and GOA, respectively. In addition to the spatial data, the CIA database also contains information about the fishing activity (e.g. total catch, target species, vessel size, etc.) such that gear types can be attributed to the spatial records which allows for fishing lines to be converted to area swept. Data from the legacy database is available from 2012-August of 2022 on monthly time steps.

Currently, the NMFS AKRO is in the process of creating the CIA 2.0 system, which is a modernized rebuild of a legacy data product that draws on two existing data sources: the CAS, which ingests multiple commercial reporting data-streams to describe what was caught, by whom, on which trip, using what gear, and in which reported statistical area; and the VMS, which provides a continuous GPS track of fishing vessels. The application that produces the CIA dataset processes these inputs one fishing trip at a time. For each trip, it reconstructs the vessel's path from VMS position data, then uses any available precision haul-level location data (from at-sea observers or electronic monitoring systems) to attribute the trip's reported catch to specific geographic locations. When such data is unavailable, the system instead uses vessel behavior (i.e. gear type & speed) to estimate fishing activity. The result is a catch record that retains all of the detail of the original CAS data (species, weight, gear type, vessel, management program) while adding a more precise spatial estimate of where the catch occurred. It should be noted that the CIA system only includes federal fishery information and associated gears, and does not include State fishing data, such as crab pot fishing. This data will eventually be available from 2013 – present, with higher resolution temporal data (better than monthly).

During the process of the rebuild and transition to the 2.0 database, issues were identified that will require several months to troubleshoot and implement. Therefore the database was not available for this analysis; in lieu of the CIA 2.0 database, analysts used the data and methodology described in Section 3.1.1 to apportion catch volumes, value, and PSC to the custom closure area. Issues with the CIA 2.0 database included the need for an improved method to remove incorrect VMS points and methodological adjustment to reduce incorrectly attributing transiting behavior as "fishing". The database is also not currently configured to account for complex coastlines and smaller overlapping closure areas. These are all areas of current development work, but not completed in time for this analysis. The CIA database staff noted that while the current 2.0 database is not sufficiently precise for the complex high-resolution area around Kodiak, the current dataset is still useful at larger spatial scales, such as noting centers of catch and locations of higher density fishing in the NMFS GOA Inseason Management Report.

For future iterations of this analysis, if the CIA 2.0 database is available, it would be useful to improve understanding of spatial fishing patterns at a higher spatial and temporal resolution, understanding of spatial and temporal patterns of PSC, and to determine more recent bottom contact area estimates. However, for discard information (PSC and groundfish) on unobserved trips and hauls, the CIA database relies on apportioning catch estimates across VMS tracks. The resulting spatially apportioned discard information is inferred from observed events that may have occurred outside of the vessel's specific trip and VMS track. Discard rates derived from available observer data are typically aggregated at broader spatial scales (e.g., across an entire federal reporting area) that may not capture localized variability at localized spatial resolutions.

5.1.2 Methods

5.1.2.1 Species Distribution Model

Methods

Model Framework

The analysts developed two distinct modeling approaches to characterize Tanner crab distributions around Kodiak using correlative spatiotemporal models, combining survey data with important environmental covariates. The **first approach** utilized data exclusively from the ADF&G trawl survey to produce life-stage-specific models for mature males and mature females. This allowed us to examine habitat associations unique to specific reproductive stages. The **second approach** integrated data from both the ADF&G and the National Marine Fisheries Service (NMFS) RACE GAP bottom trawl surveys to produce estimates of abundance across all Tanner crab regardless of sex or maturity. This approach expanded the spatial extent of the study, bridging gaps between localized ADF&G survey blocks to provide a broader view of the Tanner crab population surrounding Kodiak.

Covariates

The analysts built estimates of abundance of Tanner crab through correlative models of survey data with ten environmental predictors, which might hypothesize to explain Tanner crab abundance. These covariates characterize terrain, oceanographic, and substrate features of the seafloor. Analysts derived bottom depth using bathymetry grids and calculated seafloor terrain variables including slope (rate of depth change), aspect eastness and northness (representing the directional orientation of the seafloor), mean curvature, and Bathymetric Position Index (BPI), to identify localized topographic features like ridges and depressions. To capture dynamic environmental conditions, analysts integrated oceanographic data from the Northeast Pacific Modular Ocean Model 6 (MOM6-NEP) and extracted annual mean summer bottom temperature (June–August) from 1993–2025 hindcasts at a ~10-kilometer horizontal resolution. Additionally, a maximum tidal current covariate was included, estimated using a tidal inversion program on a 1-kilometer grid, to account for high-energy benthic environments. For substrate, analysts utilized updated sediment grain size (phi) data (Jenkins et al., 2025) and applied a seafloor rockiness covariate. More details on how these covariates were derived can be found in the D3 2028 EFH 5-Yr Review Description and Maps Method discussion paper as well as the 2023 EFH 5-year Review (Pirtle et al. 2025).

Model Fitting

Species distribution models (SDMs) were implemented using the sdmTMB package in R (Anderson et al. 2022), fitting spatiotemporal Generalized Linear Mixed Models (GLMMs) to the survey data using the ten covariates. Numerical abundance was specified using a Tweedie distribution to accommodate the high frequency of zero-catch observations and the continuous, positively skewed catch data and a log link at spatial location s and time t according to the following formula:

$$\log \log (\mu_{st}) = X_{st} + \alpha_t + \text{offset}(\log \log (\kappa)_{st}) + \omega_{st} + \varepsilon_{st}$$

$$Y_i \sim \text{Tweedie}(\mu_{st}, \theta, \psi)$$

where ‘X’ represents each of the ten covariates at spatial location s and time t , α is a fixed effect for year, and κ is the bottom trawl effort in area swept (km^2) included as a gear offset to standardize the response variable to absolute abundance. For the combined survey model, an additional fixed effect for "Survey" was incorporated to account for inherent catchability differences between the ADF&G and NMFS gear types. Annual variations in spatial patterns were captured through a spatiotemporal structure using independently and identically distributed (IID) random fields (ω) and residual error (ϵ). To identify the

most influential drivers of distribution, a full covariate subsetting procedure was performed, evaluating all 1,023 possible combinations of environmental predictors.

To handle spatial autocorrelation, the Stochastic Partial Differential Equation (SPDE) approach was utilized with a triangulated spatial mesh. Distinct regional meshes were developed for the two model types: (1) ADF&G survey, (2) ADF&G/NMFS combined survey. To ensure the mesh resolution was appropriate for the study area, sensitivity tests were conducted on this cutoff distance, evaluating ranges between 100 m and 300 m for the ADF&G-only models and 3 km to 10 km for the combined survey. Based on these tests, optimal cutoffs of 300 m and 3 km were selected, respectively, ensuring the minimum edge length remained several times smaller than the estimated spatial range while maintaining computational efficiency (Appendix 2; Table A2-1). A critical component of this design was the implementation of a barrier mesh, which constrained spatial interpolation strictly to the marine environment. This constraint prevented the models from erroneously “bleeding” abundance estimates across terrestrial land masses or between disconnected fjord systems.

Performance Metrics

To identify the best-fit models, the Akaike Information Criterion (AIC) was compared across all candidate combinations. Model performance was further validated through a cross-validation process, assessing predictive skill using three primary metrics: Root Mean Square Error (RMSE), Sum of Log-Likelihood (SumLogLik), and Spearman’s ρ rank correlation. These metrics ensured that the selected models provided both a strong statistical fit and reliable predictive accuracy (Appendix 2; Table A2-2, A2-3, A2-4).

Mapping

Three primary spatial outputs were generated to visualize the results. First, catch maps were produced to display the raw data distribution. Second, estimated abundance maps were created, providing a continuous surface of predicted crab density across the study area. Finally, these abundance estimates were converted into subarea percentile maps. Using NMFS AKRO’s SDMEFH package, the same method of delineating the 25%, 50%, 75%, and 95% abundance percentiles was adopted, mapping the hotspot, core and marginal boundaries of Tanner crab in the Gulf of Alaska.

5.1.2.2 Fishing Effects Model

Fishing operations may change the abundance or availability of certain habitat features used by managed fish species to spawn, breed, feed, and grow to maturity. These changes may reduce or alter the abundance, distribution, or productivity of species. The fishing effects (FE) on habitat depend on the intensity of fishing, the distribution of fishing with different gears across habitats, and the sensitivity and recovery rates of specific habitat features.

During the 2017 EFH 5-year Review, NMFS contracted with the Alaska Pacific University (APU) to develop a FE model. The FE model estimates benthic habitat disturbance over time and space from commercial fishing activities. The model is implemented in two linked modules: a Fishing Module that translates CIA database fishing event data and gear parameter tables into estimates of fishing footprint and fishing gear–seabed interactions (e.g., bottom contact), and a Habitat Module that combines Fishing Module outputs with habitat maps and feature-specific susceptibility and recovery parameters to estimate cumulative benthic habitat disturbance. The FE model employs an impact/recovery dynamic that tracks habitat transitions between disturbed and undisturbed states in monthly time steps within 5 km x 5 km (25 km²) grid cells across the North Pacific (see Smeltz et al. 2019 for a full description of the model). The primary output of the FE model is an estimate of the amount of disturbed habitat in each grid cell for each month of the model run. A brief summary of the results from the most recent FE evaluation completed for the 2023 EFH 5-year Review is provided in Section 5.2.2.

The updated CIA 2.0 database data was not ready at the time of this analysis. It should be noted that at this time, only federal fishing information is included. State fishing with crab pot or scallop dredge is not available in the CIA database.

Updates to the GOA pelagic trawl gear portion of the gear parameter table through the Gear Innovation Initiative were not available at the time of this analysis. To inform this action, analysts prepared time series data and maps of bottom contact area for comparison across gear types, and proposed options under Alternative 2. When preparing the Fishing Module product, *swept area* is calculated as the estimated areal coverage over which any gear-seafloor interactions may occur; this is also referred to as the fishing footprint. *Bottom contact area* is a fraction of the swept area and the estimated areal coverage of the seafloor that has been touched by gear. For a specific fishing event, the bottom contact area is calculated as the product of the swept area and the contact adjustment of the fishing gear used. The median contact adjustment was used to calculate bottom contact area.

It should be noted that the legacy CIA database was only available through Aug. 2022; therefore, that is a partial year and should be interpreted as such when reviewing the tables and plots (Section 5.4.2). Estimated bottom contact area from 2022 – 2025 was not available, and therefore the impacts of fishing activity in those years cannot be determined. The temporal resolution of the legacy CIA database is monthly and therefore does not fully align with the proposed closure duration options in Alternative 2, Element 2, Option 2. Additionally, annual estimates of bottom contact area may exceed the size of the proposed closure because monthly estimates of bottom contact area are summed to produce an annual area. Any bottom contact area activity that occurs in unexpected areas is the result of the underlying CIA data combined with aggregation to 5 km x 5 km (25 km²) grid cells. Maps of bottom contact by year (2012-2022), closure duration option (Alt. 2, Element 2, Options 1, 2a, 2b), and gear type (NPT, PTR, POT) that focus on the east side of Kodiak Island are available upon request and future iterations of this analysis (~ 100 maps).

5.1.3 Resource Components Addressed in the Analysis

This section evaluates the impacts of the alternatives and associated elements and options to the human environment. Elements of the human environment that could be considered include: natural resources, aesthetic, historic, cultural, economic, social or health factors. Impacts under NEPA may be either beneficial or adverse, or both. This analysis breaks elements of the human environment into discrete resource components. Recent and relevant information, necessary to understand the affected environment for each resource component, is either referenced where applicable or summarized in the relevant subsections below. For each resource component, the analysis identifies the potential impacts of each alternative, and uses criteria to evaluate the significance of these impacts. Resource components of the human environment that overlap with the proposed action and *could* potentially be affected by the proposed action and alternatives include:

- groundfish
- prohibited species
- ecosystem component species
- marine mammals
- seabirds
- habitat
- ecosystem systems
- social and economic resources (*discussed in Chapter 4*)

Although this action has potential to add a new time and area closure to protect Tanner crab, and to modify or remove existing closures that were implemented to protect red king and Tanner crab, this action would not change the overall fishery management structure that includes the harvest specifications

process used to set overall limits for target and non-target species, general timing of fishing, the management area of where fishing activity is authorized to occur, or other fishing regulations applicable to existing fishing operations. Numerous marine mammal protections currently limit fishing effort and vessel interactions in the Kodiak area. This action would not impact those closures and does not contemplate any changes to the existing regulations to protect marine mammals. Therefore, this action is not expected to have additional effects for ecosystem component species, marine mammals, seabirds, or ecosystem systems beyond those effects previously analyzed or expected as a result of this action and no further analysis of these resource components is necessary for this action.

Changes contemplated by this proposed action could affect the location and timing of groundfish prohibited species catch (PSC) within currently authorized seasons and FMP management area. Although fishing is expected to continue at similar rates of effort elsewhere if a closure were implemented, PSC encounters, rates, and timing seem to be spatially dependent. Any changes affecting placement of gear in the water column and along the seafloor may cause potential impacts to essential fish habitat.

Therefore, resource components that could be affected by the action and that are discussed in more detail below are:

- groundfish
- Tanner crab
- PSC: Chinook salmon
- PSC: halibut
- habitat

The social and economic impacts of this action are described in detail in the Regulatory Impact Review (RIR; Chapter 4).

5.2 Groundfish Species

5.2.1 Background

Groundfish species most impacted from Alternative 2 would be pollock, Pacific cod, rockfish, and flatfish. Although sablefish is harvested by pot vessels in the proposed closure areas, the implementation of any of the time/area closures considered by this action appear to have a very minimal impact on sablefish since the fishery occurs primarily in deep waters, outside of the areas considered for closure. Less than 1% of CGOA sablefish pot harvests have come from the areas considered for closure since 2017 (Table 3-3), and in most years (aside from 2020, 2021, 2022) RP vessels incidentally harvesting sablefish with NPT in the areas considered for closure was less than 5% of total CGOA sablefish harvest volumes caught by RP vessels (Section 3.1.4.2). Therefore, this section of the EA will focus primarily on pollock, Pacific cod, rockfish, and flatfish species.

5.2.1.1 Walleye Pollock

Walleye pollock (*Gadus chalcogrammus*) are distributed broadly in the North Pacific Ocean. Pollock in the central and western Gulf of Alaska are managed as a single stock. Pollock are semi-pelagic, distributed from near the surface to depths of 500m. In late winter and early spring pollock form very large spawning aggregations, including those found in the Gulf of Alaska's Shelikof Strait. Pollock migrate seasonally between spawning and feeding areas. Pollock feed on copepods, euphausiids, and fish, and are preyed upon by other finfish, marine mammals, and seabirds. Pollock enter the fishery around age three and can live up to about 20 years.

Since 1992, GOA pollock catch has been apportioned spatially and temporally to reduce fishery impacts on SSLs (see Section 2.2.1). According to the most recent¹⁴ GOA Walleye pollock SAFE Report (Monnahan 2024), overfishing is not occurring, the stock was not overfished, and the stock is not approaching overfished status.

Gulf-wide catch specifications are spatially apportioned into federal management reporting areas 610, 620, 630 and 640. Table 5-1 shows the 2025 GOA pollock TAC and catch, by federal management reporting area. In 2025, 76% of the total GOA pollock TAC was utilized. Area 620 had the highest utilization, with harvests achieving 97% of the TAC. In area 630, harvests achieved 76% of the TAC.

Table 5-1 2025 GOA Pollock Catch and TAC, by federal management reporting area (metric tons)

Federal Management Reporting Area	TAC (mt)	Catch (mt)	% of TAC Utilized
610	37,344	14,030	38%
620	82,865	79,477	97%
630	51,605	39,213	76%
640	5,282	1,861	35%
GOA TOTAL	176,496	134,581	76%

Source: 2025 Annual GOA Inseason Management Report to the Council, available at <https://www.fisheries.noaa.gov/resource/document/alaska-inseason-management-annual-reports-north-pacific-fishery-management>

The GOA Pollock TAC is temporally apportioned to A season and B season quota annually. Pollock A season typically runs from January 20 to June 1, and B season runs from September 1 to November 1.

Table 5-2 describes the 2025 temporal quota apportionments for the federal management reporting areas in the Central GOA (620 and 630). In 2025, A season TAC was set higher than B season in Area 620, while B season TAC was higher than A season TAC in 630. Within the pollock A season, 99% of the TAC from Area 620 was utilized, and 89% of the TAC from Area 630 was utilized.

Table 5-2 2025 CGOA Pollock Catch & TAC, by federal management reporting area and season

Season	Area 620			Area 630		
	TAC	Catch	% Taken	TAC	Catch	% Taken
A Season	63,267	62,414	99%	16,751	14,959	89%
B Season	18,998	16,216	85%	34,854	23,117	66%
Outside of set seasons	-	847	-	-	1,138	-
2025 Total	82,265	79,477	97%	51,605	39,215	76%

Source: GOA Seasonal Catch Report, NMFS SF Catch Accounting, available at <https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports-alaska#goa-groundfish>

As described in Section 3.1.3, the primary fleet harvesting pollock in the CGOA is the open access (OA) fleet, though vessels in the Rockfish Program also have some incidental pollock catch.

Pollock harvest volumes in the statistical areas of interest have fluctuated widely between 2012 and 2025, as shown in Table 5-3 below. Annual variances in pollock harvest in these areas largely follow the same historical trends in PTR harvest volumes show in Section 3.1.3, since pollock comprises the vast majority of PTR harvest volumes, and the vast majority of pollock catch volumes are harvested with PTR.

¹⁴ The next full operational assessment is scheduled for 2026, outside the normal annual cycle due to impacts from the federal government shutdown in fall 2025. However, based on information available and catch updates, the Council approved harvest specifications for 2026 and 2027 (Dec 2025 [Council motion](#)).

Table 5-3 Annual Pollock Catch Volumes by area (CGOA, Federal Reporting Area 630, and Areas of Interest), 2012 – 2025 (metric tons)

Year	CGOA Total	Area 630 Total	525702			Custom Closure		
			Volume (mt)	% of 630	% of CGOA	Volume (mt)	% of 630	% of CGOA
2012	69,764	25,019	8,997	36.0%	12.9%	9,040	36.1%	13.0%
2013	80,752	28,079	7,146	25.4%	8.8%	9,012	32.1%	11.2%
2014	124,260	41,685	14,347	34.4%	11.5%	18,909	45.4%	15.2%
2015	132,792	51,882	16,888	32.6%	12.7%	23,275	44.9%	17.5%
2016	110,960	64,167	26,305	41.0%	23.7%	35,645	55.6%	32.1%
2017	133,142	52,299	10,333	19.8%	7.8%	15,035	28.7%	11.3%
2018	118,327	39,304	10,870	27.7%	9.2%	13,513	34.4%	11.4%
2019	87,859	24,250	9,326	38.5%	10.6%	9,494	39.2%	10.8%
2020	80,481	25,406	4,041	15.9%	5.0%	4,321	17.0%	5.4%
2021	74,890	22,816	3,747	16.4%	5.0%	4,160	18.2%	5.6%
2022	99,047	29,999	4,454	14.8%	4.5%	5,147	17.2%	5.2%
2023	97,681	32,898	3,084	9.4%	3.2%	3,472	10.6%	3.6%
2024	90,781	19,990	7,128	35.7%	7.9%	7,187	36.0%	7.9%
2025	117,337	38,470	8,257	21.5%	7.0%	8,711	22.6%	7.4%
Average, 2012-2025	101,291	35,447	9,637	27.2%	9.5%	11,923	33.6%	11.8%
Total, 2012-2025	1,418,071	496,263	134,924	27.2%	9.5%	166,921	33.6%	11.8%

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

Table 5-4 describes pollock harvest volumes by month in the CGOA, reporting area 630, and in the areas of interest, by gear type. PTR catch generally reflects catch in the target pollock fishery, and NPT catch generally reflects incidental volumes caught through other target fishing activity. Though pollock A season spans from January 20 to June 1 in regulation, the bulk of A season harvests throughout the CGOA and Area 630 occur in February and March. Similarly, B season harvests are concentrated at the beginning of the B season regulatory opening date.

Pollock are primarily harvested with PTR gear within the areas of interest during B season, and the areas of interest are important to B season pollock harvests. From 2012 to 2025, 94% of all pollock harvested from these areas were caught between July 1 and December 31. The bulk of PTR pollock harvests in the areas of interest occur between August and October. Minimal volumes occur during A season.

NPT pollock harvests are distributed over the course of the year rather than concentrated in pollock A and B seasons. The bulk of NPT pollock harvests occur in September and October in all areas examined in the below table. Proportionally NPT harvests from 525702 and the custom area both comprise ~30% of all pollock volumes caught with NPT gear in area 630. These are not additive; as the custom area overlaps with area 525702.

Table 5-4 Pollock Harvests, by gear type and month, CGOA, Area 630, and Areas of Interest, 2012-2025 Totals (metric tons)

Month	PTR Pollock Harvests						NPT Pollock Harvests					
	CGOA Volume	Area 630 Volume	5252702		Custom Area		CGOA Volume	Area 630 Volume	5252702		Custom Area	
			Volume	% of 630	Volume	% of 630			Volume	% of 630	Volume	% of 630
January	43,557	18,314	1,939	11%	4,576	25%	5,227	1,874	794	42%	779	42%
February	282,276	44,832	1,507	3%	1,502	3%	7,340	3,869	748	19%	730	19%
March	455,067	52,630	879	2%	892	2%	2,268	904	154	17%	164	18%
April	52,840	16,029	177	1%	250	2%	1,418	793	237	30%	238	30%
May	3,308	486	-	0%	19	4%	1,518	793	272	34%	268	34%
June	1,475	1,012	-	0%	6	1%	3,103	1,485	347	23%	349	24%
July	1,113	941	-	0%	17	2%	2,844	1,936	264	14%	315	16%
August	31,340	15,234	10,789	71%	12,416	81%	2,002	1,166	331	28%	363	31%
September	230,460	167,373	64,324	38%	74,541	45%	15,623	12,319	4,485	36%	4,270	35%
October	259,416	140,353	43,894	31%	58,230	41%	14,191	12,224	3,426	28%	3,242	27%
November	898	798	<1	0%	3	0%	1,338	1,036	295	28%	291	28%
December	4	4	-	0%	2	65%	398	319	191	60%	184	58%
Total, 2012-2025	1,361,753	458,005	123,510	27%	152,454	33%	57,269	38,718	11,545	30%	11,194	29%

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

5.2.1.2 Pacific cod

The Pacific cod stock in the GOA has declined since peaking in the late 1980s, and after severe marine heatwaves in 2014 and 2019, the population collapsed. The magnitude of the population in 2014 was estimated to be much higher than it was in 2025. After 2019, the smallest in the stock assessment time series, the stock seems to be increasing. The stock appears to be recovering from low levels with the 2026 stock estimated to be nearly equal to the BMSY proxy of B35%. The 2026 max ABC is 41,520 t, which is 29% larger than the 2025 ABC of 32,141 t, and 37% larger than the 2026 ABC projected in last year's assessment due to updated survey data and an increase in the estimated stock status. The stock is not subject to overfishing, is not currently overfished, nor is it approaching a condition of being overfished (Hulson et al 2026). The Kodiak Area state-waters Pacific cod guideline harvest level (GHL) is 5.31 million lbs, 50% of which is allocated to pot vessels.

Unlike most species, which are harvested predominately by one type of gear accounting typically for 90 percent or more of the catch, Pacific cod is taken by trawl, hook-and-line, and pot gear types. Amendment 83 established sector allocations of Pacific Cod TAC for each gear and operation type in the Western and Central GOA Pacific cod fisheries after deductions for Alaska state GHL fisheries starting in 2012. In both regulatory areas, the sectors are jig, hook-and-line (HAL) catcher/processor (CP), pot catcher vessel (CV) and CP combined, trawl CP, trawl CV, and hook-and-line CV. In the Central GOA, the hook-and-line CV sector is further divided by vessel length; hook-and-line CVs less than 50 ft (15.2 m) LOA (< 50 ft (15.2 m) LOA), and hook-and-line CVs greater than or equal to 50 ft (15.2 m) (≥ 50 ft (15.2 m)). More detailed information on GOA Pacific cod allocations is available within the 2023 GOA Pacific Cod Allocation Review.¹⁵

¹⁵ Available at https://files.npfmc.org/catch_shares/2023GOA_PCodAllocationReview.pdf. Interactive versions of the data within this report are available in dashboard form, and can be accessed on the AKFIN NPFMC Allocation Review webpage: <https://reports.psmfc.org/akfin/?p=501:2503:14097302876868>

The GOA Pacific cod sector allocations are apportioned across an A and B season (679.20(a)(12)), by Central GOA and Western GOA federal management reporting areas, and by gear type (679.23(d)(3)).

Table 5-5 summarizes the 2025 Western and Central GOA Pacific cod TAC and catch by sector. In 2025, 90% of the Western GOA Pacific cod TAC was utilized, and 92% of the Central GOA Pacific cod TAC was utilized. Pot vessels (CVs and CPs combined) utilized 94% of their Western GOA Pacific cod allocation, and 100% of their Central GOA Pacific cod allocation. Trawl allocations are apportioned separately to CVs and CPs, and CV TACs are further apportioned by vessels participating in the Rockfish Program (RP), and non-RP vessels. Trawl CVs utilized 94% of their Western GOA Pacific cod allocation, and a combined 89% of Central GOA Pacific cod allocation (RP and non-RP combined). Trawl CPs utilized nearly all of their Central GOA allocation (99%), but only 24% of their small Western GOA allocation (24%).

The GOA Pacific cod sector allocations are apportioned across an A and B season (679.20(a)(12)), by Central GOA and Western GOA federal management reporting areas, and by gear type (679.23(d)(3)).

Table 5-5 2025 GOA Pacific Cod Catch and TAC, by federal management reporting area and sector (metric tons)

Regulatory Area and Sector	TAC (mt)	Catch (mt)	% of TAC Utilized
Western GOA	6,097	5,461	90%
Jig	213	89	42%
HAL CV	152	142	93%
HAL CP	1,165	1,019	87%
Trawl CV	2,040	1,927	94%
Trawl CP	141	34	24%
Pot CV & CP	2,386	2,250	94%
Central GOA	15,251	14,034	92%
Jig	462	444	96%
HAL CV, <50	2,178	1,956	90%
HAL CV, ≥50	1,000	752	75%
HAL CP	762	689	90%
Trawl CV (non-RP)	5,177	4,632	89%
Trawl CV (RP)	458	368	80%
Trawl CP	1,046	1,036	99%
POT CV & CP	4,168	4,157	100%

Note: Trawl catcher vessels participating in Rockfish Program cooperatives receive 3.81 percent, or 586 mt, of the annual Central GOA TAC (see table 28c to [50 CFR part 679](#)). This apportionment is deducted from the Trawl CV B season allowance.

Sources: 2025 Annual GOA Inseason Management Report to the Council, available at

<https://www.fisheries.noaa.gov/resource/document/alaska-inseason-management-annual-reports-north-pacific-fishery-management>

As described above, the GOA Pacific Cod allocations are apportioned temporally. The Pacific cod seasons were initially established to mitigate concerns surrounding prey availability for SSLs, and seasonal apportionments within each sector were established to reflect the seasonal fishing behaviors of each sector. Sector TACs are seasonally apportioned as follows:

- **HAL/Pot:** A season: 1/1 to 6/1. B season: runs from January 1 to June 10, and B season runs from September 1 to December 31
- **Jig:** A season runs from January 1 to June 10, and B season runs from June 10 to December 31
- **Trawl:** A season runs from January 20 to June 10, and B season runs from September 1 to November 1
 - **Trawl CVs, in the Rockfish Program:** Directed fishing open from April 1 to November 15

Directed fishing for Pacific cod is open outside of the typical Pacific cod A or B season for Trawl CVs operating in the Rockfish Program. These vessels are given a Pacific cod allocation as a secondary species.

Table 5-6 shows the 2025 CGOA Pacific cod catch and TAC, by season and sector. In 2025, the majority of the CGOA Pacific cod TAC was apportioned to the A season, and a higher proportion of the total CGOA Pacific cod TAC was utilized in the A season versus the B season. Of the 9,847 mt of CGOA Pacific cod TAC allocated to the A season, 93% was utilized. In comparison, only 67% of the 4,946 CGOA Pacific cod B season TAC was utilized.

Catch exceeds the TAC in some sector/season combinations. This can occur because regulations allow for NMFS to apply any underage or overage of Pacific cod harvest by each sector from one season to the subsequent season as well as reallocation of TAC that is projected to be unharvested to other sectors to provide an opportunity for the full harvest of the GOA Pacific cod TAC (50 CFR 679.20(a)(12)(ii)).

Table 5-6 2025 CGOA Pacific Cod Catch & TAC, by season and sector

Sector	A Season			B Season			Outside of A and B Season		
	TAC	Catch	% Taken	TAC	Catch	% Taken	TAC	Catch	% Taken
Jig	277	388	140%	185	56	30%	-	-	-
HAL CV, <50	1,389	1,369	99%	789	568	72%	-	33	-
HAL CV, ≥50	836	679	81%	164	46	28%	-	27	-
HAL CP	613	613	100%	149	76	51%	-	-	-
Trawl CV (non-RP)	3,773	3,048	81%	1,404	1,313	94%	-	271	-
Trawl CV (RP)	-	-	0%	-	-	0%	586	462	79%
Trawl CP	299	33	11%	747	65	9%	-	939	-
POT CV & CP	2,660	2,988	112%	1,508	1,168	77%	-	-	-
2025 Total	9,847	9,118	93%	4,946	3,292	67%	586	1,732	296%

Source: GOA Seasonal Catch Report, NMFS SF Catch Accounting, available at <https://www.fisheries.noaa.gov/alaska/commercial-fishing/fisheries-catch-and-landings-reports-alaska#goa-groundfish>

The following tables contain information specific to the gear types impacted by this action: groundfish pot and trawl (PTR and NPT) gear.

As noted in Table 5-7, between 2021 and 2025, the majority of Pacific cod caught in the CGOA using NPT, groundfish pot, or PTR gear are harvested by vessels participating in the federally-managed OA fisheries (71.9%). Most of the federal OA volumes in the CGOA are harvested with NPT (~55% of OA harvests) or groundfish pot gear (~43%). The remaining non-OA volumes (4.6% of CGOA totals for the gear types) were harvested by vessels participating in the Rockfish Program, all of which harvested cod with NPT.

Within only the areas of interest, the majority of groundfish pot & trawl Pacific cod catch volumes were harvested cod using NPT gear. The OA NPT catch from the areas of interest comprised ~9% of total CGOA OA NPT pacific cod harvests between 2021 and 2025.

A far smaller proportion of Pacific cod catch is harvested from the areas of interest using groundfish pot gear than within the entire CGOA. As described in Section 3.1.2, this sector's activity in the proposed area closures is low.

The areas considered for closure yield the highest proportion of total CGOA pacific cod volumes for the PTR sector. Between 2021 and 2025, approximately one fifth of all CGOA PTR pacific cod volumes were harvested within 525702 and the custom area.

Table 5-7 2021-2025 Pacific Cod Catch Volumes, by gear type and management sector, in CGOA and within Areas of Interest (metric tons)

Gear Type	CGOA Total		525702			Custom Area		
	Total Volume	% of CGOA Total Volume	Total Volume	% of 525702 Total Volume	% of CGOA Totals	Total Volume	% of 525702 Total Volume	% of CGOA Totals
OA	38,743.4	71.9%	2,303.0	97.7%	5.9%	2,370.3	97.4%	6.1%
NPT	21,002.5	39.0%	1,827.6	77.5%	8.7%	1,908.2	78.4%	9.1%
Pot	16,840.6	31.3%	315.2	13.4%	1.9%	285.6	11.7%	1.7%
PTR	852.6	1.6%	160.3	6.8%	18.8%	176.4	7.2%	20.7%
RP (NPT)	2,495.1	4.6%	54.0	2.3%	2.2%	63.7	2.6%	2.6%
TOTAL	53,861.3	100.0%	2,357.0	100.0%	4.4%	2,433.9	100.0%	4.5%

Note: Pacific cod harvested by gear types/management programs that did not participate within the statistical areas of interest are not included in this table. The total CGOA Pacific Cod catch volume used to create the total % of CGOA Pacific Cod catch volume taken from the statistical areas of interest includes volumes harvested through the State of Alaska-managed Pacific cod fishery. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_Blend_CA

Pacific cod harvest volumes in the CGOA and within the areas of interest have fluctuated widely between 2012 and 2025, as shown in Table 5-8 below. In 2025, 12,500 mt of Pacific cod were caught in the CGOA, 5.4% of which were harvested from area 525702, and ~5.3% from the custom area.

The relative importance of these areas to fleets harvesting CGOA Pacific cod has varied over the time period shown. Area 525702 and the custom closure area yielded an average of 1,250 and 1,290 mt of Pacific cod annually (~7% of total CGOA) between 2012 and 2020, respectively. These areas were of highest importance in 2015, 2019, and 2020. In 2020, ~17% of all CGOA Pacific cod harvested with groundfish pot or trawl gear were caught within the areas of interest.

Table 5-8 Annual Pacific cod Catch Volumes, CGOA total and within statistical areas of interest, 2012 – 2025 (metric tons)

Year	CGOA Total	525702 Total Volume	525702, as % of CGOA Total	Custom Closure Area	Custom Area, as % of CGOA Total
2012	35,479.7	2,817.4	7.9%	2,760.6	7.8%
2013	28,818.3	2,102.8	7.3%	2,245.1	7.8%
2014	36,631.4	3,141.8	8.6%	3,037.7	8.3%
2015	37,221.1	3,762.1	10.1%	3,420.4	9.2%
2016	28,331.4	1,828.1	6.5%	1,615.2	5.7%
2017	16,695.4	609.5	3.7%	532.6	3.2%
2018	5,246.9	350.4	6.7%	376.8	7.2%
2019	5,368.8	573.8	10.7%	571.7	10.6%
2020	3,215.9	543.1	16.9%	558.0	17.4%
2021	7,682.6	461.0	6.0%	572.1	7.4%
2022	12,103.6	383.4	3.2%	351.3	2.9%
2023	9,157.4	314.5	3.4%	333.6	3.6%
2024	12,375.2	528.8	4.3%	515.4	4.2%
2025	12,499.7	669.4	5.4%	661.5	5.3%
Average, 2012-2025	17,916.2	1,291.9	7.2%	1,253.7	7.0%
Total, 2012-2025	250,827.4	18,086.2	7.2%	17,552.0	7.0%

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

Table 5-9 shows seasonal Pacific cod harvests by year, in the CGOA and in the areas of interest. The data includes only harvest from groundfish pot and trawl (PTR and NPT) gear. For the purposes of this table, seasons were defined as January 1 to June 30, and July 1 to December 31, in order to capture all harvest from these areas during the seasonal closure options defined in Element 2 of Alternative 2.

By volume, Pacific cod are primarily harvested within the statistical areas of interest between January 1 and June 30. Between 2012 and 2025 a total of 11,478 mt of Pacific cod were harvested area 525702 during this window, and 6,608 mt were harvested in the latter half of the year. Harvests from the custom closure area followed similar trends and proportions.

Table 5-9 Seasonal Pacific Cod Catch Volumes, CGOA total and within areas of interest, 2012 – 2025 (metric tons)

Year	January 1 to June 30					July 1 to December 31				
	CGOA Total	525702	525702 as % of CGOA	Custom Area	Custom Area as % of CGOA	CGOA Total	525702	525702 as % of CGOA	Custom Area	Custom Area as % of CGOA
2012	26,958.3	1,809.4	6.7%	1,841.8	6.8%	8,521.4	1,008.0	11.8%	918.9	10.8%
2013	23,225.0	1,516.4	6.5%	1,653.6	7.1%	5,593.4	586.4	10.5%	591.5	10.6%
2014	26,690.5	1,404.8	5.3%	1,394.0	5.2%	9,940.9	1,737.0	17.5%	1,643.6	16.5%
2015	27,124.7	2,505.7	9.2%	2,066.8	7.6%	10,096.3	1,256.5	12.4%	1,353.6	13.4%
2016	22,059.8	1,455.2	6.6%	1,275.5	5.8%	6,271.6	372.9	5.9%	339.7	5.4%
2017	14,425.5	539.2	3.7%	451.5	3.1%	2,270.0	70.3	3.1%	81.1	3.6%
2018	3,119.0	81.0	2.6%	89.4	2.9%	2,127.9	269.4	12.7%	287.3	13.5%
2019	3,432.9	279.4	8.1%	286.1	8.3%	1,935.9	294.4	15.2%	285.6	14.8%
2020	2,326.7	358.5	15.4%	350.0	15.0%	889.1	184.6	20.8%	208.0	23.4%
2021	6,390.4	319.1	5.0%	378.6	5.9%	1,292.2	141.9	11.0%	193.5	15.0%
2022	9,818.5	342.3	3.5%	301.4	3.1%	2,285.1	41.1	1.8%	49.9	2.2%
2023	6,580.3	264.1	4.0%	249.5	3.8%	2,577.1	50.3	2.0%	84.0	3.3%
2024	9,342.0	244.3	2.6%	209.8	2.2%	3,033.1	284.5	9.4%	305.7	10.1%
2025	9,782.1	358.3	3.7%	343.6	3.5%	2,717.5	311.1	11.4%	317.9	11.7%
Average	13,662.6	819.8	6.0%	778.0	5.7%	4,253.7	472.0	11.1%	475.7	11.2%
Total	191,275.7	11,477.8	6.0%	10,891.6	5.7%	59,551.5	6,608.4	11.1%	6,660.4	11.2%

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

5.2.1.3 Rockfish

The ‘rockfish’ species category includes all rockfish species, including POP, northern rockfish, dusky rockfish, shorttraker rockfish, roughey rockfish, thornyhead rockfish, the demersal shelf rockfish complex, and many other species (aggregated as ‘other rockfish’ for stock assessment purposes). Distribution, habitat, and stock structure vary widely by rockfish species, and are detailed within individual GOA rockfish stock assessment documents. As of the 2024 GOA Groundfish SAFE, the spawning biomass estimates of POP, roughey and blackspotted rockfish, northern rockfish, and dusky rockfish were all above target stock size. The spawning biomass for all other rockfish were unknown. More detailed information regarding the stock status of GOA rockfish species can be found in the SAFE reports found on the Council website; <https://www.npfmc.org/library/safe-reports/>.

Rockfish are managed in the CGOA through the Central GOA Rockfish Program (RP). A complete description of the CGOA Rockfish Program is available through the most recent program review, at https://files.npfmc.org/catch_shares/Rockfish/RockfishProgramReview2025.pdf. Rockfish Program participants are primarily trawl CVs and trawl CPs, with limited participation by vessels using longline gear. The Rockfish Program assigns quota share and cooperative quota to participants for primary rockfish species (*i.e.*, Pacific ocean perch, northern rockfish, and dusky rockfish), as well as secondary species, which include three rockfish species (roughey and blackspotted rockfish, shorttraker rockfish,

and thornyhead rockfish), as well as Pacific cod and sablefish. Details on CGOA Pacific cod harvest and management are described in the previous section.

Under the Rockfish Program, the TAC of rockfish primary species in the Central GOA is allocated to participants after deducting for incidental catch needs in other directed groundfish fisheries (§ 679.81(a)(2)). The table below shows the 2025 allocations and catch of primary RP species, by management program and gear type. Entry-level longline participants are not eligible to join the cooperatives. Quota allocated to RP cooperatives are further divided into CV and CP cooperative quotas.

POP is, by substantial margin, the primary rockfish species in the GOA by volume (Table 5-10). A total of 28,209 mt of POP were allocated in 2025, 93% of which was utilized. Allocations of northern and dusky rockfish are much smaller; in 2025, the TAC for northern rockfish was 3,680 mt and the TAC for dusky rockfish was 5,818. The utilization rate for both of these species is far lower than POP. In 2025, 33% of the Northern rockfish TAC was utilized, and 38% of the Dusky rockfish TAC was utilized.

Table 5-10 2025 CGOA Rockfish Program Allocations and Catch, by primary species and management program (metric tons)

Species	Allocation	TAC (mt)	Catch (mt)	% of TAC Utilized
Pacific Ocean Perch	Entry Level Longline	5	0	0%
	RP Cooperatives	24,704	22,909	93%
	CGOA Incidental Catch	3,500	1,666	48%
Northern Rockfish	Entry Level Longline	5	0	0%
	RP Cooperatives	3,375	1,191	35%
	CGOA Incidental Catch	300	27	9%
Dusky Rockfish	Entry Level Longline	50	1	2%
	RP Cooperatives	5,518	2,141	39%
	CGOA Incidental Catch	250	51	20%

Source: 2025 Annual GOA Inseason Management Report to the Council, available at <https://www.fisheries.noaa.gov/resource/document/alaska-inseason-management-annual-reports-north-pacific-fishery-management>

The table below describes the total CGOA rockfish harvests, by species, between 2012 and 2025. In this timeframe, 2,020 mt of rockfish were harvested from area 525702 (0.6% of total CGOA rockfish catch), and 3,761 mt of rockfish were harvested from the proposed area closure.

The majority of the rockfish caught within the statistical areas of interest were POP, followed by northern rockfish, and dusky rockfish. Rougheye rockfish and Thornyhead rockfish catch from the custom area closure comprised the highest proportion of catch by rockfish species in the CGOA (at 2.9% and 2.8%, respectively).

Table 5-11 2012-2025 Rockfish Catch Volumes, CGOA total and within Proposed Closure Areas, by rockfish species (metric tons)

Species	CGOA		525702		Custom Area	
	Metric Tons	% of Total CGOA Rockfish Catch	Metric Tons	% of CGOA Catch by Species	Metric Tons	% of CGOA Catch by Species
Pacific Ocean Perch	253,866	76%	1,376	0.5%	2,500	1.0%
Dusky Rockfish	36,029	11%	224	0.6%	444	1.2%
Northern Rockfish	27,753	8%	232	0.8%	539	1.9%
Rougeye Rockfish	3,508	1.1%	86	2.4%	103	2.9%
Thornyhead Rockfish	2,573	0.8%	47	1.8%	71	2.8%
Harlequin Rockfish	2,536	0.8%	24	0.9%	56	2.2%
Shortraker Rockfish	2,276	0.7%	22	1.0%	30	1.3%
Redstripe Rockfish	1,032	0.3%	5	0.5%	6	0.5%
Sharpchin Rockfish	720	0.2%	0	0.0%	1	0.1%
Yelloweye Rockfish	516	0.2%	1	0.2%	1	0.3%
Widow Rockfish	495	0.1%	0	0.1%	1	0.2%
Silvergrey Rockfish	473	0.1%	1	0.1%	4	0.9%
Redbanded Rockfish	205	0.1%	1	0.3%	1	0.7%
All Other	73	0.0%	3	3.8%	3	4.1%
Total, All Rockfish Species	332,055	100.0%	2,020	0.6%	3,761	1.1%

Note: The 'All Other' category includes all species with less than 10 mt of harvest occurring between 2012 and 2025. This category includes the following species, listed in order of CGOA total catch volume: darkblotched rockfish, tiger rockfish, rosethorn rockfish, canary rockfish, striptail rockfish, quillback rockfish, greenstripe rockfish, copper rockfish, splitnose rockfish, yellowmouth rockfish, pygmy rockfish, china rockfish, and blackgill rockfish.

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

Table 5-12 shows the 2012-2025 total catch volumes of each primary RP species from the proposed area closures, by management sector and gear type. No rockfish were harvested from the areas considered for closure with groundfish pot gear within the time span; therefore the table below includes only trawl harvest volumes.

RP primary species are broken out because they comprise the majority of rockfish catch in the CGOA. These species are targeted by the RP fleet, and caught incidentally in other fisheries. The OA volumes in the table below can be interpreted as the incidental catch volumes of these species (occurring through the targeted harvest of other OA species for vessels with CGOA trawl LLPs), while the RP volumes are the target catch volumes.

POP accounted for the majority of rockfish trawl harvests from the CGOA, and from the areas considered for closure. POP harvests from the areas considered for closure comprised ~10% of total CGOA incidental trawl POP harvests. For dusky and northern rockfish, catch from the proposed area closures comprised approximately ~15% of CGOA incidental trawl harvests of these species.

Table 5-12 2012-2025 Rockfish Catch Volumes, CGOA total and within statistical areas of interest, by gear type, management sector, and RP primary species (metric tons)

Species, Management Sector, Gear Type	CGOA	525702		Custom Area	
		mt	% of CGOA	mt	% of CGOA
Pacific Ocean Perch	253,869	1,378	0.5%	2,502	1.0%
OA	13,357	1,142	8.5%	1,395	10.4%
NPT	6,019	392	6.5%	442	7.3%
PTR	7,338	750	10.2%	953	13.0%
RP	240,512	236	0.1%	1,107	0.5%
NPT	143,538	232	0.2%	866	0.6%
PTR	96,973	4	0.0%	241	0.2%

Species, Management Sector, Gear Type	CGOA	525702		Custom Area	
		mt	% of CGOA	mt	% of CGOA
Dusky Rockfish	36,029	224	0.6%	444	1.2%
OA	985	129	13.1%	140	14.2%
NPT	813	107	13.2%	116	14.3%
PTR	171	22	12.6%	24	13.9%
RP	35,044	95	0.3%	304	0.9%
NPT	32,718	95	0.3%	304	0.9%
PTR	2,326	-	-	<1	<0.1%
Northern Rockfish	27,753	232	0.8%	539	1.9%
OA	819	132	16.2%	146	17.8%
NPT	806	130	16.2%	142	17.6%
PTR	12	2	17.4%	4	32.3%
RP	26,934	100	0.4%	393	1.5%
NPT	26,692	100	0.4%	393	1.5%
PTR	242	<1	<0.1%	<1	<0.1%
Total, RP Primary Species	317,651	1,834	0.6%	3,485	1.1%

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

Table 5-13 shows the catch volumes of POP, northern rockfish, and dusky rockfish combined, by management program, between 2012 and 2025. As within the table above, RP primary species are broken out because they comprise the majority of rockfish catch in the CGOA. Comparisons to total CGOA catch volumes by species include only catch harvested with trawl gear by each sector.

Though most of the TAC of primary rockfish species is allocated to the RP sector (as described in Table 5-10), an ICA is allocated to other fisheries that catch rockfish incidentally. As within the table above, OA volumes in the Table 5-13 can be interpreted as the incidental catch volumes of these species (occurring through the targeted harvest of other OA species for vessels with CGOA trawl LLPs), while the RP volumes are the target catch volumes.

Between 2012 and 2025, an average of 0.1% of CGOA RP primary rockfish species catch came from area 525702, and 0.6% from the custom area closure. The areas are of higher proportional importance for incidental rockfish catch volumes, for vessels participating in other OA trawl fisheries. An average of 9% of total rockfish primary species catch volumes for the OA trawl sector came from area 525702, and 11% from the custom area.

Table 5-13 Rockfish Catch Volumes, CGOA total and within Proposed Area Closures, 2012 – 2025, RP Primary Species (metric tons)

Year	Open Access Trawl Fisheries					RP Trawl Fishery				
	CGOA	525702		Custom		CGOA	525702		Custom	
		mt	% of CG	mt	% of CG		mt	% of CG	mt	% of CG
2012	470	44	9%	52	11%	17,550	16	0.1%	68	0.4%
2013	1,031	93	9%	135	13%	15,551	7	<0.1%	86	0.6%
2014	1,172	83	7%	132	11%	18,585	8	<0.1%	103	0.6%
2015	799	95	12%	114	14%	19,622	31	0.2%	59	0.3%
2016	899	160	18%	215	24%	22,994	105	0.5%	492	2.1%
2017	1,283	130	10%	147	11%	18,748	45	0.2%	300	1.6%
2018	1,526	155	10%	243	16%	21,792	117	0.5%	302	1.4%
2019	1,176	194	16%	199	17%	21,075	44	0.2%	181	0.9%
2020	1,200	89	7%	96	8%	24,302	22	0.1%	91	0.4%
2021	957	74	8%	81	8%	29,409	9	<0.1%	77	0.3%
2022	2,140	60	3%	66	3%	27,298	30	0.1%	59	0.2%
2023	1,894	106	6%	115	6%	28,140	20	0.1%	43	0.2%
2024	907	136	15%	137	15%	23,470	15	0.1%	28	0.1%
2025	1,425	133	9%	138	10%	26,594	0.2	<0.1%	0.2	<0.1%
Avg.	1,206	111	9%	134	11%	22,509	33	0.1%	135	0.6%

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

Table 5-14 shows the catch volumes of rockfish species in the CGOA. Between 2012 and 2025, the majority of rockfish from the proposed area closures are harvested in the latter half of the year. Conversely, for all CGOA rockfish catch volumes, the majority of harvests occur between May and July—each of these months comprising about one-quarter of total annual catch.

As of 2025, the directed fishery for rockfish is open from April 1 through November 15. Amendment 113, which took effect during the 2025 fishing year, moved the start of the CGOA RP fishery to April 1; before this, the fishery was open from May 1 to November 15. The fishery also opened on April 1 in 2021 via emergency rule.¹⁶ Changing the start date is expected to increase catch earlier in the year. Looking at only 2021 and 2025, 13.3% of the target catch of RP primary species in the entire CGOA occurred in April.

Table 5-14 Monthly Catch Volumes of Rockfish Species CGOA and Proposed Closure Areas, 2012 – 2025 (metric tons)

Month	CGOA	Monthly Volume, as a % of Annual Volume	525702	Custom Area
Jan	97	<1%	15	16
Feb	867	<1%	36	41
Mar	545	<1%	47	72
Apr	9,729	3%	86	108
May	92,638	28%	185	812
Jun	75,490	23%	137	411
Jul	80,035	24%	36	306
Aug	25,741	8%	82	137
Sep	16,423	5%	831	1,063
Oct	16,770	5%	409	591
Nov	13,648	4%	152	197
Dec	80	<1%	7	10
Total	332,064	100%	2,024	3,765

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

5.2.1.4 Flatfish

The flatfish species complex includes all major flatfish species inhabiting the region, with the exception of Pacific halibut (*Hippoglossus stenolepis*). Catch limits for flatfish are specified separately for Arrowtooth flounder, flathead sole, rex sole, the deep-water flatfish complex, and the shallow-water flatfish complex. The deep-water flatfish complex is composed of Dover sole, Greenland turbot, deep-sea sole, and Kamchatka flounder; the shallow-water flatfish complex includes Alaska plaice, butter sole, English sole, sand sole, starry flounder, yellowfin sole, northern rock sole, and southern rock sole.

The stock status of GOA flatfish is generally considered stable and well-managed under current fisheries management frameworks. Most assessed stocks are at or above target biomass levels, and overfishing is not occurring. Conservative catch limits, regular stock assessments, and ecosystem-based management approaches have helped maintain sustainability.

¹⁶ On February 10, 2021, the Council recommended NOAA Fisheries issue an emergency rule to modify the fishing season start date to April 1 for fishing vessels participating in a rockfish cooperative as part of the RP for the 2021 fishing year. About 30 percent of the Pacific ocean perch and Northern rockfish catch was taken in April that year. Dusky rockfish catches were about 5 percent of the annual total. The regulatory change to move the start date to April beginning in 2025 is expected to result in a substantial harvest of these species earlier than allowed under the May start date.

The flatfish fisheries have consistently captured only a fraction of the ABC for all species & species complexes. Additional detail on the rationale behind flatfish species categorization is included within GOA flatfish SAFE documents, located at <https://www.npfmc.org/library/safe-reports/>.

Gulf-wide catch specifications for flatfish are apportioned spatially into the Western and Central GOA. Since the fishery became entirely domestic in 1988, the Central Gulf management area has produced the majority of the GOA flatfish catch. The majority of the CGOA catch occurs on the continental shelf and slope east of Kodiak Island.

Table 5-15 describes the 2025 GOA flatfish TAC and catch, by area and species. In 2025, 77% of the total GOA flatfish TAC was allocated to the CGOA, and the 97% of flatfish catch volumes occurred in the CGOA. Flatfish TACs are underutilized in both the Central and Western gulf; across all flatfish species, only 12.4% of the total CGOA flatfish TAC was utilized, and 1.1% of the total WGOA flatfish TAC. In 2025, arrowtooth flounder comprised 78% of GOA flatfish volumes, and the vast majority of arrowtooth flounder was harvested from the Central Gulf (98%). In 2025, 19.1% of the CGOA arrowtooth flounder TAC was utilized, the highest utilization of any flatfish species/area combination in the GOA. Low catches relative to the TAC, specifically

Table 5-15 2025 GOA Flatfish Catch and TAC, by federal management reporting area (metric tons)

Species	Area	TAC (mt)	Catch (mt)	% of TAC Utilized
Arrowtooth Flounder	Western	14,500	266	1.8%
	Central	68,261	13,038	19.1%
Flathead Sole	Western	8,650	64	0.7%
	Central	21,817	867	4.0%
Rex Sole	Western	3,382	12	0.4%
	Central	13,698	591	4.3%
Shallow Water Flatfish	Western	13,250	107	0.8%
	Central	28,279	2,077	7.3%
Deep Water Flatfish	Western	234	1	0.4%
	Central	2,616	77	2.9%
All Flatfish Species	Western	40,016	450	1.1%
	Central	134,671	16,650	12.4%
	Total GOA	174,687	17,100	9.8%

Note: The deep water flatfish species complex includes dover sole, Greenland turbot, Kamchatka flounder, and deepsea sole. The shallow water flatfish complex is essentially a catch-all category that includes all other flatfish not otherwise grouped.

Source: 2025 Annual GOA Inseason Management Report to the Council, available at

<https://www.fisheries.noaa.gov/resource/document/alaska-inseason-management-annual-reports-north-pacific-fishery-management>

Flatfish may be harvested incidentally with PTR, but no directed flatfish fishing may occur with that gear type. In 2014, Amendment 89 to the GOA FMP required that vessels using NPT gear to target flatfish in the Central GOA use approved modified gear to reduce the potential adverse effects of nonpelagic trawl gear on benthic habitat and to reduce unobserved Tanner crab injury and mortality.¹⁷

As noted Table 5-16, flatfish are generally harvested by the vessels participating in OA fisheries, though vessels participating in the Rockfish Program (RP) also harvest flatfish volumes. Between 2021 and 2025, ~96% of the flatfish harvested from the areas of interest were harvested in OA NPT fisheries. Volumes harvested by vessels participating in the Rockfish Program accounted for less than 1% of flatfish volumes from these areas, a much lower proportion than CGOA-wide.

¹⁷ The requirement to use modified sweeps in the GOA flatfish fisheries was implemented alongside the Marmot Bay Tanner Crab Protection Area via Amendment 89. Additional information on the history and development of this amendment is included in Section 2.1.1, Section 7.1, and Section 7.5.

OA NPT flatfish harvest volumes from the areas of interest comprised ~16% of total CGOA OA NPT flatfish harvests between 2021 and 2025. The areas also yield a high proportion of flatfish volumes harvested across the CGOA in OA PTR fisheries (~25% between 2021 and 2025).

Table 5-16 2021-2025 Flatfish Catch Volumes, CGOA total and within areas of interest, by gear type & management sector (metric tons)

Management Sector & Gear Type	CGOA Total		525702			Custom Area		
	CGOA Catch Volume	% of Total CGOA Flatfish Catch, by mgmt. & gear	525702 Catch Volume	% of Total 525702 Flatfish Catch	% of CGOA Flatfish Catch for mgmt. & gear type	525702 Catch Volume	% of Total 525702 Flatfish Catch	% of CGOA Flatfish Catch for mgmt. & gear type
OA	60,578.1	91.4%	10,030.2	99.7%	16.6%	9,828.5	99.6%	16.2%
NPT	59,253.8	89.4%	9,658.2	96.0%	16.3%	9,437.3	95.6%	15.9%
PTR	1,445.2	2.2%	372.0	3.7%	25.7%	391.2	4.0%	27.1%
RP	5,673.7	8.6%	30.7	0.3%	0.5%	42.5	0.4%	0.7%
NPT	5,657.9	8.5%	30.7	0.3%	0.5%	42.3	0.4%	0.7%
PTR	37.5	0.1%	-	NA	NA	0.2	0.0%	0.5%
Total, All Sectors & Gears	66,289.6	100.0%	10,060.9	100.0%	15.2%	9,871.0	100.0%	14.9%

Annual flatfish harvest volumes in the CGOA averaged 22,476 mt between 2012 and 2025, the entire period shown in Table 5-17. Catch volumes within this period peaked in 2014, at 41,582 mt. Annual volumes have declined in the last six years, averaging 13,270 mt annually between 2020 and 2025, and reached a minimum of 9,578 mt in 2023.

Flatfish catch volumes from the areas of interest have followed similar patterns to overall CGOA flatfish harvest. An average of 3,615 mt of flatfish are harvested from ADF&G statistical area 525702 annually, equating to 16.1% of total CGOA flatfish catch, and 3,745.9 mt are taken annually from the custom area (16.7% of total CGOA catch).

Table 5-17 Annual Flatfish Catch Volumes, CGOA total and within areas of interest, 2012 – 2025 (metric tons)

Year	CGOA Total	525702	525702 as % of CGOA Total	Custom Area	Custom Area as % of CGOA Total
2012	22,646.0	3,671.6	16.2%	4,003.5	17.7%
2013	27,111.3	3,977.5	14.7%	4,680.6	17.3%
2014	41,582.3	4,508.2	10.8%	5,144.8	12.4%
2015	23,324.5	3,928.4	16.8%	3,793.6	16.3%
2016	24,898.8	5,976.8	24.0%	5,751.1	23.1%
2017	30,196.8	3,811.2	12.6%	4,203.9	13.9%
2018	22,566.4	3,951.6	17.5%	4,158.9	18.4%
2019	29,239.5	6,075.0	20.8%	6,273.0	21.5%
2020	26,745.7	4,653.8	17.4%	4,614.1	17.3%
2021	10,064.0	1,899.6	18.9%	1,715.1	17.0%
2022	12,048.9	939.3	7.8%	863.2	7.2%
2023	9,577.8	822.2	8.6%	840.2	8.8%
2024	19,130.9	3,071.5	16.1%	3,148.0	16.5%
2025	15,530.7	3,328.3	21.4%	3,252.8	20.9%
Average, 2012-2025	22,476.0	3,615.4	16.1%	3,745.9	16.7%
Total, 2012-2025	314,663.6	50,614.9	16.1%	52,442.9	16.7%

Table 5-18 shows the 2021-2025 catch volumes of flatfish species in the areas of interest & in the CGOA. Arrowtooth flounder are highly abundant in the CGOA, and make up over 80% of the total CGOA

flatfish harvests by volume. Shallow-water flatfish comprise the second highest proportion of flatfish harvests by volume, at 10% of the total CGOA flatfish catch.

Within the areas of interest, Arrowtooth flounder comprise only 50% of the flatfish harvested; indicating higher concentrations of other flatfish species within the areas of interest—namely GOA shallow-water flatfish. Between 2021 and 2025, 58% of all shallow water flatfish caught in the CGOA were harvested from area 525702, and 53% were harvested from the custom area. Of the species within this grouping, the areas considered for closure yielded proportion of total CGOA catch of starry flounder (89.4%), butter sole (83.3%), and English sole (70.4%).

Table 5-18 2021-2025 Flatfish Catch Volumes, CGOA total and within statistical areas of interest, by species (metric tons)

Species	CGOA Total, by Species	% of All Flatfish Catch in CGOA	525702 Total, by Species	% of All Flatfish Catch in 525702	525702 Harvest as % of Total CGOA, by Species	Custom Closure	Custom Closure Harvest as % of Total CGOA, by Species
Arrowtooth Flounder	54,631.5	82.3%	5,000.1	49.7%	9%	5,199.4	10%
Rex Sole	2,297.2	3.5%	331.0	3.3%	14%	327.9	14%
Flathead Sole	2,913.0	4.4%	966.8	9.6%	33%	898.7	31%
Shallow Water Flatfish	6,410.3	9.7%	3,748.5	37.3%	58%	3,378.9	53%
<i>Rock Sole</i>	4,556.2	6.9%	2,481.5	24.7%	54%	2,223.6	49%
<i>English Sole</i>	1,026.6	1.5%	615.7	6.1%	60%	568.3	55%
<i>Butter Sole</i>	757.5	1.1%	598.4	5.9%	79%	539.1	71%
<i>Starry Flounder</i>	60.8	0.1%	48.1	0.5%	79%	43.5	72%
<i>All Other</i>	9.19	0.0%	4.9	0.0%	54%	4.5	49%
Deep Water Flatfish	100.3	0.2%	14.5	0.1%	15%	14.4	14%
Total, All Flatfish	66,352.2	100%	10,060.9	100%	15%	9,819.3	15%

Table 5-19 breaks out annual flatfish catch volumes in areas of interest by species or species group. Species are sorted left to right, by total volume of catch taken from area 525702 of interest between 2012 and 2025.

Trends in the arrowtooth flounder harvests largely follow the trends shown in overall flatfish catch, since arrowtooth flounder comprised three-quarters of total CGOA flatfish volumes in the time period shown. Shallow-water flatfish catch has generally declined since 2009, and total catch in the CGOA in the years shown is well below ABCs and TACs. In years where flatfish species fetched higher prices, overall CGOA shallow-water flatfish catch volumes were higher, and more equally distributed across productive flatfish fishing grounds outside of area 525702. The volume of shallow water flatfish harvests from area 525702 averaged ~1,400 mt annually between 2012 and 2021. Harvests declined in 2022 to <500 mt, and remained far under historical averages until 2025. In 2025 the 525702 shallow-water flatfish harvest rebounded to 1,180mt. Proportionally, the area yielded 45.2% of total CGOA shallow water flatfish catch between 2012 and 2025.

Deep-water flatfish catch volumes have declined steadily throughout the CGOA since the early 1990s, and are well below TACs. Low catches relative to the TAC in the deepwater flatfish complex are thought to be driven by targeting decisions. Only 8.1% of total CGOA deep-water flatfish were harvested from the areas considered for closure between 2012 and 2025. However, in recent years, the area has yielded a higher proportion of total CGOA deep-water flats. This may be a result of reduced overall flatfish efforts, or changes in fishing patterns resulting from decreased market interest in flatfish overall, and deep-water flats in particular.

A total of 351 mt of flathead sole were harvested from area 525702 between 2012 and 2025, representing 23% of total CGOA flathead sole catch volumes. For rex sole, 525702 harvests accounted for 7.8% of total CGOA volumes annually; indicating low concentrations of rex sole in the area compared to other species within the flatfish complex.

Table 5-19 Annual Flatfish Catch Volumes, by species, CGOA total and within Area 525702, 2012-2025

Year	Arrowtooth Flounder			Shallow-Water Flats			Flathead Sole			Rex Sole			Deep Water Flats		
	CGOA	525702	% of CGOA	CGOA	525702	% of CGOA	CGOA	525702	% of CGOA	CGOA	525702	% of CGOA	CGOA	525702	% of CGOA
2012	14,867	1,625	10.9%	3,715	1,310	35.3%	1,799	460	25.6%	2,192	271	12.4%	73.3	4.8	6.5%
2013	16,018	1,441	9.0%	5,266	1,768	33.6%	2,135	569	26.7%	3,553	196	5.5%	139.0	2.6	1.9%
2014	31,411	2,295	7.3%	4,284	1,622	37.9%	2,301	393	17.1%	3,418	181	5.3%	168.7	16.3	9.7%
2015	16,731	1,598	9.6%	2,923	1,783	61.0%	1,726	412	23.9%	1,860	130	7.0%	84.5	5.7	6.7%
2016	17,529	3,538	20.2%	3,565	1,824	51.2%	2,177	475	21.8%	1,536	131	8.5%	91.0	9.3	10.2%
2017	24,823	2,726	11.0%	2,048	785	38.3%	1,872	246	13.2%	1,384	52	3.7%	69.4	2.6	3.7%
2018	16,355	2,298	14.0%	2,501	1,174	46.9%	2,020	384	19.0%	1,602	90	5.6%	88.6	6.0	6.8%
2019	22,784	4,102	18.0%	2,518	1,285	51.0%	2,412	545	22.6%	1,495	137	9.1%	31.1	6.7	21.5%
2020	19,631	2,511	12.8%	4,139	1,605	38.8%	1,770	456	25.8%	1,151	78	6.8%	53.7	4.1	7.6%
2021	7,849	544	6.9%	1,474	1,070	72.6%	471	227	48.2%	253	53	21.2%	16.8	4.8	28.9%
2022	9,969	344	3.4%	1,018	487	47.9%	445	97	21.8%	598	11	1.8%	17.9	0.6	3.2%
2023	7,927	326	4.1%	850	374	44.1%	413	105	25.3%	366	17	4.7%	22.0	0.1	0.3%
2024	16,546	2,113	12.8%	1,279	636	49.8%	775	229	29.5%	509	91	17.8%	22.3	3.2	14.5%
2025	12,340	1,674	13.6%	1,790	1,180	66.0%	808	309	38.3%	571	159	27.8%	21.4	5.8	27.2%
Total	234,780	27,134	11.6%	37,370	16,904	45.2%	21,125	4,908	23.2%	20,489	1,597	7.8%	900	72.5	8.1%
Avg.	16,770	1,938	11.6%	2,669	1,207	45.2%	1,509	351	23.2%	1,463	114	7.8%	64	5.2	8.1%

Directed fishing opens for flatfish fisheries on 1/20 and remains open by regulation until 12/31. As noted in Table 5-20, though flatfish are landed in the CGOA year-round, the highest proportion of flatfish catch are landed in April (23% of the annual total). Flatfish catch volumes remain fairly steady in all other months between April and October, with about ~10% of the annual total catch across the CGOA occurring in each of these months. Landings are lowest between December and January, and ramp up in February and March before reaching the April peak. Catch patterns in the areas considered for closure follow annual trends.

The proportion of monthly CGOA flatfish catch that is caught in area 525702 and the custom area varies across the year. Generally, the area yields a higher proportion of total CGOA flatfish harvests in later months of the year—overall, harvests from 525702 comprise 16% of total CGOA flatfish catch, and harvests from the custom area comprise 17%.

Table 5-20 Monthly Catch Volumes of Flatfish Species, CGOA and within statistical areas of interest, 2012 – 2025 (metric tons)

Month	CGOA		525702		Custom Area	
	mt	% of Annual CGOA Total	mt	% of Monthly CGOA Total	mt	% of Monthly CGOA Total
Jan	3,612	1%	609	17%	628	17%
Feb	13,880	4%	2,770	20%	3,154	23%
Mar	22,190	7%	3,039	14%	4,210	19%
Apr	70,942	23%	8,564	12%	9,968	14%
May	25,770	8%	5,070	20%	5,032	20%
Jun	41,279	13%	5,495	13%	5,195	13%
Jul	24,750	8%	3,638	15%	3,379	14%
Aug	30,404	10%	3,023	10%	2,872	9%
Sep	30,504	10%	6,666	22%	6,584	22%
Oct	32,584	10%	7,159	22%	7,077	22%
Nov	16,132	5%	3,559	22%	3,621	22%
Dec	2,617	1%	1,024	39%	1,000	38%
Total	314,664	100%	50,615	16%	52,719	17%

5.2.2 Effects on GOA groundfish species

5.2.2.1 Walleye Pollock

Under the proposed Alternative 2 relative to the No Action alternative, the effects on the GOA pollock may vary depending on the spatial extent, timing, and gear applicability of the closure options. Closure of either area under consideration could reduce access to fishing grounds that have supported a portion of Area 630 pollock harvest, particularly during the B season (September 1 – November 1) (Table 5-2). A closure that applies year-round (Element 2, Option 1) and includes pelagic trawl gear (Element 3, Option 1) could affect the primary harvesting sector responsible for the majority of pollock catch and may result in some displacement of fishing effort to other areas. To the extent that these areas provide relatively consistent or efficient fishing opportunities in certain years, such displacement could result in reduced fishing efficiency, increased operating costs, or changes in the spatial distribution of effort. In some cases, these factors could potentially contribute to lower attainment of Area 630 TAC, particularly during the B season when these areas appear to be most important (Table 5-4). The degree to which this may occur is uncertain and would depend on the availability and productivity of alternative fishing grounds.

In contrast, seasonal closures limited to February–June (Element 2, Options 2a and 2b) would likely have limited direct effects on the directed pollock fishery, as these areas support relatively little pollock harvest during that period (Table 5-4). Similarly, a closure that applies only to nonpelagic trawl gear (Element 3,

Option 2) would be expected to have minimal effects on the pollock fishery, given the small proportion of pollock harvested with that gear type.

Overall, the proposed action when compared to the No Action alternative would be expected to have negligible to potentially moderate impacts on GOA pollock. Impacts would likely be greatest under scenarios that include pelagic trawl gear and overlap with the B season, when the areas under consideration have historically supported a larger share of pollock harvest. In these cases, impacts would primarily occur through redistribution of fishing effort rather than changes in stock status. However, given the annual variability in pollock distribution, fishery performance, and the recent decline in the relative contribution of these areas to total harvest (Table 5-8), the magnitude of impacts could vary across years.

5.2.2.2 Pacific cod

Under the proposed action relative to the No Action alternative, effects on Pacific cod would depend on the closure area, duration, and gear types included. A closure that includes both trawl (pelagic and nonpelagic) and pot gear (Element 3, Option 1) could affect multiple sectors that collectively account for a substantial portion of Pacific cod harvest (Table 5-7). To the extent that these sectors rely on the proposed closure areas for a portion of their catch, the closure could result in some redistribution of fishing effort to other areas. This may reduce fishing efficiency or increase operational costs for some vessels, particularly in years when the areas support higher catch levels (Table 5-8). However, because these areas have historically accounted for a relatively modest share of total CGOA harvest, and because Pacific cod effort is more spatially distributed across the GOA than some other fisheries, the ability to access alternative fishing grounds may limit the overall magnitude of impacts.

The proposed area closures (statistical area 525702 and the custom closure area) have historically contributed a relatively small but variable portion of total CGOA Pacific cod harvest. Between 2012 and 2025, these areas accounted on average for approximately 7% of CGOA Pacific cod catch (Table 5-8), although contributions have ranged higher in some years (e.g., up to ~17% in 2020). More recent data suggest somewhat lower reliance, with approximately 5% of CGOA harvest occurring in these areas in 2025 (Table 5-8). By gear type, the areas appear to be of relatively greater importance to the PTR sector (approximately one-fifth of PTR harvest occurring in these areas), while representing a smaller share of total harvest for NPT and pot sectors (Table 5-7).

Proposed time closures, February–June (Element 2, Options 2a and 2b), would overlap with the A season, when a large proportion of Pacific cod harvest occurs (Table 5-9), and could therefore affect fishing operations across several sectors. In contrast, a year-round closure would also constrain B season fishing, when these areas appear to represent a higher proportion of total harvest, potentially affecting late-season fishing opportunities for some vessels.

Overall, the proposed action would be expected to have minor impacts on Pacific cod in the CGOA relative to the No Action alternative. Impacts would likely be greatest under multiple gear type restrictions and the closure extended across both A and B seasons. In those cases, effects would likely occur through changes in the spatial distribution of fishing effort and potential reductions in efficiency. However, given the relatively limited average contribution of these areas to total Pacific cod harvest (Table 5-8), the diversity of gear types and fishing locations, and the flexibility provided through seasonal reapportionment and reallocation provisions, impacts are not expected to substantially affect overall stock status or the ability to harvest the GOA Pacific cod TAC.

5.2.2.3 Rockfish

The proposed closure options in Alternative 2 relative to the No Action alternative would be expected to have limited to minor direct effects on rockfish stocks, although some localized and fishery-specific impacts may occur. Rockfish harvest in the Central GOA is dominated by the Rockfish Program (RP), which allocates quota and constrains total removals through cooperative management. As such, overall

removals of primary rockfish species (Pacific ocean perch (POP), northern rockfish, and dusky rockfish) would continue to be limited by TAC and quota allocations, and the proposed closure action are not expected to affect stock status or biological sustainability.

Available data indicates that the statistical area 525702 and the custom area contribute a small proportion of total GOA rockfish harvest, with the custom area contributing a slightly higher proportion. Between 2021 and 2025, approximately 1.1% of total CGOA rockfish catch occurred within the custom area (Table 5-11), and only about 1.0% of total CGOA POP catch (the largest of the rockfish fisheries) was derived from these areas. For Rockfish Program target fisheries, the importance of these proposed closure areas appears to be even lower in recent years, with an average of 0.6% of directed trawl harvest of RP primary species originating from the areas of interest between 2012 and 2025, declining to negligible levels in 2025 (Table 5-13). This suggests that the proposed closure areas would be unlikely to substantially constrain the RP fleet's ability to access primary fishing grounds or achieve their quota.

Gear-specific effects would likely vary. Because nearly all rockfish catch in the proposed closure areas are taken by trawl gear (Table 5-12), impacts would be concentrated on trawl sectors, including both RP participants and OA vessels. Nonpelagic trawl gear accounts for the majority of RP target harvests of POP in these areas, while pelagic trawl gear accounts for a substantial portion of incidental catch of rockfish in the pollock target fishery (Table 5-12). Under Element 3 that includes both pelagic and nonpelagic trawl gear (Option 1), impacts to rockfish species would extend to both directed rockfish fisheries from nonpelagic gear and incidental rockfish from pelagic gear, whereas if the proposed gear limit is specific to nonpelagic trawl (Option 2) impacts would primarily from the RP target.

Overall, relative to the No Action alternative, the relatively small contribution of these proposed closure areas to total rockfish removals and the quota-based management structure of the RP, the proposed action would likely result in minor impacts to directed rockfish fisheries and stock status. These effects would most likely be expressed through changes in fishing behavior, spatial effort distribution, and bycatch dynamics rather than changes in overall harvest levels.

5.2.2.4 Flatfish

The proposed closure options would likely have limited direct biological impacts on GOA flatfish stocks, but may result in moderate, fishery-specific impacts depending on the spatial and seasonal extent of closures. Flatfish stocks in the GOA are currently managed under catch limits that are substantially underutilized, with only 12% of the Central GOA (CGOA) TAC harvested in 2025 (Table 5-15). As a result, overall removals are not constrained by access to fishing grounds, and the proposed action is not expected to affect stock status, overfishing risk, or long-term sustainability.

However, the proposed statistical area closures represent a relatively important component of CGOA flatfish harvest, particularly for certain species and the nonpelagic trawl gear. Between 2012 and 2025, an average of approximately 16% of total CGOA flatfish catch originated from the proposed area closures (Table 5-17), and between 2021 and 2025, about 15% of total CGOA flatfish harvest occurred within the areas (Table 5-16). These areas are especially important for nonpelagic trawl fisheries, which account for the vast majority of flatfish harvest. During 2021–2025, approximately 16% of all CGOA OA nonpelagic flatfish catch occurred in the proposed closure areas (Table 5-16), indicating that area closures affecting nonpelagic gear could displace a meaningful portion of flatfish fishing effort.

The importance of the areas of interest varies by species. While arrowtooth flounder dominate overall GOA flatfish harvest, only about 9–10% of CGOA arrowtooth catch occurs in the proposed closure areas (Table 5-18). In contrast, the areas support a disproportionately large share of shallow-water flatfish, with approximately 53–58% of CGOA shallow-water flatfish catch occurring within the proposed closure areas (Table 5-18). Key species within this complex, including rock sole, English sole, butter sole, and starry flounder, are particularly concentrated in these areas. As a result, the proposed closure areas could

have a greater effect on fisheries targeting these species, potentially requiring vessels to shift effort to less productive grounds or reduce catch of these species.

Proposed closure effects may also influence the magnitude of impacts. Flatfish harvest occurs year-round but peaks in spring and again in the fall, with the proposed closure areas contributing a higher proportion of total CGOA harvest later in the year (Table 5-20). Therefore, the proposed annual closure (Element 2, Option 1) would likely have a greater impact on flatfish harvest than closures limited to early-year periods, although the shorter time closures (Element 2, Options 2a & 2b) would also likely impact flatfish harvest given the spring peak.

Gear-specific impacts would depend on the gear option selected. Gear limitations that include both pelagic and nonpelagic trawl gear would affect a broader portion of the fleet, including vessels that retain flatfish incidentally in pelagic trawl fisheries (Table 5-16). Alternatives limited to nonpelagic trawl gear would primarily affect directed flatfish fisheries and the vessels most dependent on these areas.

Overall, the proposed action relative to the No Action alternative would likely result in minor impacts at the stock level, given low TAC utilization and broad spatial distribution of flatfish species, but could result in moderate localized impacts to flatfish fisheries, particularly for nonpelagic vessels and for species within the shallow-water flatfish complex that are more concentrated in the proposed closure areas. These impacts would most likely be expressed through changes in fishing location, effort distribution, and catch composition rather than reductions in total harvest relative to TAC.

5.2.3 Effects From Reasonably Foreseeable Environmental Trends and Planned Action in the Action Area on Pollock, Pacific cod, Rockfish, and Flatfish

Environmental conditions in the GOA are expected to remain variable in the near future, including continued variability in ocean temperature, marine heatwave occurrence, and ecosystem productivity. These factors can influence pollock, Pacific cod, rockfish, and flatfish recruitment, growth, and spatial distribution, including shifts in the location and timing of seasonal aggregations.

In combination with the proposed closure alternatives, these environmental trends could influence the degree to which the action affects these groundfish fisheries. For example, in years when these groundfish species are more concentrated in or near the areas under consideration, particularly during periods when those areas represent a higher proportion of seasonal harvest, the closure could constrain access to productive fishing grounds and result in greater displacement of effort across multiple gear sectors. Conversely, in years when environmental conditions result in a broader or shifted distribution of these groundfish species outside the closure areas, the effects of the action would likely be reduced.

Given that these groundfish fisheries are prosecuted by multiple gear types across a wide geographic area, and that the relative importance of the areas of interest has varied over time, the combined effects of environmental variability and the proposed action are expected to be variable and somewhat uncertain. To the extent impacts occur, they would likely be expressed through changes in fishing patterns, timing, and efficiency rather than changes in overall stock status. The existing management framework, including sector allocations and inseason management provisions, would continue to provide flexibility to respond to these changing conditions.

5.3 Tanner Crab

5.3.1 Background

5.3.1.1 Species description, range, and migration

Tanner crab (*Chionoecetes bairdi*) are found in the Gulf of Alaska and the Eastern Bering Sea (Figure 5-1). Gulf of Alaska Tanner crab are thought to be genetically identical to the Eastern Bering Sea stock

(NMFS 2025; Daly, pers. comm.), but phenotypic differences may be driven by localized environmental covariates, as indicated by temporal and spatial variability in EBS Tanner crab Ecosystem and Socioeconomic Profile (ESP) ecosystem indicators. Tanner crab diet varies by life stage, and ranges from diatoms and copepods to other crustaceans, polychaetes, molluscs, and echinoderms. Predators of Tanner crab range from juvenile pollock, salmon, jellyfishes, Pacific cod, flatfish, skates (see Table 5-21; Section 5.3.1.5).

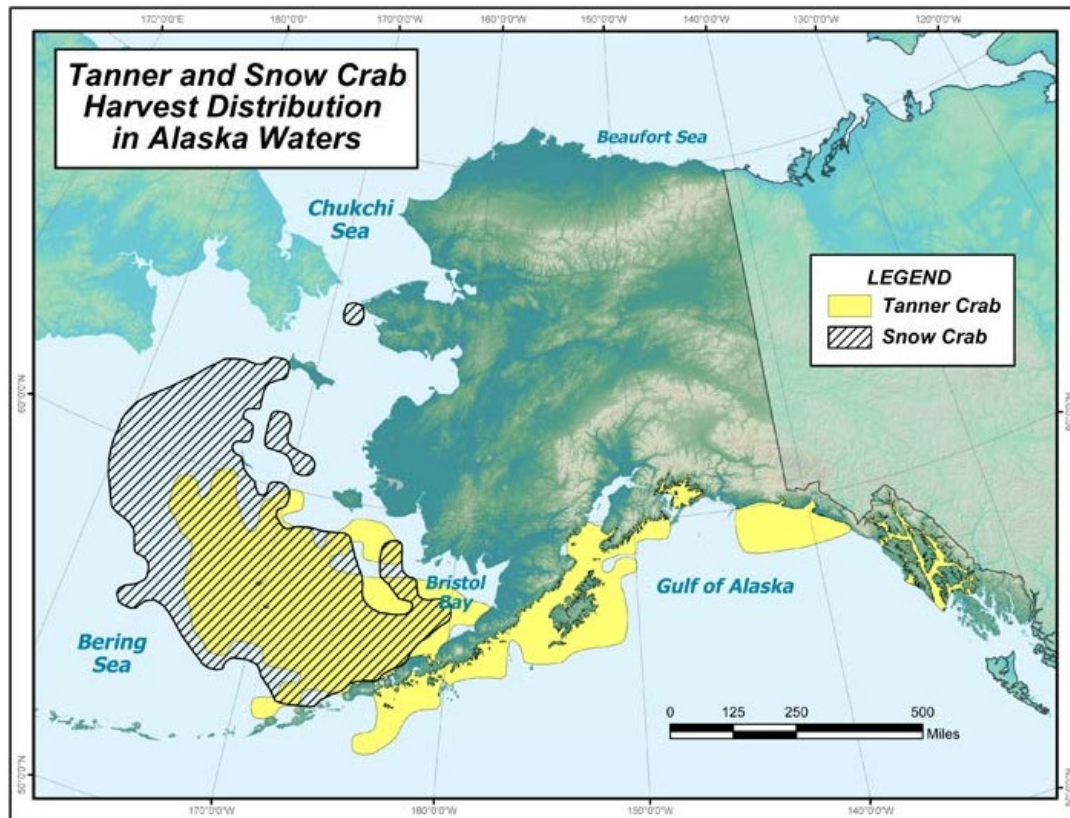


Figure 5-1 Tanner and snow crab harvest distribution and range in Alaska waters. ADF&G harvest strategies also exist for the Akutan and Unalaska areas, which will be reflected in future map updates. Source: ADF&G Species profile (Retrieved March 2026).

Migration patterns are not well understood; however, it is believed that the sexes are separated during much of the year and move into the same areas during the reproductive season (see abundance maps by sex and maturity in Section 5.3.2 and Appendix 1). Donaldson (1983) found that mean movement of male Tanner crab in the Kodiak area was approximately 24.0 km. In addition, male Tanner crab in bays tended to move to deeper offshore waters, while those in offshore areas tended to remain offshore (Donaldson 1983). Tagging research of legal male crabs by ADF&G with traditional tags from 2004 to 2010 (ADF&G unpublished data) suggests that Tanner crab in the Eastside Section of Kodiak do not move into other management sections; likewise, Tanner crab in Marmot Bay do not move south of Marmot Bay (Figure 5-2). Tanner crab that were tagged within the proposed closure areas were generally recovered within the proposed closure areas. Inferences from ADF&G annual summer trawl surveys also suggest persistent Tanner crab populations in nearshore embayments and connected offshore gully systems, juvenile crab being found closer to shore, and mature crab generally found further offshore. It should be noted that tagging data have limitations and should be interpreted with caution, especially mark-recapture tagging. Recoveries were made during the commercial fishery so if fishing did not occur outside the closure areas, crab would not be recovered. This study was based on relatively small sample sizes of legal males and may not be representative of other sex and maturity stages.

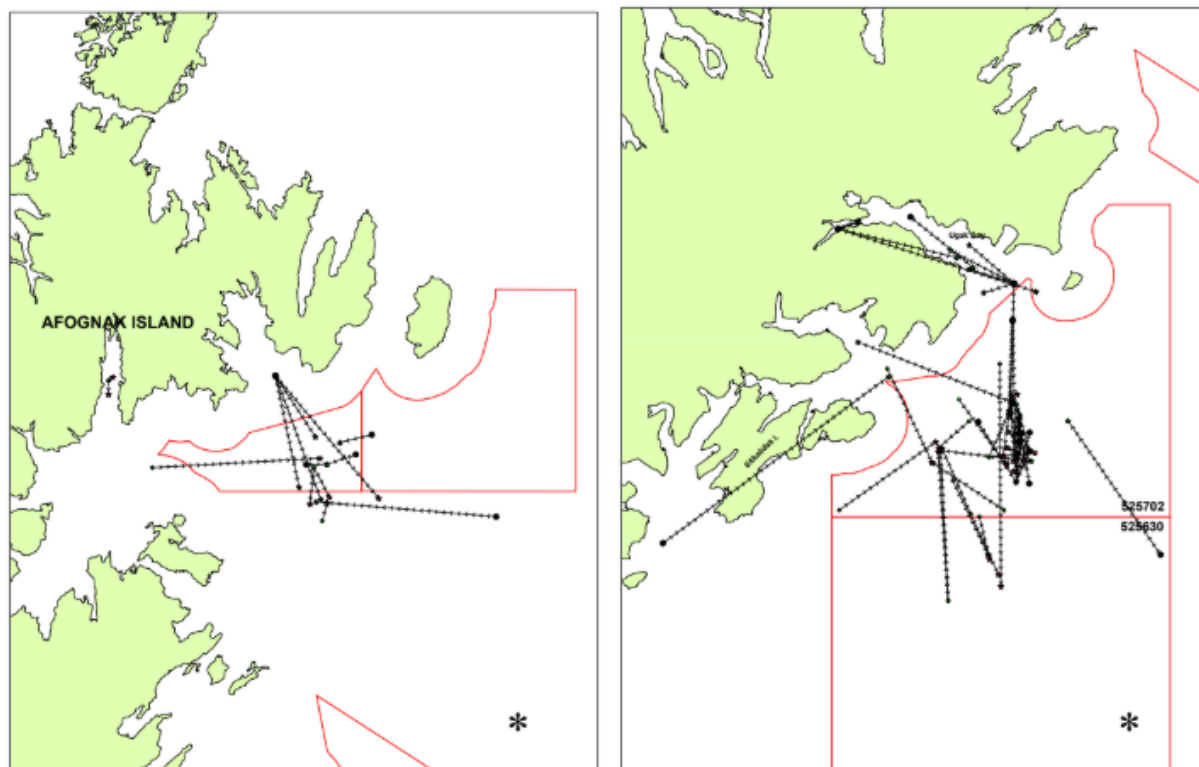


Figure 5-2 Tanner crab release and recovery locations from Kodiak District Northeast (left panel) and Eastside Sections (right panel) in 2008 and 2009. Circles denote release locations, stars denote recovery location, and arrows denote direct path between release and recovery. Tagging data is available from ADF&G for other regions on the east side of Kodiak Island from 2004-2010. Source: ADF&G unpublished research; findings and figure cited in the EA/RIR/IRFA for Amendment 89 to the GOA groundfish FMP.

Table 5-21 Ecological information by life history stage for EBS Tanner crab. Source: NMFS AFSC Ecosystem and Socioeconomic Profile of the Tanner crab stock in the Eastern Bering Sea, Sept 2025. See that publication for the sources listed within.

Stage	Habitat & Distribution	Phenology	Age, Length, Growth	Energetics	Diet	Predators / Competitors
Egg	Clutch of embryos brooded under the female's abdomen until hatching	397 days for multiparous females to 489 days for primiparous females at 6°C ⁽¹⁾	Egg diameter: 0.57-0.63mm ⁽²⁾	NA	Yolk	Amphipods and nemertean worms feed on egg clutches
Larvae	Pelagic; concentrated in the upper 20m over the middle and outer shelf ⁽³⁾	Peak hatching in late April - early May ⁽⁴⁾	Mean carapace length (stage II zoea): 1.04mm ⁽⁵⁾	NA	Diatoms, small copepods ⁽⁶⁾	Juvenile pollock, Pacific salmon, and jellyfishes
Juvenile	Benthic; found in silt, fine sand, and mud habitat (100-200m depth) ⁽⁷⁾	Settlement peaks in late September ⁽⁸⁾ , later benthic stages molt annually in the spring ⁽⁹⁾	12-18 benthic instar stages until final molt to maturity ⁽⁹⁾	Growth indices highest at 6°C ⁽¹⁰⁾	Crustaceans, polychaetes, molluscs, sediment/detritus ^(11,12)	Pacific cod, flatfish, sculpins, skates, crab ^(13,14)
Adult	Benthic; mud and sand bottoms (50-200m depth) ⁽⁴⁾	5-6+ years, form mating aggregations in spring to mate ⁽¹⁵⁾	Average size at terminal molt: females 83mm CW, males 112mm CW ⁽⁹⁾	Occupy temperatures between -2-8°C	Polychaetes, echinoderms, crustaceans, molluscs ⁽¹⁶⁾	Pacific cod, skates, halibut, sculpin ⁽¹⁷⁾

Note: Subscripts in table correspond to the following citations in sequential order 1. Swiney, 2008, 2. Krause et al., 2001, 3. Incze et al., 1987, 4. Armstrong et al., 1981, 5. Haynes, 1981, 6. Incze and Paul, 1983, 7. Zhou and Shirley, 1997, 8. Incze et al., 1982, 9. Donaldson et al., 1981, 10. Ryer et al., 2016, 11. Tarverdieva, 1976, 12. Copeman et al., 2018, 13. Jewett, 1982, 14. Rosenkranz et al., 2001, 15. Stone, 1999, 16. Jewett and Feder, 1983, 17. Mito, 1974.

Larval Tanner crab are found in the upper part of the water column, juvenile crab are found in silt, fine sand, and mud habitat, and adult crab are found in mud and sand bottoms (Hennessey and Garber-Yonts, 2025; Table 5-6). Although the Tanner crab ESP is focused on the Eastern Bering Sea stock, sources include research in the Kodiak area, such as Copeman et al. (2018) and Ryer et al. (2015). The Ryer et al. (2015) study focused on newly settled (juvenile) Tanner crab in Chiniak Bay, at the head of Chiniak Gully, the next gully system north of Barnabas gully and the proposed closure areas. Ryer et al. suggested settled juveniles fared better in shallow waters where warmer water temperatures speed growth and shorten the number of years before crab recruit to the fishable or reproductive population. They noted that although spatial segregation of adults was clearer in other areas of the Gulf of Alaska (e.g., Glacier Bay and Cook Inlet), it was unclear if juvenile habitat usage was distinct from adults. Settlement was from April through July and peaked in May through July which is consistent with the pattern of egg hatching (April–May) that has been reported for both primiparous and multiparous females (Stevens, 2003b; Swiney, 2008). This is also consistent with the timing of spring blooms, after which diatoms settle and accumulate in lower wave-energy, providing food for juvenile crab. They also noted that juvenile crab in more protected embayments were larger in August than those in open coastal sites. Because of the inverse relationship between depth and wave-induced bottom scour, protected sites had silt and mud at shallower depths. Finer sediments typically have higher organic content, such as detrital material, a component of crab diet. Juvenile Tanner crab bury in fine sediment and are also observed to associate with polychaete tubes for protection.

Adult crab are found in similar areas but are more widespread and can be found deeper in areas of mud and sand, and are known to bury themselves in the soft sediment. This may be due to density-dependent prey limitation and mating behavior, among other things, as spatial segregation is evident from ADF&G survey information and ADF&G staff field observations. Stevens and Haaga (1993) found that after

extruding new clutches, females buried themselves during the day, and were active at night, whereas some crab stayed exposed, presumably waiting for mating to occur.

5.3.1.2 Harvest Strategy

Harvest strategies can have an impact on the magnitude of abundance trends, and changes to those strategies may be reflected in survey results. In this region, survey information and conservative harvest strategies are used to maintain the Tanner crab population. However, as GOA Tanner crab are not an FMP species, a formalized stock assessment process is not conducted, but survey information is available to monitor stock status.

Since the State assumed full management authority in 1987, the harvest strategies in the Kodiak District have changed, the most recent of which were adopted in March of 2022 by the Alaska Board of Fisheries (BOF). Harvest strategies in this region can be described in three distinct phases (see ADF&G Regional Info Report, Dec 2021, 4K21-13 for detailed information):

- **1988-1998:** no formal guidelines for determining when areas should remain closed or should reopen, and fixed exploitation rate of 40% on legal males
- **1999-2022:** stair-step exploitation rate, 10% or 20% of molting mature males, with a cap at 30% of legal males, minimum stock size threshold based on survey for mature males to determine maximum exploitation rate, and a minimum GHL for fishery to open.
- **March 2022-present:** minimum stock size threshold based on survey, harvest control rule with both male and female abundance to determine maximum exploitation rates ('female dimmer', see below) and to determine the GHL, and a minimum GHL for fishery to open

In 2022, the harvest strategy revision included several notable advancements:

- Standardized survey stations and areas for consistency in area-swept calculations, and to provide comparable abundance estimates for survey years 1988-2021 (survey start through harvest revision proposal). This is used to update biological thresholds (i.e., minimum stock size).
- Update of the mature male abundance threshold. Since 1999, areas where the long-term abundance trend is increasing a threshold level of 50% used; new in 2022, in areas where the trend is decreasing, a threshold level of 100% is used (Figure 5-3, x-axis).
- Updated strategies reduce the maximum exploitation rate on legal crab from 30% to 20% of the estimated abundance that year. Past rates > 20% often yielded longer seasons and lower CPUEs. (Figure 8, left-side y-axis).
- Elimination of the use of a molting mature males calculation. Since 2005, a terminal molt to maturity for female and male Tanner crab was broadly accepted by the scientific community (see Section 5.3.1.4 for more on Tanner crab life history).
- The addition of a female crab control rule for the first time for this stock, that would reduce legal male exploitation rate on a sliding scale when mature female abundance falls below the long-term average abundance index. The floating HCR is also termed a 'female dimmer' by ADF&G managers. This mechanism also allows for a lower exploitation rate on mature males 1-2 years prior to a population decline could buffer the rate of population decline.
- A minimum GHL, enacted in 1999, acts as an additional precautionary measure. In the Kodiak district, sections will stay closed if the GHL is below 100,000 lbs. In 2022, the additional requirement of 400,000 lbs for the entire District was removed. Minimum GHL was loosened in 2022 due to the increased ability of ADF&G to manage the fishery in-season with a high percentage and accuracy of fishermen reporting catch and effort daily as at-sea communication improved within the fleet.

In the ADF&G Updated Tanner Crab Harvest Strategies Report (Spalinger et al, 2021), highly episodic recruitment became evident in 2000, the year after the stair-step exploitation harvest strategy was adopted

(Figure 5-4). The change in harvest strategy could be one contributing factor to when the pattern emerged, but the magnitude of impacts of the harvest strategy in combination with other factors is unknown. If a similar analysis were completed after additional cycles of recruitment, it may be possible to distinguish impacts of the current harvest strategy, adopted in 2022.

The total Kodiak District Tanner crab GHL attainment during the 2012-2025 time period was fully utilized each year the fishery was open, with a range of 100% to 114% utilization. By Section, the GHL has been the highest for the Eastside Section every year, with GHL utilization ranging from 98% to 112%. Except for the Southeast Section in 2013, GHL utilization has been greater than or equal to 96%. Tanner crab fishery was closed for five years during the 2012-2025 time period (2014-2017, 2021) and was closed for the 2026 season (Nichols et al., 2025).

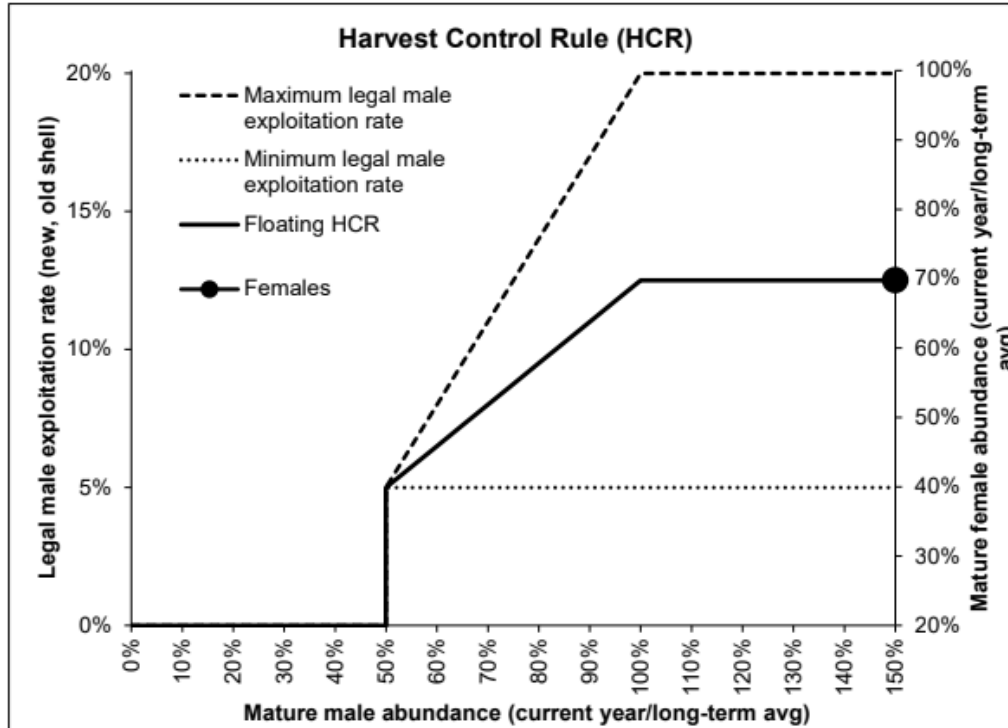


Figure 5-3 Harvest control rule with exploitation rates on new and old shell legal males based on mature male and female abundance ratios (i.e., current year relative to the 1988-2021 long-term average). Source: ADF&G Tanner Harvest Strategies Regional Information Report 4K 21-13.

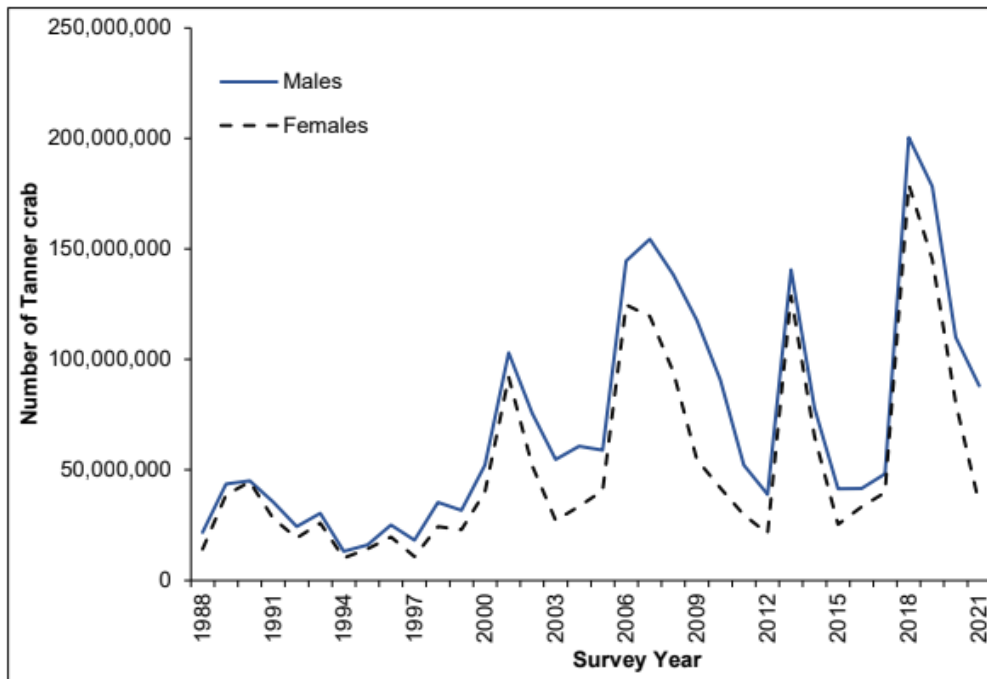


Figure 5-4 Total Tanner crab abundance estimated from ADF&G trawl surveys in the Kodiak, Chignik, and South Peninsula Districts, 1988-2021. Highly episodic recruitment became evident in 2000, the year after the stair-step exploitation harvest strategy was adopted. Source: ADF&G Updated Tanner Crab Harvest Strategies for Kodiak, RIR No. 4K21-13.

5.3.1.3 Annual ADF&G survey

The annual ADF&G large-mesh trawl survey is the most comprehensive source of data for Tanner crab in the Gulf of Alaska. The first comprehensive large-mesh trawl survey of the Kodiak District occurred in 1987, and in 1988, following the collapse of red king crab stocks, large-mesh surveys replaced pot surveys as the standard Tanner crab stock assessment tool in this region. However, annual trawl survey results have only been used since 1999 to determine if Tanner crab abundance is above regulatory thresholds. The ADF&G large-mesh trawl survey is conducted around Kodiak Island, along the Alaska Peninsula from Cape Douglas to False Pass, and in the Eastern Aleutian Islands from Akutan to Unalaska. The Kodiak District is the focus of this analysis, including portions of the Eastside and Southeast Sections that overlap with the proposed closure areas (Figure 5-5). The primary objectives of the trawl survey are to estimate the relative abundance and condition of Tanner and red king crabs; and to determine spatial distribution, species composition, length frequency, and catch per unit effort (CPUE) of commercially important groundfish species. A secondary focus is to measure the chela height of male Tanner crab in the Kodiak and South Peninsula districts, a metric that is used to relate to maturity status.

The survey is conducted in areas of historical and current Tanner crab abundance using a fixed-grid design. Stations were standardized and stratified in 2021 to update historical abundances of Tanner crab. Station areas vary in size due to irregular coastline and bathymetry. For example, in the Barnabas Gully area of the Eastside Section, station sizes range from approximately 21 km² to 86 km². Survey timing is generally consistent each year. The Northeast, Eastside, Southeast, and Southwest Sections of Kodiak District are typically surveyed in June and July. Trawl survey gear includes a 400-mesh eastern otter trawl designed to sweep a 12.2 m path, and haul locations were limited to a trawlable substrate. Within each station, the trawl net was towed on bottom for a target distance of 1.85 km (approx. 1 nm; see ADF&G Fishery Management Report No. 26-05 from the 2025 survey for details). During the haul, bottom temperature and depth are recorded. Many species are whole-haul sampled, including Tanner crab (unless greater than 200 individuals, then subsampled). Crabs are categorized by sex and shell condition,

measured, and weighed. Tanner crab carapace width (CW) and king crab carapace length (CL) are recorded, as well as clutch fullness of mature female Tanner, king, and Dungeness crab. This is estimated by examining the egg clutch and assigning a fractional clutch size relative to the size of the abdominal flap. Embryo development stage is also noted. External signs of bitter crab disease, black mat, nemertean worms, and parasitic barnacles were also recorded.

Abundance is estimated by calculating the sum of stratum abundances. A stratum abundance is derived from survey CPUE weighted by station area, divided by the assumed survey net width (12.2 m), and multiplied by the area for each station (see ADF&G FMR No. 25-16 for detailed calculations).

In 2025, the highest CPUE of Tanner crab (number of crab per km towed) were found in Kiliuda Bay, in the Eastside Section (Figure 5-6). Lower CPUE of legal males were found in the Eastside and Southwest Sections, but elsewhere were minimal or non-existent. The Northeast Section had the overall lowest CPUE across stations than elsewhere.

The ADF&G survey collects data on groundfish species, confirming the presence of the groundfish species focused on in this analysis along the eastern side of Kodiak Island. The top three species caught between 2021 and 2025 in the Kodiak District (in percent of catch by weight) were arrowtooth flounder, flathead sole, and walleye pollock (Figure 5-7).

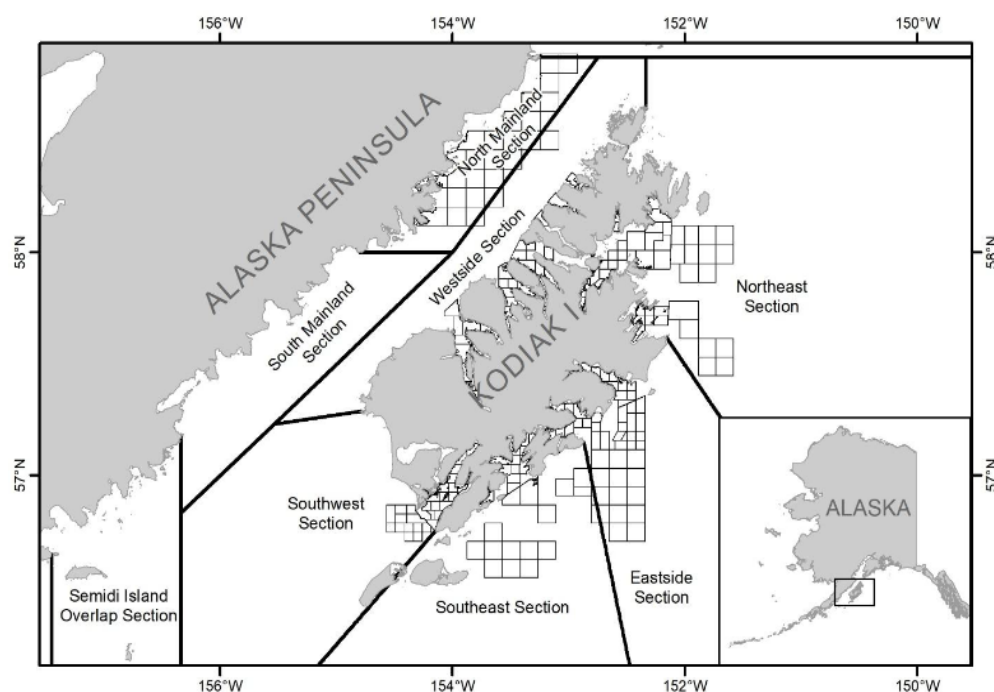


Figure 5-5 ADF&G trawl survey stations for Tanner crab abundance and ADF&G Kodiak District fishery management sections. Source: ADF&G Commercial Shellfish, Kodiak.

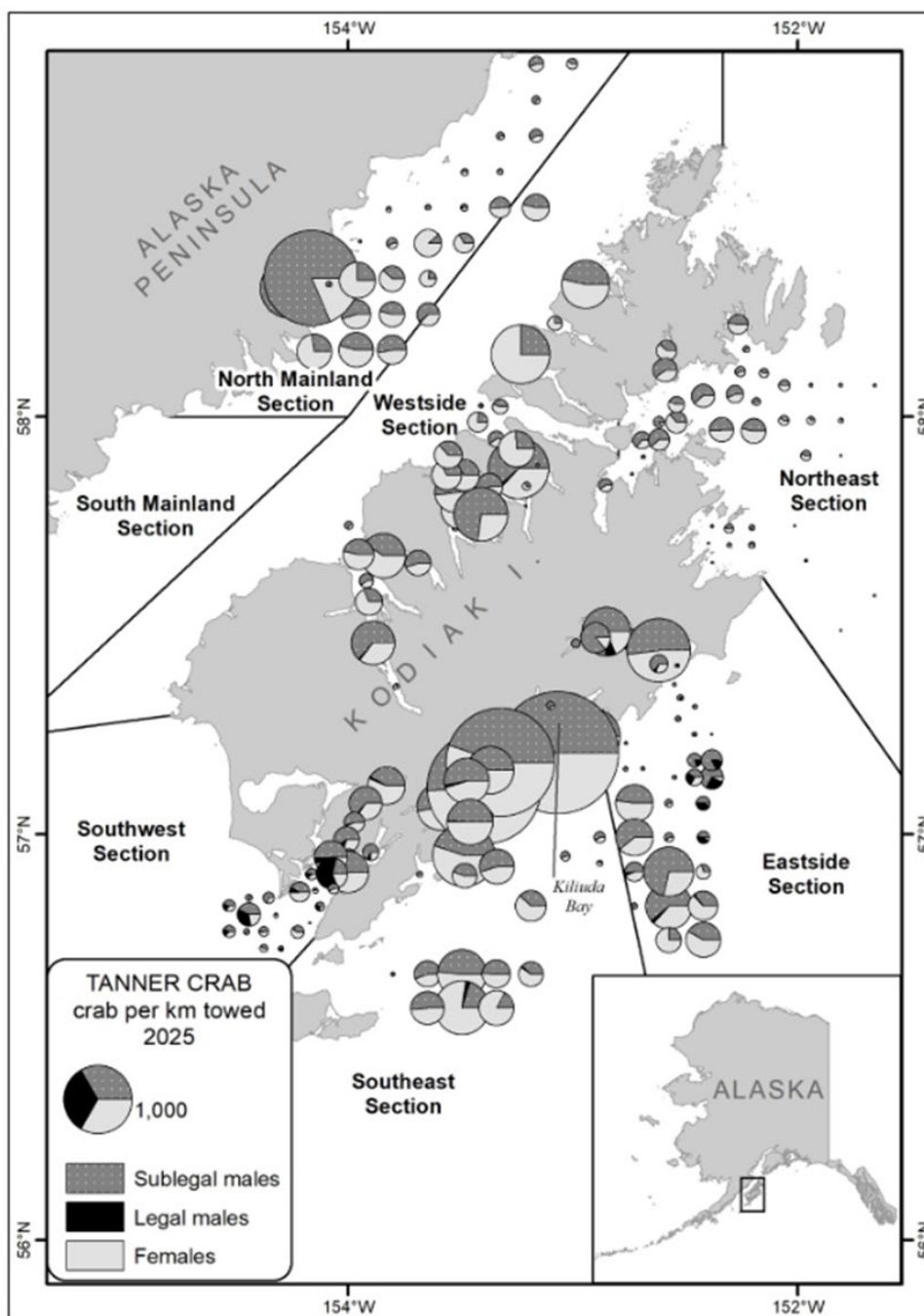


Figure 5-6 Number of Tanner crab per kilometer towed in the 2025 Kodiak District large mesh bottom trawl survey by sex. This is the most recent complete survey report. Each pie chart represents the relative proportion of sublegal male, legal male, and female Tanner crab encountered at a specific survey location. The size of the pie chart provides a relative indication of catch-per-unit effort (CPUE), with larger circles representing higher CPUE and vice versa. Source: Spalinger, 2026. ADF&G Fishery Management Report 26-05.

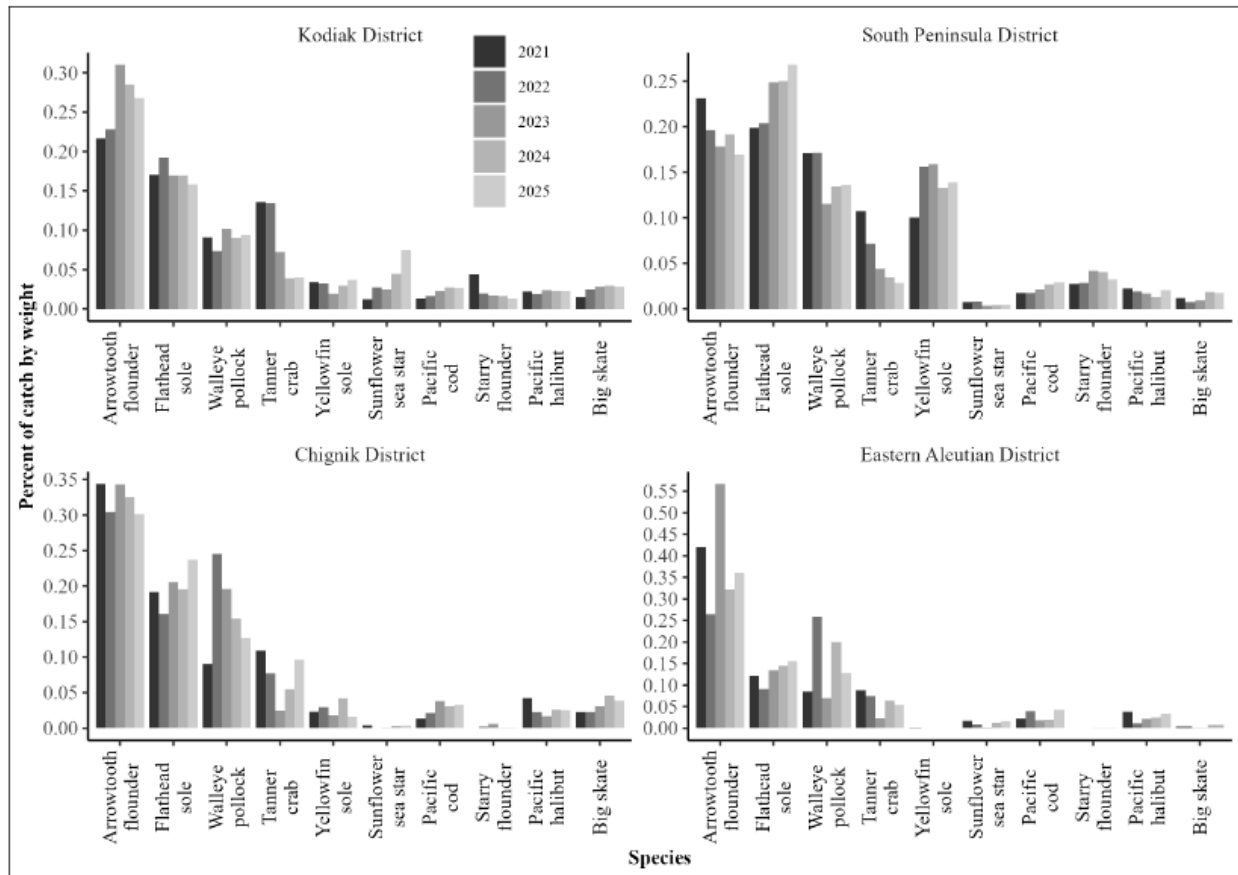


Figure 5-7 Top species caught by weight in the ADF&G large-mesh bottom trawl surveys by district, 2021-2025. Source: Spalinger, 2026. ADF&G Fishery Management Report 26-05.

5.3.1.4 Molting and mating

Chionoecetes crab undergo a terminal molt to maturity, after which point they stop molting, and therefore stop growing. This is not the case for all crab species and was not widely accepted for *Chionoecetes* crab until 2005 (Tamone et al., 2005, 2007; Zheng et al. 2011). Tanner crab may be more sensitive to disturbance during molting, mating, and egg hatching periods than during other portions of the year.

Primiparous females are individuals bearing their first offspring, undergoing their terminal molt and growing before extruding eggs. Primiparous females are therefore soft-shelled when mating for the first time and tend to mate with smaller males in shallow waters in isolated pairs earlier in the year. Multiparous females, or older mature females, mate in large aggregations or mounds with larger males in deeper waters during April, May, and June (Stevens et al. 1994). This differential mating behavior is termed bipartite breeding (Somerton 1982) and seems to be driven by the separation of multiparous and primiparous females rather than the exclusion of small mature males by larger ones (Stevens and Haaga, 1994). In the absence of a male, multiparous females can produce an egg clutch with sperm stored from a previous mating. Fertilization is internal, and the eggs are usually extruded within 48 hours onto the female's abdominal flap where they incubate for almost one year (in some cases up to 16 months; Stevens 2003). Hatching occurs late the following winter and spring with the peak hatching period usually during April to June during the aggregation period. Hatching occurs within approximately 6-12 days (Stevens 2003), with shorter times for primiparous as compared to multiparous females (Swiney 2008).

High density aggregations of female multiparous crab were first documented in 1991 in Chiniak Bay (Stevens and Haaga, 1994). Aggregations were observed and studied annually between 1991 and 1995, and in 2003 were documented further with video camera sleds and an ROV (Stevens 2003). Mounds

include hundreds to thousands of female crab and can be up to 1-1.5 meters high and last for up to 6 weeks (Stevens and Haaga, 1994). The study found the mounding behavior to be as follows: multiparous female crab form mounds ~1 month prior to release of larvae, mounding occurred coincident with local high spring tides and larval release occurred with spring tides, males stay on the edges and between mounds and mate with female crab, hatching occurs over the course of several weeks during the mounding period centered around the high spring tide in April or May, and then crab leave mounds after hatching. The study further suggests that only crab on the surface of the mound could release larvae as they must be able to flap their abdomen open; crabs beneath or inside the mounds could not release larvae. Some authors have suggested that groundfish trawls could easily capture or disrupt an entire Tanner crab mating aggregation (Stevens 1990). It is unclear if mounding aggregations occur in other areas around Kodiak Island; however, the same behavior was documented in Fritz Cove immediately adjacent to Juneau in 1990 (Stone 1999). Crab migrated to shallower water to molt en masse in April.

The young, free-swimming larvae molt many times and grow through several distinct stages. Growth during this period is usually dependent on water temperature, but lasts about 63 to 66 days, after which the larvae lose their swimming ability and settle to the ocean bottom. Small juveniles may molt multiple times in a year. Later benthic stages of juvenile crab are thought to molt annually in the spring (Donaldson et al, 1981). After numerous molts and several years of growth, females mature at approximately 5 years of age. Males will mature at about 6 or 7 years. Tanner crab live to an estimated maximum age of 14 years, with a shorter life span for female crab versus male crab. Males of commercial size range from 7 to 11 years of age. It should be noted that there is no widely accepted method to age crab, so shell condition is used as a proxy of time since last molt. Female crab grow to a smaller size at terminal molt than male crab. Less is known about female molt timing except for the terminal molt. Smaller juveniles may molt earlier in the spring while large juveniles may molt to maturity later. It is unclear how long it takes a shell to harden. For red king crab, the shell was found to be at approximately 90% hardness at 74 days (Stevens 2009). Red king crab shells are thicker than Tanner crab and may therefore take less time to harden, but the timing is unknown. The ADF&G survey observes soft-shell crab in late June/early July, which is after what is thought to be the peak in molting and mating in April and May. Therefore it is possible that shell hardening could take at least a month or more.

Molt timing varies between primiparous and multiparous female crab (Stockhausen 2023, 2023 Tanner SAFE). Pubescent molting and mating takes place over a protracted period from winter through early summer, whereas multiparous mating occurs over a relatively short period during mid-April to early June (Hilsinger 1976; Munk et al. 1996; Stevens 2000).

Molt timing also appears to vary by area. Colgate (1982) suggested that May is the peak molting period for male crabs in the western Gulf of Alaska, whereas Meyers et al. (1990) stated that Southeast Alaska Tanner crabs begin molting in mid-March with peak activity in April. Within the summer ADF&G trawl survey conducted in the Kodiak district, it is common to see softshell crab throughout the summer in varying proportions. This varies by area, as well as by sex and maturity stage, as described above. According to the 2024 ADF&G survey report (FMR No. 25-16, Table 5) soft/new pliable shell and new shell crab composed 70% of the total male Tanner crab captured in the Kodiak District, a decrease from 78.5% in 2023. A majority of those crab were sublegal males. In the Eastside Section, over 50% of crab were greater than 100 mm CW, which are still sublegal males, and likely molt annually. Multiparous female crab with clutches accounted for 59% of mature females captured, and other soft-shelled female crab were encountered. In some years, ADF&G survey biologists observed newly molted males in Ugak Bay in late June/early July, and a number of large softshell males in Alitak Bay in July. They regularly see soft, juvenile crab in Shelikof Strait in September (K. Spalinger, pers. comm.).

Table 5-22 Seasonal pattern of life history traits of Tanner crab. Source: Modified from Table 3 of GOA C. Bairdi Area Closures Secretarial Review for Amendment 89 to the GOA groundfish FMP, May 2013, including additional referenced research in this section.

Event	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Primiparous female molt to maturity/mating												
Primiparous peak of new egg clutch extrusion												
Multiparous females mate in deepwater aggregations												
Multiparous females mounding, larvae release												
Primiparous and multiparous egg clutch incubation												
Egg clutch hatching												
Mass molting events - smaller, mixed sex; larger, males												
Male and female soft shell encounters - ADF&G survey												
Male molt - Western GOA												
Male molt - Southeast Alaska												
Benthic juveniles annual molt												

When females molt to maturity, it is easy to differentiate as their abdominal flap increases in size, covering a larger proportion of their body (Figure 30). It is used to classify them during the measurement process on the ADF&G bottom trawl survey, regardless of their size. Male maturity is not as straightforward; therefore, managers use a static size of >114 mm. Various studies from the 1970's were used to determine average size at 50% maturity around Kodiak, but in 2022, ADF&G biologists used chela (front claw) height measurements to evaluate if that should be changed. When male Tanner crab reach their terminal molt to maturity, the chelae become proportionally larger. Ultimately, they determined that using >114 mm was within the 95% confidence intervals of the updated chela/carapace ratio and did not adjust (Knutson 2022). The study recommends that the Northeast, Eastside, and Westside Sections are good candidates to continue annual monitoring to detect significant changes because they have the longest sampling history and include areas regularly open and closed to commercial fishing.

Synchronous molting of large numbers of crab have been observed around Kodiak ranging from February to May. The timing of these events can differ based on temperature and location as well as the size of the crab molting. When large aggregations of molts wash onto the beaches and are reported to ADF&G, it is sometimes possible to sample these events. Samples from synchronous molting events composed of small sized crab have shown the molts to represent both male and female animals, while molting events composed of larger sized crab have been mostly male. Size frequencies of sampled molts have been similar to size frequencies from the ADF&G summer survey in nearby locations. For example, in February 2019 a synchronous molting event was reported in Ugak Bay, that was sampled and determined to be a mixture of male and female crab. Size frequency of those Tanner crab molts closely aligned with the size frequency of Tanner crab captured during the 2018 summer survey from adjacent survey stations. In the same area, a synchronous molting event was reported in April 2022. Samples examined from that event showed all molts were from sublegal male crab, most of which met the mature male size of >114 mm. This indicated that those crab had likely grown to legal size during the molt. Again, the sizes of those Tanner crab molts was similar to the size of male Tanner crab captured during the 2021 summer survey from adjacent stations. The subsequent 2022 survey had the highest estimate of legal males in the survey record. It is likely that female molts were not seen during the 2022 molting event because they had already reached their terminal molt to maturity 1-2 years prior. ADF&G staff have not had any reports of large scale synchronous Tanner crab molting events in the area since 2022 (K. Spalinger, personal communication).

Clutch fullness

According to Donaldson and Adams (1989), fertilized egg clutches generally remain attached to the abdomen for 12 months, or sometimes up to 16 months, with hatching occurring in the spring, prior to mating and prior to the ADF&G survey. The amount of time a female crab carries her clutch is a potential driver of the later timing when multiparous females tend to mate, as they wait until they release their

clutches. ADF&G staff do not see eyed eggs that are close to hatching in the summer survey, only fresh clutches, or empty. Somerton and Meyers (1983) and Stevens (2003) demonstrated that fecundity of primiparous crabs is notably less than multiparous crab, up to a twofold difference.

Clutch fullness is not incorporated into the current ADF&G harvest strategy but is used as an indicator of population health and general reproductive potential, and potential status of mate availability in the EBS Tanner crab stock assessment. Clutch fullness fluctuates as a cohort group ages (Figure 5-8). Low clutch fullness often coincides with a high proportion of very oldshell females as the cohort is senescing out of the population, or lots of newshell females that are in their first year of reproduction and less productive. Highest average clutch fullnesses are seen when the population is dominated by oldshell females (K. Spalinger, pers. comm.). These metrics also provide a basis for understanding the proportion of those females that have reached their terminal molt and produced their first egg clutch (primiparous; soft/new pliable/new shell) as compared to multiparous females that have produced their second (or more) clutch.

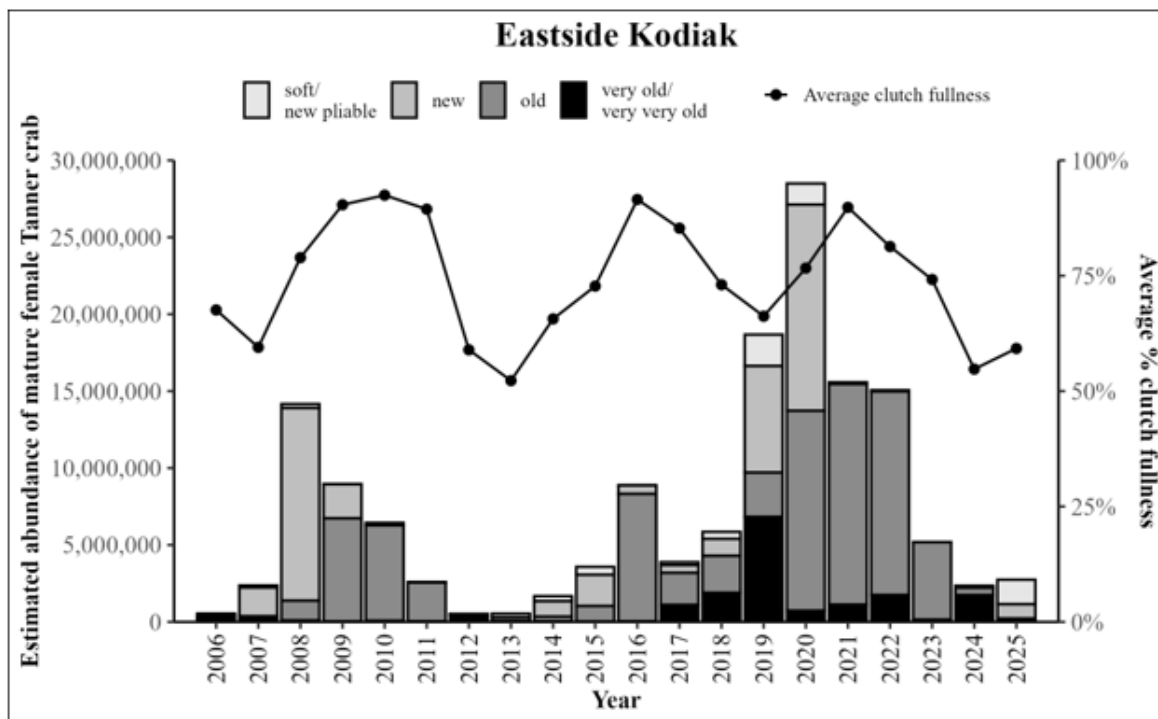


Figure 5-8 Estimated abundance of mature female Tanner crab and associated average % clutch fullness by year and shell condition. Source: ADF&G Kodiak.

5.3.1.5 Potential sources of mortality other than directed crab fishery

Sources of mortality can include bycatch handling and discard, groundfish predation, cannibalism, disease, unobserved mortality, density-dependent impacts, and changes to environmental conditions that reduce prey availability or slow growth. See Section 5.3.4 for mortality from directed fishing and Section 5.3.6 for potential mortality from handling and bycatch. See Section 5.3.5 for additional sources of mortality related to this action.

Data are unavailable as to the impact of unobserved mortality from fishing gear interactions with crab; however, the Unobserved Fishing Mortality Working Group was formed in 2023 in response to a Council request to identify data sources, major data gaps, and assumptions, and to provide research priority recommendations. These aspects were discussed in the context of the three primary Bering Sea crab stocks (Bristol Bay red king crab, snow crab, and Tanner crab) and compiled into a report (NPFMC, Jan 2024). Information was summarized by gear type, information type, and whether the impacts were at an individual level or population level. Information needs for assessing unobserved fishing mortality of crab

included the following categories (UFMWG Table 2): bottom contact estimates, crab spatial distribution by size/life stage/season, movement, life stage dependent vulnerabilities, encounter rate, and mortality rate. The UFMWG was paused until further research is completed to inform unobserved fishing mortality estimates. NPT, PTR, and lost pots were listed as the highest priority for additional research, especially the lethality of pelagic trawl at the individual trawl level and the population level. Report authors prioritized pelagic trawl gear in part due to the expectation that it has the potential for a relatively high ratio of unobserved to observed mortality encounters with crab.

Pelagic trawl nets include large forward mesh sections that were designed to reduce drag and also resulted in reduced observed bycatch of halibut and crab; however, the potential for unobserved mortality is still unknown (Taylor, 2025). However, some unobserved crab mortality research has been conducted with bottom trawl nets. In the Bering Sea, estimated unobserved mortality was found to vary by the portion of the gear that made contact with the crab and by crab species (e.g., footrope center had lower mortality than the footrope wing). Red king crab were deemed more vulnerable to gear interactions than snow or Tanner crab, and snow and Tanner crab mortality was similar across the components of gear tested (4-15%; Rose et al, 2012; Hammond et al, 2013). Near Norway in the Barents Sea, the center section of two types of modified demersal trawl gear were deemed to have low effects on crab damage (low crush injuries and pereopod loss) but mortality from other portions of the gear were not examined (Brinkhof et al, 2026).

Pacific cod (*Gadus macrocephalus*) are a known predator of benthic Tanner crab, as well as halibut, other flatfish, sculpins, skates, and conspecifics (cannibalism). In the Bering Sea, Pacific cod biomass was the dominant predictor of large juvenile snow and Tanner crab consumption indices, spatial crab-cod overlap was related to consumption indices for small cod, and mortality from predation varied across time (Reum et al. 2025). Juvenile Tanner crab are especially vulnerable to predation and cannibalism during and immediately following molting. Density-dependence may also play a reductory role due to high rates of cannibalism and prey resource limitation in juvenile nurseries (Chuchukalo et al., 2011; Ryer et al., 2016). Fishermen in the Kodiak area have noted that arrowtooth flounder are a common predator. Halibut, arrowtooth, yellowfin sole, and other flatfish are benthic and known to cover themselves in the sediment, similar to Tanner crab.

Pacific cod (*Gadus macrocephalus*) are a known predator of benthic Tanner crab (Jewett 1978; Albers & Anderson 1985; Urban & Hart 1999; Yang 2004; Yang et al., 2006; Aydin et al., 2007; Poltev & Stominok 2008; Urban 2012). In the Eastern Bering Sea and GOA, Tanner crab and Snow crab *C. opilio* have been found to comprise 9% of Pacific cod diets (Aydin et al., 2007). In the Bering Sea, Pacific cod biomass was the dominant predictor of large juvenile snow and Tanner crab consumption indices, spatial crab-cod overlap was related to consumption indices for small cod, and mortality from predation varied across time (Reum et al. 2025). In Marmot Bay on the north side of Kodiak Island, Tanner crab were found to comprise 20 – 45% of Pacific cod diets by weight (Urban 2012). There are indications that Pacific cod and Tanner crab abundances are inversely related to each other, where years of high Pacific cod abundance correlate to periods of lower Tanner crab abundance and vice versa (Figure 5-12). This may indicate that Pacific cod predation on Tanner crab may impact local populations in the Kodiak Island area, but this correlative relationship would benefit from further research, including impacts from co-location with other known Tanner crab predators. Other predators of Tanner crab vary by life stage and can include other flatfish, sculpins, other Tanner crab (cannibalism), skates, Pacific halibut (*Hippoglossus stenolepis*), and sea otters (Table 5-22; Monson et al., 2025). Fishermen in the Kodiak area have noted that arrowtooth flounder are a common predator, however, Tanner crab were noted to have a low frequency of occurrence in arrowtooth stomach contents sampled between 2002-2004 near Kodiak Island (Knoth and Foy, 2008) and are not listed as a common prey item in the most recent GOA arrowtooth flounder stock assessment (Shotwell et al., 2021).

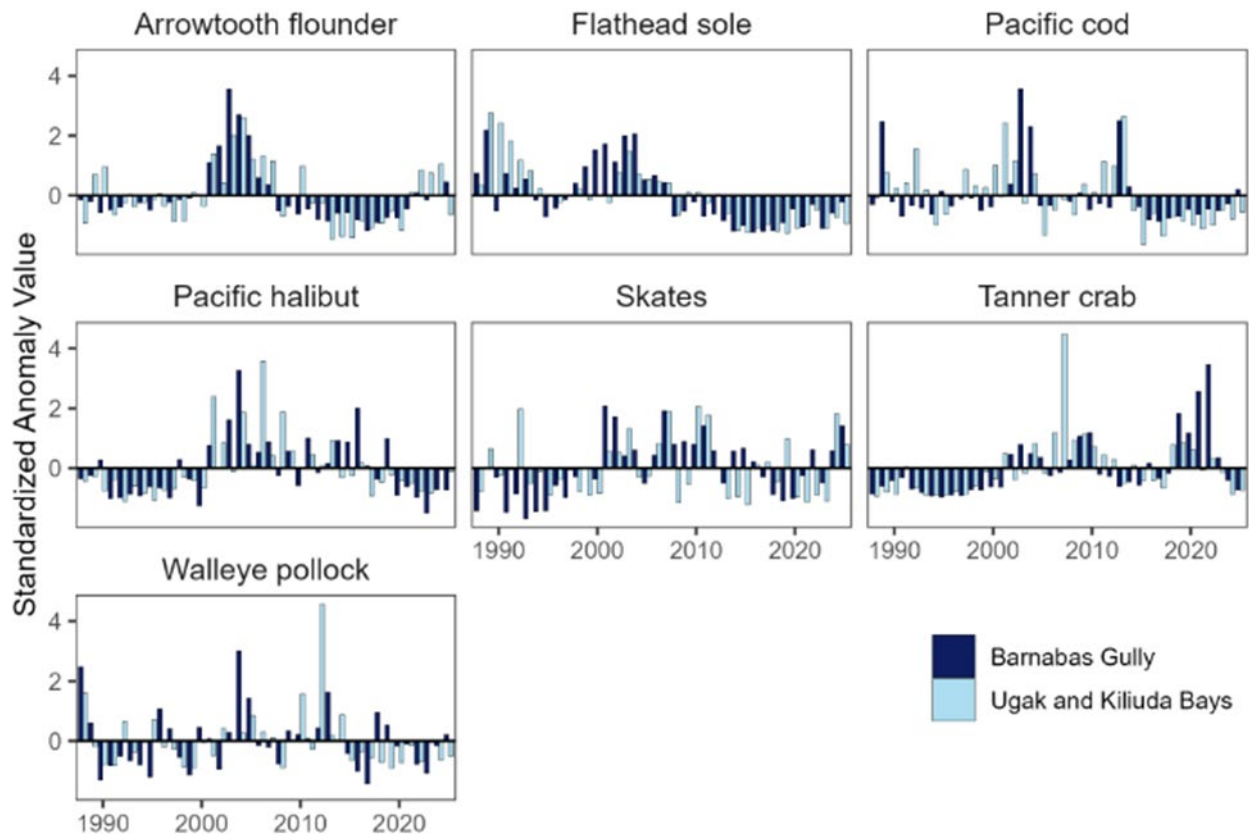


Figure 5-9 Comparison of standardized anomaly values based on catch (kg) per distance towed (km) for selected species caught during the ADF&G trawl survey in Barnabas Gully (offshore area) and Ugak and Kiliuda Bays (inshore areas), 1988-2025. Source: Worton, 2025. GOA 2025 Ecosystem Status Report, ADF&G Gulf of Alaska Trawl Survey section.

5.3.2 Spatial and Temporal Distribution

Tanner crab are found mainly on soft bottom and most abundant in depths of 40 fathoms to 50 fathoms (or approx. 73 to 91 m; Urban and Hart 1999). Abundance maps in Appendix 1 depict density of crab/km towed from the ADF&G annual large-mesh bottom trawl survey, which is translated to abundance. Abundance is estimated by calculating the sum of stratum abundances. A stratum abundance is derived from survey catch-per-unit effort (CPUE) weighted by station area, divided by the assumed survey net width (12.2 m), and multiplied by the area for each station (see ADF&G FMR No. 25-16 for detailed calculations; see also Section 5.3.1.3). Note that maps are simple interpolated surfaces from raw survey data.

Color ramps within a sex and maturity category are the same; however, color ramps among sex and maturity categories differ only in that the max range for the darkest red is different. Circles represent actual survey stations, and blocks of color correspond to the survey stations. Maps of legal male crab include those crab > 5.5 inches and are a portion of the population shown in the mature male crab maps. The footprint is fixed within areas of known historical fishing, and therefore there are areas within the proposed closures that are unsurveyed, such as the eastern edges. Presumably, in coastal or gully areas where crab are found in the survey but there are no survey stations, it may be possible to infer that crab may exist in those surrounding areas. Species distribution maps help with inferences in areas without survey information (see Section 5.2.3). **Caution should be taken when interpreting annual maps of abundance as positive or negative signs of population trends, or as clear evidence of ontogenetic movement. The summer survey does not necessarily indicate spatial distribution of the winter**

population when directed Tanner crab fishing occurs. However, ADF&G managers have indicated that summer survey information does seem to reliably map to winter Tanner crab fishery efforts.

The Tanner crab summary map shown in Figure 5-10 is the average of crab density (crab/km towed) for the entire time period of 2012-2025. It is evident that embayments along the south and east side of the island are important, especially Ugak Bay.

Summary of spatial distribution patterns and densities from annual abundance maps

For juvenile crab, embayments are important regardless of year, particularly those along the Eastside Section (Ugak Bay, Kiliuda Bay, Sitkalidak Strait, and further southwest). In general, the highest densities are found in embayments, particularly Ugak Bay, with fewer estimated juvenile female crab across years and locations as compared to juvenile males. In years of highest densities (e.g., 2013 & 2014; 2018 & 2019) juvenile crab were more widespread. Spatial distribution and densities were starkly different in some years (e.g., 2016, 2020, 2021), with juvenile males at much higher densities than females. This may be due to differences in size at maturity between the sexes. Females begin reaching maturity 1-2 years earlier than the males, at a smaller size. Hence, while there are still a lot of larger sized juvenile males around from a cohort, those same cohort of females are transitioning into the mature category. The female crab that were first seen in 2013 and 2018 reached a maturity peak in 2016 and 2020, respectively. Mature male abundance for those groups peaked in 2018 and 2022. It takes 2-3 years after crab eggs hatch and juveniles settle onto the bottom for them to grow large enough to be picked up in the ADF&G survey, so there is a lag of a couple years before the survey is able to detect any reproductive results from mature animals. Therefore, those juvenile females that seem to be missing in 2016 have likely become mature.

In years of highest abundance (e.g., 2021-2023), mature male crab (>114 mm) were found most predominantly in Ugak Bay and the connected gully system to the south of it, then the bay system to the west of Old Harbor and south of that; then the bay between the two (Kiliuda Bay, east of Old Harbor). In these years, for example, mature male crab were more widespread and found in areas south of the proposed closure boundaries, presumably following the contours of Barnabas Gully.

Legal males, a portion of the mature male population > 5.5 inches CW, were less common than any sex/maturity status, and the least widespread. In years of lower abundance (e.g., 2017 & 2018), legal males are found in the northernmost reach of Ugak Bay, and some in the northernmost reaches of other bays to the west. In years of highest abundance (e.g., 2022 and 2023), the predominant portion of the population is found in Ugak Bay and the offshore waters directly south. They were also found in the bay system west of Old Harbor and waters just offshore (such as the survey station at the point where the custom closure meets State waters to the southwest).

In some years, mature female crab densities were higher and more widespread than mature males, and vice versa. For example, in 2012, mature female crab were mainly isolated to a point south of Ugak Bay (and near, but outside the boundary to the Type III Barnabas Gully area). In contrast, mature male crab are found along Ugak Bay and south of it to a similar point, as well as in other parts of the survey footprint. The contrast in 2012 between mature male and female densities was likely because the 2012 survey was between cohort groups. Mature females from a 2006/2007 group had declined to a low level and mature males, while declining, had not dropped to their low point yet. The current ADF&G harvest strategy attempts to address this by reducing the harvest rate when mature female abundance is low to maintain the mature male population for the next year to be available to mate with any newly mature females of a younger cohort. In a year of high mature female crab densities (2019), crab were distributed widely among bays, and further offshore. In that same year, mature male crab were much less abundant, and were not as widespread.

In some years (e.g., 2017 & 2018), mature female crab seem to be in areas where male crab are not, and vice versa. ADF&G survey biologists have observed a relatively even sex distribution when crab are

juveniles, which changes as crab grow larger and the sexes segregate, sometimes being found in predominately single sex aggregations (K. Spalinger, pers. comm). Large mating aggregations of mature female crab have been observed as late as June, which could coincide with the survey (June or July on the Eastside).

A map of scaled survey abundance of all Tanner crab at NMFS RACE GAP and ADF&G survey locations, aggregated across all years (2012-2025) confirms that, at least in the identified area of interest, crab are generally found within the boundaries of the gully systems (see map below, Figure 5-11). This helps to provide context for areas outside the survey footprint, as do the SDMs (see Section 5.3.3)

Cyclical Recruitment

Tanner crab exhibit highly cyclical recruitment cycles, with larger amounts of crab moving through the system every few years (3-5 or 6 years; Figure 5-12 and Figure 5-13 below). As noted in Section 5.3.1.2 (Tanner Harvest Strategies), this recruitment pattern was not evident until 2000, the year after the ‘stair-step’ harvest strategy was implemented. The cohort from 2018/2019 was the largest in the survey time series since 1988 (Figure 5-12 and Figure 5-13). That cohort has since reached its low point. The new cohort of males coming through (Figure 5-14) appeared in 2023 and is much smaller than the previous survey record high. It is likely that a much smaller amount of mature males will reach legal size in the next few years.

Abundance by closure area

ADF&G survey information was used to determine abundance in existing and proposed closure areas (

Table 5-23 and Table 5-24). Aggregated across all years, mature adult crab were the highest proportion of the population in the proposed closure areas, with the highest percentages in the custom closure (Alt. 1, Element 1, Option 2), followed by 525702 (Alt. 2, Element 1, Option 1), then the Type II Barnabas Gully closure. Of the existing closure areas, the lowest proportion was in the Marmot Bay Tanner Crab Protection Area. This is reflected in the average Tanner crab average abundance map below (Figure 5-10).

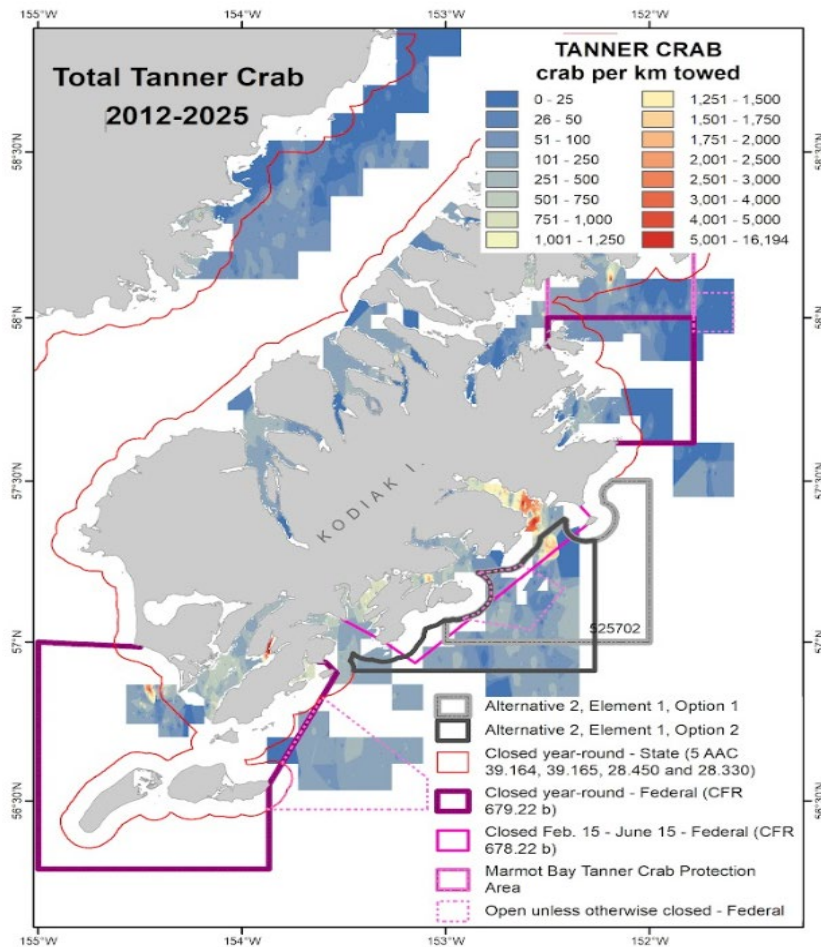


Figure 5-10 Tanner crab average abundance in crab per km towed from ADF&G survey, 2012-2025. Source: ADF&G Commercial Shellfish Program, Kodiak.

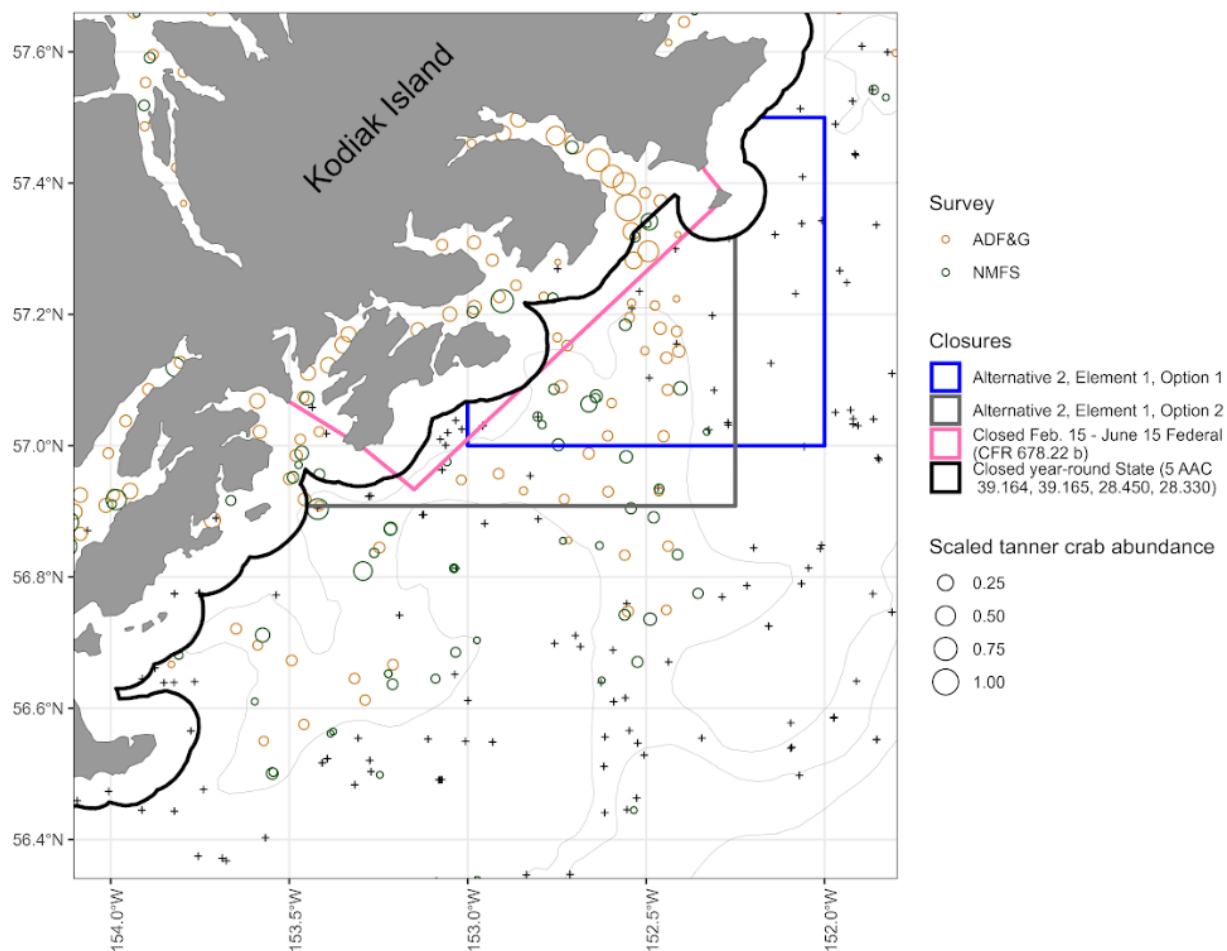


Figure 5-11 Scaled survey abundance of Tanner crab at NMFS RACE GAP and ADF&G survey locations, aggregated across all years, 2012-2024. The scaled Tanner crab abundance (across all size classes and sex) metric is scaled to max abundance caught across the entire extent for each survey. All current and proposed closures are represented. Pink circles are ADF&G large-mesh bottom trawl survey stations; green circles are NMFS RACE GAP survey stations, surveyed biennially; plus signs (+) indicate NMFS stations where no Tanner crab were caught. Source: NMFS AKRO HCD/SF.

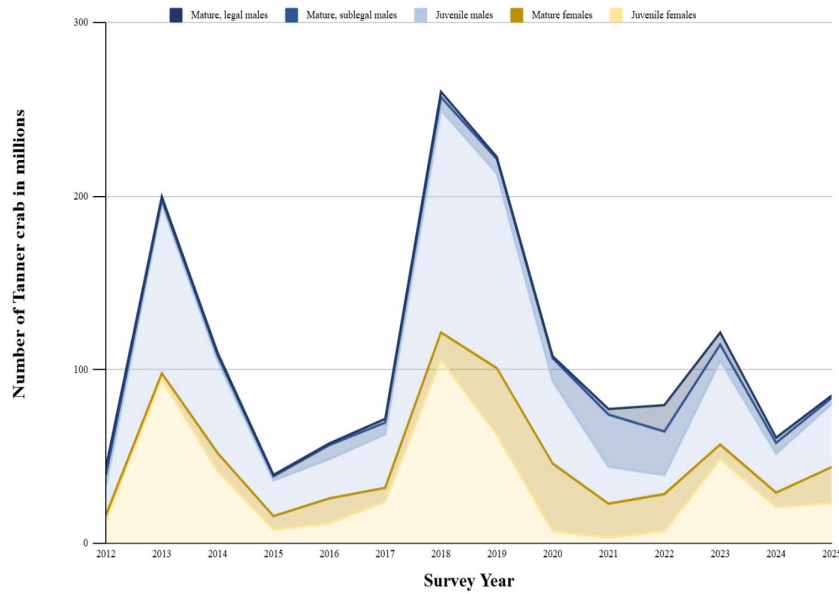


Figure 5-12 ADF&G Tanner crab large-mesh bottom trawl survey abundance by sex and maturity stage for the entire Kodiak District.

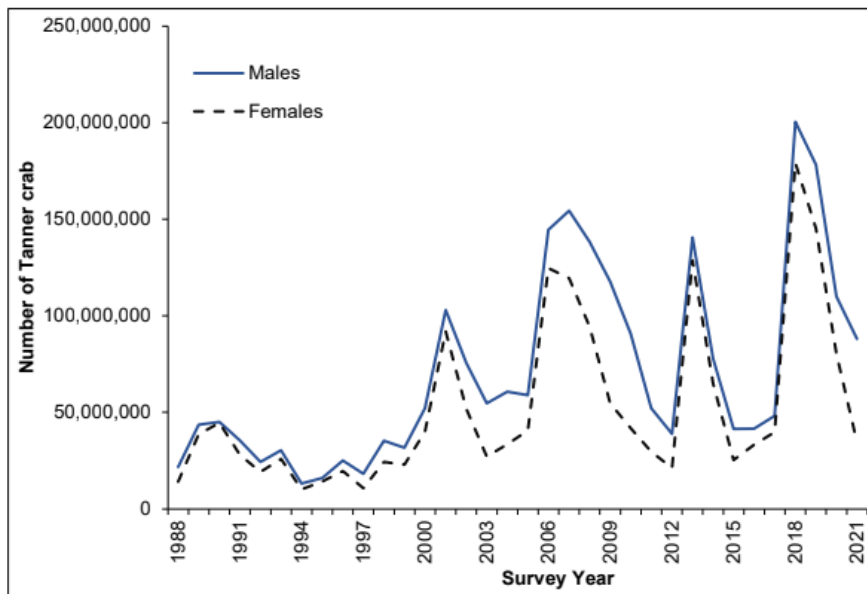


Figure 5-13 Total Tanner crab abundance estimated from ADF&G trawl surveys in the Kodiak, Chignik, and South Peninsula Districts, 1988-2021. Highly episodic recruitment became evident in 2000, the year after the stair-step exploitation harvest strategy was adopted. Source: ADF&G Updated Tanner Crab Harvest Strategies for Kodiak, RIR No. 4K21-13.

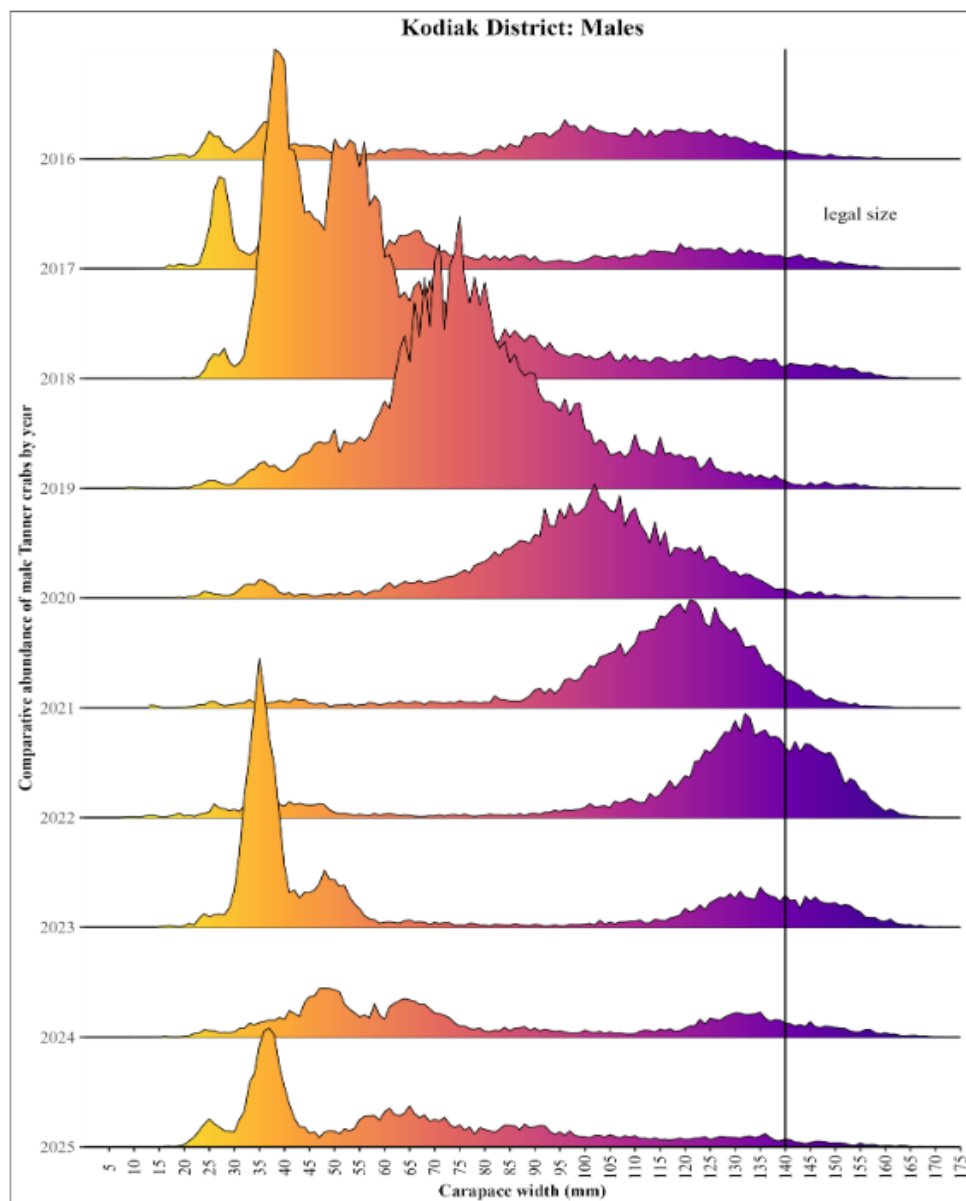


Figure 5-14 Male Tanner crab abundance estimates by size, 2016-2025 ADF&G Kodiak District trawl surveys.
Source: ADF&G 2025 Kodiak District Tanner Trawl Survey Packet.

Table 5-23 Tanner crab survey abundance by sex, maturity, and year for Alternative 2, Element 1, Option 1 (statistical area 525702). Percent of total (%) show % of annual total Kodiak estimate for that group only.

	All Tanner crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
Year	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
2012	4,893,777	11%	1,151,830	25%	3,146,341	28%	721,692	4%	395,990	15%	629,756	5%
2013	9,340,736	5%	326,437	19%	784,507	18%	4,269,551	4%	82,848	3%	4,203,838	4%
2014	6,457,440	6%	61,568	4%	206,179	5%	3,133,282	6%	634,603	6%	2,483,372	6%
2015	956,569	2%	20,887	3%	105,367	3%	563,555	3%	159,720	2%	127,933	2%
2016	10,329,400	18%	115,245	12%	2,733,388	30%	3,940,031	17%	3,644,594	25%	11,393	0%
2017	10,965,002	15%	502,897	23%	2,923,058	33%	4,055,013	13%	1,111,230	14%	2,875,705	12%
2018	9,749,656	4%	851,611	27%	2,970,197	28%	2,800,274	2%	1,720,913	11%	2,258,277	2%
2019	39,462,003	18%	176,036	16%	987,021	11%	16,268,299	15%	7,736,016	20%	14,470,671	23%
2020	32,438,754	30%	53,305	5%	3,021,509	21%	8,391,337	18%	20,785,123	53%	240,788	3%
2021	31,092,546	40%	461,682	14%	11,305,003	34%	7,003,772	33%	12,759,022	65%	24,758	1%
2022	23,623,003	30%	6,218,359	41%	13,829,537	34%	787,936	7%	8,943,826	42%	61,709	1%
2023	9,427,871	8%	2,584,392	37%	5,207,945	32%	847,246	2%	2,852,252	34%	520,425	1%
2024	4,512,540	7%	547,200	18%	1,965,767	22%	704,317	3%	1,009,226	12%	833,232	4%
2025	3,217,847	4%	264,395	20%	773,959	16%	1,165,269	3%	52,024	0%	1,226,596	5%
2012–2025 Avg	14,033,367	13%	952,560	28%	3,568,556	28%	3,903,684	8%	4,420,528	28%	2,140,604	6%

Table 5-24 Tanner crab survey abundance by sex, maturity, and year for Alternative 2, Element 1, Option 2 (custom closure).

	All Tanner crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
Year	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
2012	7,624,012	17%	1,617,506	35%	4,297,701	39%	1,573,547	9%	423,245	16%	1,329,534	10%
2013	27,526,948	14%	501,057	28%	1,282,511	30%	13,023,884	13%	403,519	13%	12,817,044	14%
2014	14,298,626	13%	175,487	10%	496,456	11%	7,128,239	13%	1,182,007	11%	5,491,915	13%
2015	4,803,324	12%	28,482	3%	213,558	7%	2,460,733	12%	1,488,622	19%	640,419	8%
2016	15,837,920	27%	130,436	13%	3,075,165	34%	5,502,949	24%	6,566,784	46%	693,036	6%
2017	21,929,521	31%	573,599	26%	3,593,899	40%	9,224,661	30%	2,374,742	30%	6,736,231	28%
2018	23,560,985	9%	981,167	31%	4,136,538	39%	9,856,871	8%	3,358,615	21%	6,208,967	6%
2019	52,148,794	23%	323,776	29%	2,195,968	23%	21,925,932	20%	11,207,878	29%	16,819,026	27%
2020	42,542,802	39%	88,487	8%	4,997,480	35%	12,330,773	26%	24,500,099	63%	714,458	10%
2021	38,801,063	50%	1,025,909	32%	16,255,241	49%	8,509,574	40%	13,622,491	70%	413,771	13%
2022	34,701,972	44%	7,303,068	48%	19,715,111	49%	2,082,326	19%	11,876,419	56%	1,028,125	15%
2023	20,583,113	17%	3,359,390	48%	8,236,767	51%	3,773,216	8%	4,710,958	56%	3,862,170	8%
2024	13,526,289	22%	1,096,778	36%	4,097,148	45%	3,923,589	17%	2,154,944	26%	3,350,617	16%
2025	10,721,924	13%	439,278	34%	1,414,464	30%	5,424,489	15%	1,617,438	8%	2,265,532	10%
2012–2025 Avg	23,471,950	21%	1,260,316	37%	5,286,286	41%	7,624,342	16%	6,106,269	39%	4,455,060	13%

5.3.3 Species Distribution Model Results

Species distribution models (SDMs) apply data to produce maps based on the relationship between species occurrences and environmental variables, predicting the distribution of a species across time and space. Models can infer significant drivers of the population distribution and areas where higher densities or hotspots may occur. To our knowledge, SDMs have not been completed for Gulf of Alaska Tanner crab and are used here to provide inferences about mature Tanner crab in regions with and without survey information. Abundance and subarea percentile maps are the mean estimate across the study years for this action (2012 - 2025) and therefore may mask some potential hotspots due to the high cyclical variability of the population. Annual abundance estimate maps are provided in Appendix 1. Maps with predicted abundance should be considered relative and not absolute, as the underlying data is zero-inflated with a non-normal distribution. The color ramp is in log scale so colors appear with more contrast, but abundance values are not on a log scale.

Results

The results of the stage-specific SDMs revealed distinct environmental drivers for mature male and female Tanner crabs. For mature females, the optimal model identified a suite of significant predictors including bottom depth, aspect (northness and eastness), BPI, and sediment grain size, maximum tidal current and rockiness. Notably, maximum tidal current emerged as a strong negative predictor (coefficient: -0.52), indicating that mature females are primarily associated with lower-energy benthic environments. In contrast, the mature male model was notably more parsimonious, with abundance primarily driven by topographic relief. Associations with mean curvature, slope and depth suggest that mature males are more frequently found in areas with higher bathymetric complexity compared to their female counterparts (see Appendix 2).

The combined survey model provided a comprehensive visualization of Tanner crab occupancy across the broader Kodiak shelf. By integrating the NMFS and ADF&G datasets, the model successfully expanded the predictive surface into areas not covered by the ADF&G survey alone, providing a more holistic seascape-scale view of the population. The inclusion of the "Survey" effect allowed for a seamless integration of the two datasets, effectively correcting for inherent differences in gear efficiency. This model demonstrated high predictive skill and provided a robust baseline for assessing the total population distribution across varying depth strata and substrate types.

The finalized abundance predictions from all models were utilized to delineate subareas. By converting model estimates of abundance into percentiles, the analysis identified hotspot habitat zones (the top 25% of predicted abundance) and broader occupancy areas (50%, 75%, and 95% percentiles). Mapping these boundaries across the Kodiak region infers the likely importance of specific bathymetric features and low-current refugia for the maintenance of Tanner crab stocks.

The relative predicted abundance for mature male and female crab is highest in gully systems, especially on the east side in Barnabas Gully and Ugak Bay (SDMs in center panels in Figure 5-15, Figure 5-16, and Figure 5-17). This correlates with the survey locations but also correlates with the combined survey SDM and where PSC is highest around the island. The combined survey SDM (Figure 5-17) also indicates a potential signal for Tanner crab to be found in Shelikof Strait. The directed Tanner crab fishery has not opened in this area during this period of analysis; however, Tanner crab PSC demonstrates the presence of crab both at the northernmost and southernmost ends of the Strait. Annual spatiotemporal SDM (i.e., STM) maps of mature female and mature male Tanner crab demonstrate some variability in the magnitude of estimated abundance; however, in a given year the distribution of crab are relatively static in the gully systems. The relatively static distribution of Tanner crab is especially apparent in the combined STM maps with all Tanner crab, indicating areas of population persistence with respect to dynamic environmental covariates (Appendix 2).

Future work could include population subarea percentile binning (similar to EFH mapping methods) on annual maps (see Appendix 2), maps that focus on juvenile crab, and/or on a seasonal basis (though this would be more challenging given the nature of the survey data only in the summer).

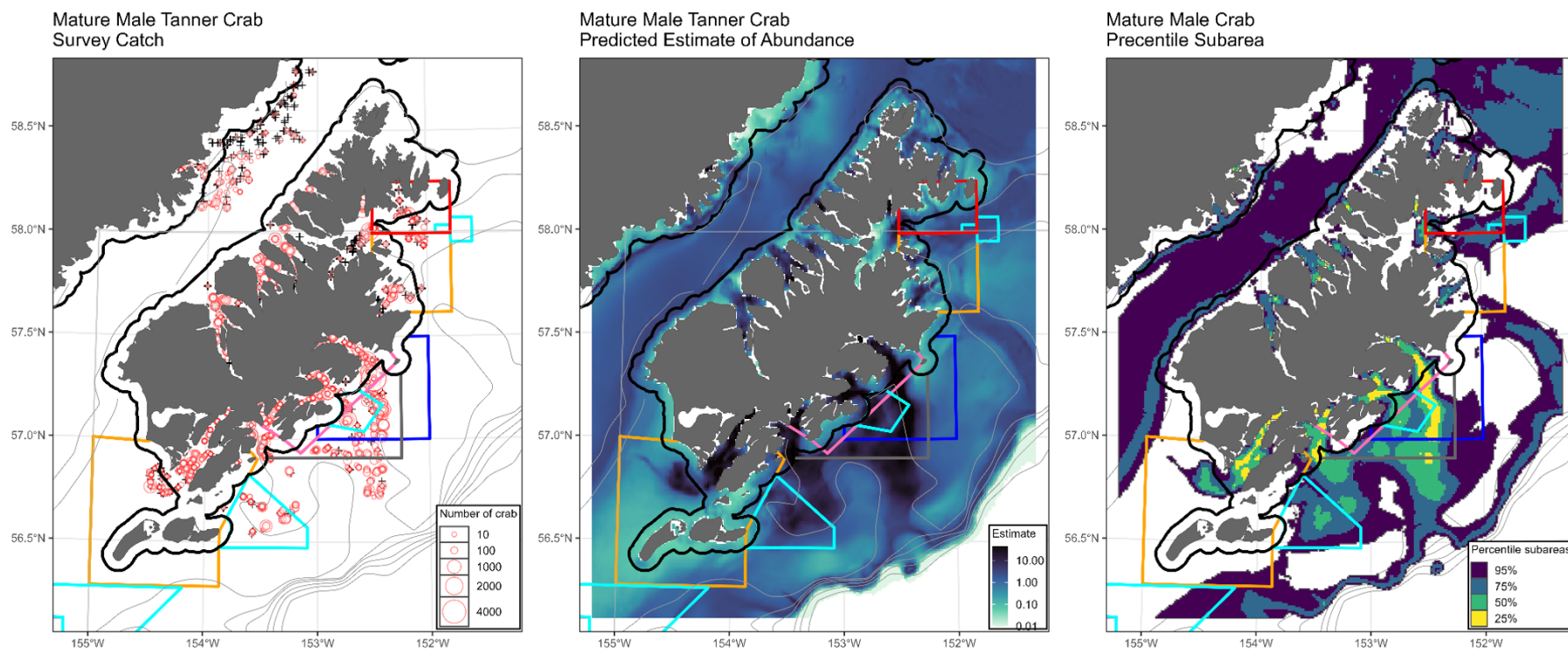


Figure 5-15 Mature male Tanner crab SDM. Contour lines (grey) are 100 meter resolution depths. Left panel is ADF&G scaled survey catch of mature males. Black crosses indicate a survey point that caught zero mature male Tanner crab; center panel is a continuous surface of predicted estimates of abundance from the SDM; right panel is a map of the continuous SDM estimates binned into percentile subareas, with yellow denoting hot spot areas. Source: NMFS AKRO HCD/SF.

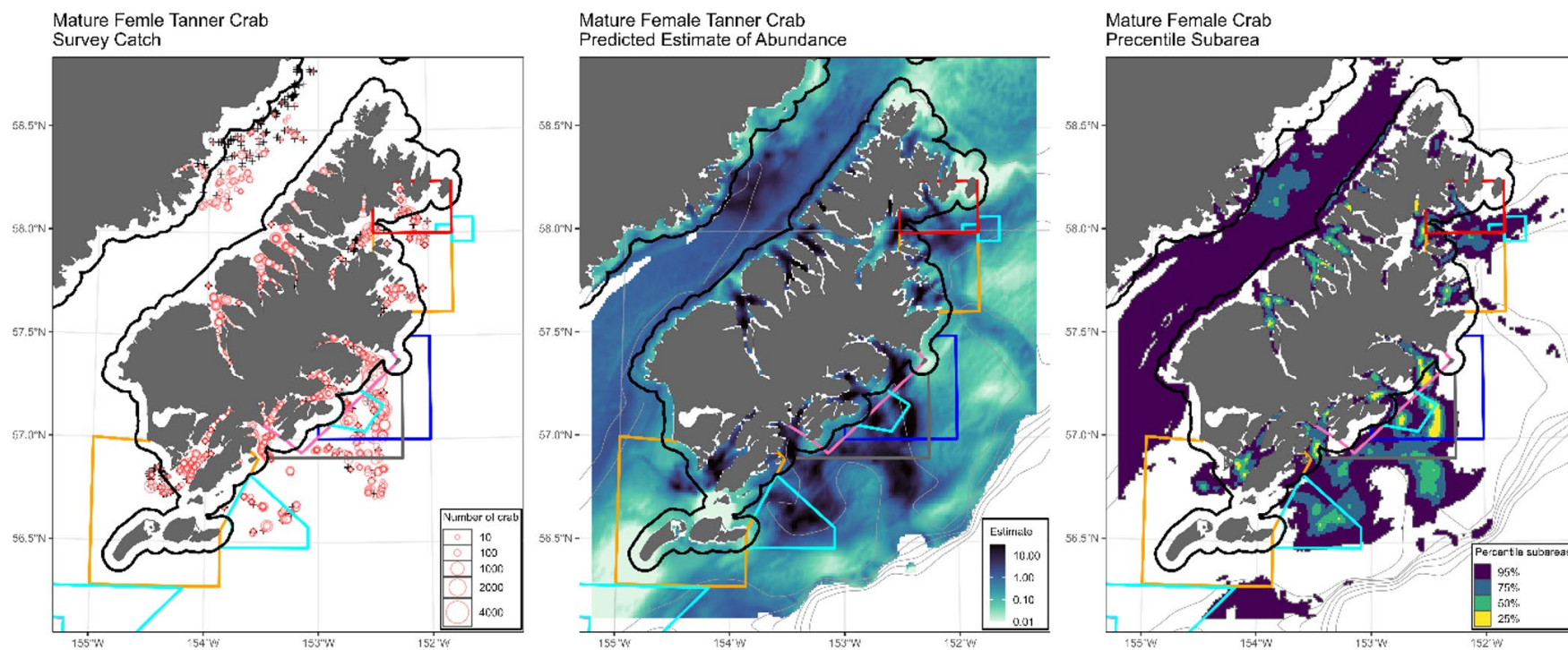


Figure 5-16 Mature female Tanner crab SDM. Contour lines (grey) are 100 meter resolution depths. Left panel is ADF&G scaled survey catch of mature females. Black crosses indicate a survey point that caught zero mature female Tanner crab; center panel is a continuous surface of the predicted estimates of abundance from the SDM; right panel is a map of the continuous SDM estimates binned into percentile subareas, with yellow denoting hot spot areas. Source: NMFS AKRO HCD/SF.

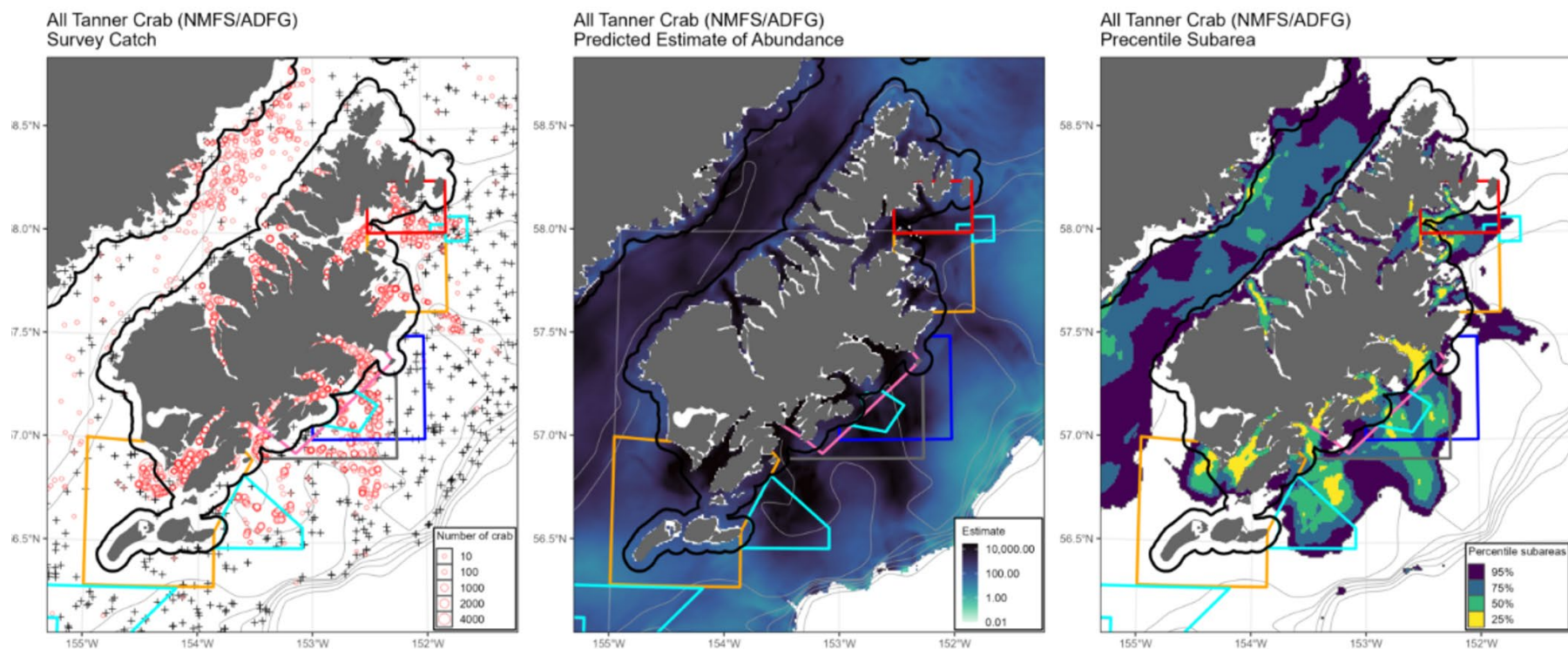


Figure 5-17 Combined SDM for all Tanner crab. This combines all Tanner crab from NMFS RACE GAP and ADF&G surveys for the period of interest (2012-2025). Left panel is a combined scaled survey catch. Black crosses indicate a survey point that caught zero Tanner crab; center panel is a continuous surface of the predicted estimates of abundance from the SDM; right panel is a map of the continuous SDM estimates binned into percentile subareas, with yellow denoting hot spot areas . Source: NMFS AKRO HCD/SF.

5.3.4 Tanner Crab PSC

As noted in Table 5-25, annually, Tanner crab PSC in the CGOA is dominated by statistical areas 525702 and 525630, with 525702 consistently contributing the largest share and 525630 the second largest. Of the two proposed closure areas, the custom area represents a substantial and consistent amount of PSC relative to statistical area 525702. From a gear perspective, nonpelagic trawl overwhelmingly accounts for the majority of PSC, driving both overall levels and interannual variability, including the pronounced peak in 2020. Pot gear contributes a secondary but occasionally notable share, particularly in earlier years, while pelagic trawl contributions are minimal. Overall, PSC is highly concentrated both geographically and by gear, with nonpelagic trawl in core and custom areas accounting for most removals.

Table 5-25 Central Gulf of Alaska Tanner crab PSC with identified statistical areas by gear, 2012-2025 (number of crab). *Custom = proposed custom closure area, Alt. 2, Element 1, Option 2. This is a portion of 525702, 525630, 535632, and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	85,231	240,387	63,983	75,939	91,116	121,500	226,197	243,335	651,473	13,537	7,285	13,149	32,394	15,511	134,357
525630	33,302	56,056	12,625	1,682	10,057	11,012	28,660	25,504	113,856	*	*	3,364	5,842	1,225	21,737
525702	16,554	98,142	27,755	50,713	29,953	27,693	57,895	108,239	166,349	8,287	2,750	1,290	10,869	6,936	43,816
535632	521	15,736	2,779	865	3,231	19,935	*	*	103,541	*	*	1,999	5,934	0	13,224
535704	0	0	0	0	0	0	*	*	0	0	0	0	0	0	42
Custom*	21,752	99,904	27,492	45,531	28,931	27,956	59,451	101,847	177,138	7,540	2,568	1,955	11,197	6,430	44,264
Other C G	34,855	70,454	20,824	22,679	47,875	62,861	112,305	106,703	267,727	3,768	3,928	6,495	9,749	7,350	55,538
Pot	111,949	311,953	36,117	63,792	38,002	2,383	11,330	13,104	43	10,837	4,519	6,413	4,753	1,940	44,081
525630	6,800	4,879	86	680	1,509	28	*	0	0	0	*	*	*	0	1,015
525702	7,565	3,666	297	4,476	3,672	92	0	0	0	*	*	*	138	0	1,427
535632	*	*	*	711	25	*	0	0	0	*	0	0	0	0	318
535704	*	*	*	0	0	*	*	0	0	*	0	0	*	0	182
Custom*	7,285	3,023	200	2,795	2,430	61	0	0	0	233	0	0	118	0	1,153
Other C G	92,249	302,844	35,640	57,926	32,795	2,260	11,330	13,104	43	10,514	4,519	6,413	4,381	1,940	41,140
Pelagic Trawl	371	1,350	0	124	0	0	689	162	180	1,877	443	859	1,284	21	526
525630	187	0	0	62	0	0	157	0	18	0	88	0	0	0	37
525702	123	1,350	0	0	0	0	91	55	55	260	18	267	1,072	3	235
535632	0	0	0	0	0	0	35	1	0	1	10	0	0	0	3
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom*	227	1,323	0	35	0	0	186	54	65	255	70	261	1,051	3	252
Other C G	61	0	0	62	0	0	407	105	106	1,616	327	592	212	17	250
Total	197,551	553,691	100,101	139,856	129,118	123,884	238,216	256,601	651,696	26,251	12,247	20,420	38,430	17,472	178,964

During the proposed February 15 to June 15 closure period, total PSC is reduced relative to annual totals, but the spatial distribution remains consistent, with 525702 and 525630 continuing to contribute the largest proportions (Table 5-26). Additionally, the custom area relative to statistical area 525702 reported the largest amount of Tanner crab PSC. Gear patterns remain similar to the annual view: nonpelagic trawl is the dominant source of PSC, including during the large 2020 spike. Pot gear contributes modestly, and pelagic trawl remains a minor component. Overall, PSC during this period is still concentrated in the custom area, statistical area 525702, and statistical area 525630, and is primarily driven by nonpelagic trawl activity.

Table 5-26 Central Gulf of Alaska Tanner crab PSC with identified statistical areas by gear Feb 15 to Jun 15th, 2012-2025 (number of crab). *Custom = proposed custom closure area, Alt. 2, Element 1, Option 2. This is a portion of 525702, 525630, 535632, and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	12,219	37,243	12,255	19,012	60,247	22,815	30,305	91,087	603,248	388	2,836	2,289	13,763	7,329	65,358
525630	3,606	14,744	1,776	388	7,777	5,385	6,146	17,955	109,356	*	142	*	2,510	777	12,215
525702	2,053	7,891	1,308	12,990	15,144	10,810	3,345	23,716	153,451	74	490	198	5,549	4,588	17,258
535632	287	502	109	*	954	348	*	137	94,590	*	0	*	2,131	0	*
535704	0	0	0	*	0	0	*	0	0	0	0	0	0	0	*
Custom*	2,599	10,144	1,542	11,643	15,159	10,769	4,910	24,885	164,266	66	466	284	5,573	4,246	18,325
Other C/G	6,273	14,107	9,062	5,625	36,372	6,272	18,743	49,279	245,850	310	2,205	1,374	3,572	1,964	28,642
Pot	39,681	238,411	26,870	43,908	3,733	407	2,204	6,435	13	5,512	3,618	4,233	1,815	1,506	27,025
525630	0	0	0	0	0	*	0	0	*	*	*	*	*	0	*
525702	0	0	0	0	0	14	0	0	0	0	*	*	0	0	1
535632	0	0	0	0	0	*	0	0	0	0	0	0	0	0	*
Custom*	0	0	0	0	0	8	0	0	0	0	0	0	0	0	1
Other C/G	39,681	238,411	26,870	43,908	3,733	393	2,204	6,435	*	*	3,618	4,233	*	1,506	27,024
Pelagic Trawl	0	0	0	124	0	0	193	0	0	15	314	831	0	12	106
525630	0	0	0	*	0	0	0	0	0	0	*	*	0	0	11
525702	0	0	0	*	0	0	0	0	0	*	*	*	0	0	18
535632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
535704	0	0	0	*	0	0	0	0	0	0	0	0	0	0	0
Custom*	0	0	0	35	0	0	0	0	0	0	50	244	0	0	24
Other C/G	0	0	0	62	0	0	193	0	0	*	225	581	0	12	78
Total	51,900	275,655	39,124	63,044	63,980	23,223	32,702	97,523	603,261	5,915	6,768	7,353	15,578	8,848	92,489

In the April 1 to June 15 proposed closure time period, Tanner crab PSC declines further, indicating that a large portion of annual Tanner crab PSC occurs prior to April. Despite lower totals, the spatial pattern remains stable, with 525702 and 525630 continuing to account for most PSC. Among the proposed closure areas, the custom area had the highest Tanner crab PSC relative to statistical area 525702. Gear composition is consistent with earlier periods: nonpelagic trawl continues to account for the majority of Tanner crab PSC, though at lower absolute levels, while pot gear contributions are minimal and pelagic trawl remains negligible.

Table 5-27 Central Gulf of Alaska Tanner crab PSC with identified statistical areas by gear Apr 1 to Jun 15th, 2012-2025 (number of crab). *Custom = proposed custom closure area, Alt. 2, Element 1, Option 2. This is a portion of 525702, 525630, 535632, and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	8,021	13,701	3,544	9,516	43,860	13,269	19,369	35,448	527,036	292	2,592	2,288	12,663	7,329	49,923
525630	2,389	5,130	707	0	7,263	1,845	1,913	1,518	100,366	*	*	*	2,510	777	8,928
525702	1,494	2,640	474	8,651	9,103	6,532	1,324	6,489	137,854	*	*	*	5,549	4,588	13,241
535632	164	87	8	0	881	263	*	137	65,394	*	0	*	2,131	0	*
535704	0	0	0	0	0	0	*	0	0	0	0	0	0	0	*
Custom*	1,840	3,431	571	7,700	9,671	6,214	2,217	6,101	147,036	60	397	284	5,573	4,246	13,953
Other C G	3,974	5,843	2,355	865	26,613	4,630	14,175	27,304	223,422	225	2,047	1,373	2,473	1,964	22,662
Pot	0	903	1,258	229	0	144	181	0	6	444	214	47	2	42	248
525630	0	0	0	0	0	0	0	0	0	0	0	*	0	0	*
525702	0	0	0	0	0	*	0	0	0	0	0	*	0	0	*
Custom*	0	0	0	0	0	*	0	0	0	0	0	0	0	0	1
Other C G	0	903	1,258	229	0	*	181	0	6	444	214	*	2	42	247
Pelagic Trawl	0	0	0	0	0	0	114	0	0	0	147	831	0	1	78
525630	0	0	0	0	0	0	*	0	0	0	*	*	0	0	6
525702	0	0	0	0	0	0	*	0	0	0	*	*	0	0	18
Custom*	0	0	0	0	0	0	0	0	0	0	*	*	0	0	21
Other C G	0	0	0	0	0	0	*	0	0	0	*	581	0	1	54
Total	8,021	14,604	4,802	9,745	43,860	13,414	19,663	35,448	527,042	735	2,953	3,166	12,665	7,373	50,249

Across the full 2012–2025 period for CGOA Tanner crab PSC rates, patterns are strongly driven by nonpelagic trawl and a small number of statistical areas (notably 525630, 525702, and 535632 and the proposed custom closure area). Early in the time series, PSC rates are generally moderate, but there is a pronounced escalation beginning around 2017 and peaking in 2018–2020, with 2020 standing out as the highest year across most series (e.g., nonpelagic trawl and multiple stat areas). After 2020, PSC rates decline sharply across nearly all areas and gear types, returning to comparatively low levels by 2021–2025. Pelagic trawl remain consistently low throughout, with minimal contribution to overall PSC rates relative to nonpelagic trawl and pot gear.

Table 5-28 Central Gulf Catch Tanner Crab PSC Rate with Identified Statistical Areas by Gear, 2012-2025 (Crab per Ton of Groundfish). Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	1.30	3.09	0.67	1.12	1.41	1.82	4.15	4.13	11.93	0.36	0.19	0.40	0.70	0.38	2.34
525630	5.10	5.42	1.35	0.40	2.03	1.89	6.46	4.30	34.69	0.48	1.32	3.04	2.49	0.58	4.90
525702	1.95	10.68	2.63	5.39	2.92	4.97	9.32	10.81	22.14	2.13	1.44	0.95	1.87	1.38	6.44
535632	0.38	7.22	2.35	1.66	3.65	17.37	13.09	4.46	46.86	1.68	0.16	*	4.40		12.73
535704				*			*	*							7.85
Custom*	2.42	9.55	2.41	4.90	2.83	4.48	8.98	9.99	23.66	2.02	1.43	1.34	1.95	1.31	6.29
Other CG	0.71	1.26	0.28	0.42	0.98	1.16	2.69	2.52	6.44	0.12	0.11	0.21	0.27	0.22	1.23
Pot	4.82	19.78	1.63	2.65	1.78	0.20	2.98	2.61	0.01	1.09	0.35	0.66	0.41	0.14	3.26
525630	4.07	3.27	0.13	1.74	3.18	*			0.00	0.00	*	*	*	0.00	2.88
525702	5.58	4.04	0.29	3.25	6.03	0.25				*	*	*	*	0.00	3.30
535632	4.72	2.17	*	1.78	0.55	*				*				0.00	2.64
535704	*	*	*		*	*				*					6.51
Custom*	5.88	3.83	0.27	3.14	5.56	0.24	#DIV/0!	#DIV/0!	0.00	2.16	0.00	0.00	1.37	0.00	3.44
Other CG	4.78	23.05	1.76	2.65	1.62	0.20	2.98	2.61	0.01	1.07	0.35	0.67	0.38	0.14	3.27
Pelagic Trawl	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.01	0.01	0.04	0.00	0.01
525630	0.50	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.09	0.00	0.40	*	0.00	0.00	0.01
525702	0.02	0.21	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.13	0.01	0.15	0.24	0.00	0.03
535632		*	0.00	0.00	0.00	*	0.08	0.00	0.01	0.00	0.01	0.00	*	0.00	0.00
535704				*	0.00						*				0.00
Custom*	0.03	0.16	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.11	0.02	0.13	0.24	0.00	0.02
Other CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.00
Total	1.24	3.26	0.42	0.62	0.64	0.58	1.31	1.62	5.57	0.24	0.10	0.19	0.41	0.19	1.15

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

For the proposed time closure February 15–June 15, PSC rates are generally elevated relative to the full-year averages, with the same structural pattern of a sharp peak around 2020 followed by a steep decline. Nonpelagic trawl again contributes the highest proportion, reaching high rates in 2020, while statistical areas 525630, 525702, 535632, and the proposed custom closure area show especially large spikes in that year. Pot gear shows episodic early-period contributions but declines to near-zero or negligible levels in later years, and pelagic trawl remains essentially insignificant throughout. Overall, this seasonal window amplifies the same spatial and temporal concentration seen in the annual data, particularly around the key stat areas and the custom closure area.

Table 5-29 Central Gulf Tanner Crab PSC Rate with Identified Statistical Areas by Gear Feb 15th to Jun 15th, 2012-2025 (Crab per Ton of Groundfish). Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	0.44	1.17	0.32	0.70	2.05	0.85	1.50	3.19	20.19	0.04	0.20	0.19	0.87	0.55	2.81
525630	1.00	2.00	0.32	0.25	2.55	1.13	2.61	4.18	61.20	0.01	0.88	1.21	3.42	2.01	4.71
525702	0.80	2.33	0.55	5.54	3.87	3.66	2.08	5.95	38.47	0.20	0.88	0.36	3.08	2.01	7.39
535632	0.52	0.42	0.25	0.04	3.18	1.17	2.48	0.39	48.53	*		3.55	*		15.87
535704				*			*								9.55
Custom*	0.85	2.20	0.47	4.81	3.67	2.95	2.44	5.57	40.83	0.17	0.88	0.50	3.14	2.01	6.92
Other CG	0.30	0.71	0.30	0.25	1.65	0.33	1.20	2.47	11.10	0.03	0.17	0.13	0.28	0.18	1.60
Pot	4.18	29.46	2.97	4.44	0.41	0.07	1.30	3.67	0.01	1.22	0.57	0.79	0.38	0.24	4.50
525630						*			*	*	*	*	*		0.00
525702						0.08					*	*			0.05
535632						*									0.00
Custom*						0.08			0.00	0.00	0.00	0.00	0.00		0.05
Other CG	4.18	29.46	2.97	4.44	0.41	0.07	1.30	3.67	0.01	1.23	0.57	0.81	0.38	0.24	4.52
Pelagic Trawl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00
525630				*	*	*	*				*	*		*	0.34
525702		*		0.00	*	*			*	*	*	1.32			0.19
535632					*										0.00
535704				*											0.00
Custom*		0.00		0.04	0.00	0.00	0.00		0.00	0.00	0.98	0.95		*	0.21
Other CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Total	0.67	4.42	0.34	0.53	0.76	0.28	0.42	1.50	10.66	0.11	0.11	0.13	0.40	0.18	1.31

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

*Custom closure is a portion of 525630, 525702, 535632 and 535704

For the April 1–June 15 proposed closure period, PSC rates are the most extreme and spatially concentrated of the three datasets, with 2020 again representing a clear peak across nearly all statistical areas and gear types. Nonpelagic trawl shows very high intensity during this window, while individual stat areas—especially 525630 and 525702—exhibit some of the highest observed PSC rates in the entire series. The proposed custom area closure likewise reaches its maximum values during this period, reflecting the cumulative effect of the contributing stat areas under the custom closure configuration. After 2020, PSC rates across all areas fall rapidly and remain low through 2021–2024. Pot gear shows only limited and sporadic PSC during this window, and pelagic trawl remains negligible. Overall, this seasonal subset highlights that the most intense CGOA Tanner crab PSC interactions are highly concentrated in late-spring months, tightly linked to a small set of statistical areas as well as the proposed custom closure area.

Table 5-30 Central Gulf Tanner Crab PSC Rate with Identified Statistical Areas by Gear Apr 1st to Jun 15th, 2012-2024 (Crab per Ton of Groundfish). Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	0.46	0.81	0.13	0.47	1.85	0.65	1.20	1.86	20.30	0.03	0.22	0.23	0.97	0.64	2.88
525630	1.27	1.52	0.18	0.00	2.56	0.81	1.95	1.46	71.17	0.00	0.90	1.60	3.42	2.56	6.19
525702	0.95	1.50	0.26	5.89	3.56	2.41	1.49	3.21	44.61	*	*	0.45	3.08	2.17	8.26
535632	1.45	0.81	0.18	0.00	4.09	0.92	2.42	0.61	81.11			3.55	*		24.46
535704							*								*
Custom*	1.02	1.50	0.23	5.15	3.36	2.14	2.04	3.01	47.63	0.86	2.34	0.62	3.14	2.18	8.00
Other CG	0.29	0.50	0.11	0.05	1.47	0.30	1.04	1.73	10.82	0.03	0.18	0.15	0.24	0.22	1.61
Pot		5.96	5.56	1.72	0.00	0.10	0.69	0.00	0.01	0.15	0.07	0.02	0.00	0.01	0.18
525630									*	*	*	*	*		0.00
525702						*						*			0.10
Custom*						*		0.00	0.00	0.00	0.00	0.00	0.00		0.09
Other CG		5.96	5.56	1.72	0.00	0.10	0.69	0.00	0.01	0.15	0.07	0.02	0.00	0.01	0.18
Pelagic Trawl	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.06	0.00	0.00	0.01
525630						*	*				*	*		*	0.22
525702						*						1.32			1.31
Custom*						0.00	0.00				1.35	0.95		0.03	0.72
Other CG	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.01
Total	0.41	0.84	0.15	0.22	1.41	0.53	0.95	1.47	15.90	0.03	0.11	0.12	0.56	0.25	1.88

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

*Custom closure is a portion of 525630, 525702, 535632 and 535704

5.3.5 Effects of Alternatives on Tanner Crab

Alternative 1

Alternative 1 would maintain all elements of the existing closures for Tanner crab in the Central GOA. Under Alternative 1, Tanner crab PSC would be expected to continue at levels similar to what has been observed historically, varying by season, year, area, and gear type.

The proposed closure areas under consideration in Alternative 2 are largely located within the ADF&G Eastside and Southeast Sections of the Kodiak District, which contain the highest average proportion of the Tanner crab population in this district. For example, in 2025, the total Kodiak District Tanner crab abundance was estimated to be 85.2 million crab, of which the Eastside Section comprised 30% and the Southeast Section 34%. The Eastside Section had the highest estimated number of mature males (1,942,969 crab) as compared to all other sections in that same year, and for the last five years, has had the highest proportion of mature males by far (Table 2 in FMR No. 26-05; Spalinger et al 2026). In 2025, the number of mature females was higher in the Southeast Section (7.28 million crab) than the Eastside Section (2.77 million).

Historical patterns in Tanner crab PSC have been consistent with this spatial distribution in abundance. From 2020 to 2025 the majority of Tanner crab PSC in the GOA occurred in nonpelagic trawl fisheries targeting arrowtooth flounder, followed by fixed gear (i.e., pot gear) fisheries targeting Pacific cod. Within the Central GOA management area, Tanner crab PSC was shown to be concentrated in a relatively small number of statistical areas, particularly 525702, 525630, and 535632. However, Tanner crab PSC was also relatively concentrated in adjacent statistical areas overlapping the Chiniak Gully and outside the areas being considered under Alternative 2, Element 1. The State of Alaska does not have an observer program for directed Tanner crab pot or State-waters Pacific cod pot fishing. Although some Pacific cod pot fishing is included in the fixed gear observer coverage pool if the vessel retains any IFQ, fishes a parallel fishery, or fishes in federal waters. Therefore, the extent of Tanner crab PSC in these fisheries is unknown.

Section 5.3.2 describes the cyclical patterns of Tanner crab abundance in the Kodiak District since 2000 with overall indications of rebounding following the change in harvest strategy to reduce fishing pressure (Figure 5-14, Figure 5-15). However, the harvest strategy for Tanner crab in the Kodiak District was modified again in 2021, which has afforded additional protections to the stock, but the realized effects of this management change are not yet known. On a localized level, specifically in the proposed closure areas (Alt. 2, Element 1, Options 1 and 2), the population is on a downward trend and is at the second lowest point in overall estimated abundance in the period of analysis (2012-2025) following several years of the highest population in the time period. In proposed closure area 525702 (Alternative 2, Element 1, Option 1), mature male crab are at the 3rd lowest in the time period, and mature female crab are at their lowest estimated abundance in the time period. In the custom closure area (Alternative 2, Element 1, Option 2) trends are similar, with estimate mature male abundance at its 4th lowest in the time period of analysis, and estimate mature female abundance at the 5th lowest (

Table 5-23, Table 5-24). Although there is no stock assessment to evaluate the combined effects of fishing mortality, PSC, and environmental variability, the Kodiak District Tanner crab fishery has generally remained open since 2000 because abundance of mature males (and later also of mature females) were sufficient enough to meet minimum GHL thresholds. Closures were issued in five years (2014-2017, 2021) as the minimum thresholds were not met.

Therefore, under Alternative 1, Tanner crab PSC occurring in the Central GOA groundfish fisheries would continue to represent an ongoing source of mortality. However, given the observed cyclical population dynamics and the ability of the stock to support a directed fishery in most years (2020-2026), the relative impacts of PSC removals are expected to be adverse but do not appear to be significant at the population level.

Alternative 2

Alternative 2 would close an area to groundfish fishing, thereby redistributing fishing effort and potentially changing PSC depending on the options and suboptions selected. Potential impacts may vary depending on the crab life stage that is prioritized for protection, and therefore which closure duration and/or gear type options are selected based on those life stages. Fishing with NPT, PTR, and groundfish pot gear has occurred in both proposed closure areas (Alt. 2, Element 1, Option 1: statistical area 525702 and Option 2: custom closure), although after the Pacific cod stock collapse in 2018, federal groundfish pot fishing largely shifted outside these areas.

PSC amounts and rates are common metrics to understand the magnitude of groundfish fishing interactions with crab; however, low observer coverage rates in the Kodiak area translate to higher uncertainty in PSC counts. Additionally, Tanner crab are found in patchy distributions and are not fully censused on a vessel by an observer, so various levels of extrapolation could result in either overestimates or underestimates of Tanner crab. Observer coverage in 2020 was lower due to COVID and estimates were extrapolated from data with coarser resolution. Selectivity for Tanner crab by gear also varies widely. Pelagic trawl gear may interact with Tanner crab so Tanner crab PSC may be underrepresented. Additional uncertainty in PSC estimates can be attributed to the alternative method of using proportions of observer data to determine PSC within a custom boundary, which could perhaps be improved in the future when the CIA 2.0 database is available. This level of uncertainty in crab PSC counts means that if estimates are similar across time or between options, it may not be a clear deciding factor on what options have the most impact. The impacts of the relative intensity of fishing and associated PSC in a specific area versus a broader area are also difficult to quantify, though it is reasonable to assume that higher intensity fishing in the same areas may have greater localized impacts.

Juvenile and adult Tanner crab are likely to benefit from reduced observed and unobserved mortality within the proposed closure areas., though it is unclear to what extent as unobserved mortality likely varies by gear type, gear component, crab species (Section 5.3.1.5). While unobserved mortality and its impact to the stock cannot be quantified, the exclusion of fishing gears that contact the bottom from these areas would presumably reduce unobserved mortality on the Tanner crab population in this area. As summarized in Section 5.1.2.2, some bottom contact occurs for all fishing gears. It is reasonable to assume that a reduction in groundfish fishing and associated bottom contact area would equate to a higher proportion of crab surviving in that specific area. Potential impacts at a population level are not able to be determined.

Predation on Tanner crab from groundfish species may be an important source of mortality to consider; however, the magnitude to which predation may impact the Kodiak-area Tanner stocks in the area of interest is unknown. The gully systems seem to be productive not only for Tanner crab but also some groundfish species, including those that are known predators (e.g., Pacific cod, skates, halibut, etc.), so it is reasonable to assume that predation plays some role. At this time, impacts from Alternative 2 on predation rates cannot be quantified, but if fishing is displaced from one of the proposed closure areas (Alt. 2, Element 1, Option 1 or 2), this may change the predation dynamics.

Immediately adjacent to the proposed closure areas being considered under Alternative 2, Element 1, are several closures (SSL closures, state waters closure, and the Type II Barnabas Area). The potential separate or interdependent effects of these existing area closures, in terms of the potential conservation benefit to Tanner crab, with or without an additional closure under Alternative 2 cannot currently be determined. However, these areas are expected to provide some degree of incidental protection to the local Tanner crab population as they restrict nonpelagic trawl gear fishing.

In the motion for this analysis, the Council has indicated an intention to establish criteria and a timeline to review the effectiveness of the proposed closure area. See the discussion in Section 7 on Alternative 3 for considerations.

Location (Alternative 2, Element 1, Options 1, 2)

Unique to this area are gully systems connected to embayments that may reliably predict the most persistent portions of the Tanner crab population detected by the ADF&G and NOAA RACEGAP survey (5.3.1.3, Appendix 2). Tanner crab associate with the complex Kodiak Island bays and the gullies that extend from them as demonstrated by ADF&G survey abundance information, species distribution model results, locations of PSC encounters, and research on positive associations with soft sediment. PSC encounters occur in areas outside gully systems, but to a comparatively minimal extent. The reproductive proportion of the population – meaning mature male and female crabs – are more often found further offshore in the gully systems. Ugak Bay and the gully south of it (in the Barnabas Gully area) contain the highest density of crab, but other gullies, especially those to the west of Ugak Bay, are also productive areas for Tanner crab. Species distribution model results and maps also confirm the importance of the bays and gully systems, as well as other areas of bathymetric relief that offer crab refuge from tidal currents. According to ADF&G traditional tagging research in the early 2000s and other past Tanner crab research (Section 5.3.1.1), Kodiak area Tanner crab are not thought to migrate far (not crossing regulatory boundaries) and mainly undergo ontogenetic migration further offshore as they mature. Further research is needed to understand population connectivity among gully systems around Kodiak Island as well as wintering locations. ADF&G survey biologists have also observed a pattern of spatial segregation of mature and female Tanner crab, and of multiparous females mounding during mating. All of these aspects indicate that the Tanner crab population is fairly predictable in terms of location, and that the population within a gully is likely connected but impacts to a specific subportion of the local Tanner crab stock (e.g., mature males vs females) may be variable and difficult to predict (see SDM maps in Appendix 2, and Figure 5-15, Figure 5-16, and Figure 5-17).

Although the Tanner crab population in the Kodiak area seems to be persistent in location, quantifying the relative importance and benefit of a specific subarea (e.g., Barnabas Gully) to the entire Kodiak area Tanner crab population is not possible at this time. While it is also not possible to quantify the magnitude of conservation benefits due to reduction in Tanner crab PSC inside either closure area proposed under Alternative 2, Element 1, the information provided in the analysis may act as a way to infer potential Tanner crab reliance on habitat in these areas, or areas in which additional fishing pressure may impact the stock. Given the information provided in this analysis, it can be assumed that the Barnabas Gully region is productive for Tanner crab, and the effects under Alternative 2 would likely reduce gear interactions with crab.

The gullies and other areas of bathymetric relief may also be productive systems for groundfish. ADF&G survey results from 2021-2025 indicate co-location of groundfish species in the gully systems, with the highest amount, by weight, of species caught include arrowtooth flounder, flathead sole, and walleye pollock (Figure 5-10). Spatial patterns of historical NPT and PTR fishing differed somewhat by target but were often in statistical areas that contained gully systems, especially Barnabas Gully and Chiniak Gully, the next gully system to the north. Catch density maps (Section 3.1.3.3 and 3.1.4.3) and bottom contact maps by gear type indicate that fishing with nonpelagic and pelagic trawl gear is densest in Barnabas Gully directly over known concentrations of Tanner crab, spanning both proposed closure areas (Alt. 2,

Element 1, Options 1 & 2) and statistical area 525630. Catch densities also appear in adjacent statistical area 535632 and in Chiniak Gully to the northeast, plus other locations further to the northeast and the west side of Kodiak Island. These areas of historical fishing may be indications of where displaced fishing may occur.

Both Alt. 2, Element 1, Option 1 (525702) and Option 2 (“custom closure”) contain a portion of Barnabas Gully, the most productive gully system around Kodiak Island. However, the custom closure (Alt. 2, Element 1, Option 2) contains a larger amount of the Barnabas gully system on its southern and western boundaries, and also a higher proportion of the east side Tanner crab population in 2025 (3.2 million crab in area 525702, and 10.7 million crab in the custom area; see

Table 5-23, Table 5-24, Figure 5-12; Figure 5-15, Figure 5-16, and Figure 5-17). However, when comparing the annual average catch by gear (Table 3-16), the custom closure would displace somewhat more groundfish fishing than area 525702 (primarily from NPT flatfish and PTR pollock target fishing activity). Estimates of Tanner crab PSC, on an annual basis, are fairly similar between both closure area options, but is slightly higher, on average, in the custom closure (Table 5-25). This is likely due to the higher amount of catch in the proposed custom closure area, the fact that the proposed custom closure area includes a higher percentage of the Tanner crab population, and that the custom closure contains more of the predicted hotspots in the SDMs (Figure 5-15, Figure 5-16, and Figure 5-17). Overall, the custom closure (Alt. 2, Element 1, Option 2) may potentially afford higher degree of protection to Tanner crab from observed and unobserved fishing mortality than statistical area 525702 (Alt. 2, Element 1, Option 1).

Closure duration (Alternative 2, Element 2, Options 1, 2a, 2b)

The Council proposes to minimize groundfish fishery interactions during life stages where Tanner crab are vulnerable to fishery interactions using seasonal fishing limitations (Option 1: year-round; Option 2a: February 15 – June 15; Option 2b: April 1 – June 15).

Assumed vulnerability by crab life stage to fishing gear interactions varies (see Section 5.3.1.4). Tanner crab are likely most vulnerable when they have just molted and are soft-shelled, when they carry egg clutches, and when the egg clutches are hatching. This also includes benthic juveniles, who are assumed to molt once per year; and mature male crab that are molting to maturity. However, crab of any shell condition are presumably vulnerable to impacts from fishing gear. Although Tanner crab of various life stages are co-located to some extent, the highest proportion of the population in the proposed closure areas (Alt. 2, Element 1, Options 1 or 2) are mature males and both primiparous and multiparous female crab.

The most vulnerable Tanner crab life stage is likely primiparous female crab with a new egg clutch as they are soft-shelled and carrying egg clutches with an abdominal flap that would presumably be additionally vulnerable to fishing gear interactions as the flap is not fully internal. Multiparous females, though no longer molting, also carry egg clutches in an abdominal flap. Both primiparous and multiparous females incubate egg clutches for 11-12 months, which hatch during the spring molting & mating cycle. This indicates that a year-round closure duration (Option 1) may provide the most conservation benefits to protect soft-shell crab with egg clutches from potential interactions with fishing gear.

The peak in molting and mating for both mature male and female Tanner crab is thought to be in April and May, though based on observations of soft-shell crab during the summer ADF&G survey and other research (see Section 5.3.1.4), Feb – July seems to be the most vulnerable time of the year for soft-shell crab. It is unclear how long it takes a Tanner crab shell to harden and when primiparous females begin their terminal molt for mating, therefore the window for which soft-shell crab are vulnerable may extend before and after the Feb – July timeframe. The proposed closure duration of Feb 15-June 15 (Option 2a) would cover a majority of this time period and would presumably provide some conservation benefits to protect Tanner crab from fishing interactions. The proposed closure duration option of Apr 1-June 15 (Option 2b) would cover what is thought to be the peak in molting and mating activities but would provide less conservation benefits relative to Option 2a as Tanner crab are thought to be soft-shelled outside this window of time.

Fishing with nonpelagic trawl gear for the open access arrowtooth and shallow-water flatfish fisheries, and with pelagic trawl gear in the open access pollock fishery, occurs in both proposed closure areas (Alt. 2, Element 1, Options 1 & 2) but varies seasonally. NPT fishing activity in the open access arrowtooth flounder and shallow-water flatfish fisheries occurs year-round in this region, with peaks in fishing activity and Tanner crab PSC counts in April and Sept/October. The April peak in fishing aligns with what is thought to be the peak in molting and mating activities. The peak in September and October is

outside the window that Tanner crab are thought to be soft-shell and more vulnerable. Therefore, a year-round closure (Option 1) would likely provide the most conservation benefits to protect crab from fishing interactions and potential unobserved and observed mortality. The seasonal closure from Feb 15 – Jun 15 (Option 2a) would provide less conservation benefits relative to the year-round closure; however, Option 2a covers a majority of the time period in which crab are thought to be soft-shell. The seasonal closure from Apr 1 – Jun 15 (Option 2b) would provide less conservation benefits relative to the other seasonal closure duration (Option 2a) but would still protect soft-shell crab from observed and unobserved mortality during the peak in both NPT fishing and the molting and mating cycle.

Fishing in the open access pollock fishery with pelagic trawl gear primarily occurs during B season on the east side of Kodiak Island, peaking in September. This aligns with the timing of PTR PSC, which mainly occurs outside the Feb 15 – June 15 window. These Fall peaks in fishing and PSC are outside the Feb-July timeframe when crab are thought to be soft-shell and most vulnerable. Therefore, a year-round closure to pelagic trawl gear would be the only timeframe that may provide a conservation benefit by reducing potential gear interactions.

However, if fishing for any of these targets is displaced elsewhere into areas with known concentrations of crab, conservation benefits could be marginalized to some degree. For fishing with nonpelagic trawl gear, all of the closure duration options could displace at least a portion of fishing as fishing peaks are in the spring and fall. Catch track density maps (Section 3.1.3.3 and 3.1.4.3) suggest that historical NPT fishing (aggregated across target fisheries and the entire time period) is less widespread during the seasonal closure options (Options 2a or 2b), suggesting that there are fewer areas for vessels fishing with NPT to choose from as compared to times of the year outside the seasonal closure options (June 15– Jan). The catch track density maps (Figure 3-1, Figure 3-2) and bottom contact maps confirm that fishing with NPT occurs outside either proposed closure area (Alt 2, Element 1, Options 1 & 2) in adjacent statistical areas at all times of the year. Therefore, during any closure duration option (Alt. 2, Element 2, Options 1, 2a, & 2b) if fishing is displaced immediately south, southwest, or east to locations of historical fishing activity that overlap with higher areas of Tanner crab abundance, conservation benefits could be marginalized to some degree.

Statistical areas 525630 and 535632 are adjacent to, or are partially contained within, the proposed closure areas (Alt. 2, Element 1, Options 1 and 2) and may likely be areas for displaced fishing to occur, if fishing is displaced at all from the proposed action. For NPT fishing during the year-round closure duration (Option 1), the highest average Tanner crab PSC over the time period was from the custom closure (Alt. 2, Element 1, Option 2), then statistical area 525702 (Alt. 2, Element 1, Option 1), then statistical areas 525630 and 535632. However, the highest average Tanner crab PSC rates for the entire time period for any proposed closure duration (Alt. 2, Element 2, Options 1, 2a, or 2b) was in statistical area 535632. Tanner crab PSC rates for statistical area 525630 were lower than 535632 or 525702 during any closure duration option. This suggests that if displaced fishing were to take place in 535632, the accrued benefits to the local Tanner crab population from restricting fishing in the proposed closure areas may be lessened, and if displaced fishing occurred in 525630, the accrued benefits may be neutral or increased.

For PTR fishing, Tanner crab PSC rates are much lower than NPT during all closure duration options (Alt. 2, Element 2, Options 1, 2a, or 2b) and in all statistical areas of interest. However, for the minimal fishing that does occur on the east side during the seasonal closure duration options (Options 2a and 2b), the rates are higher in 525702 and 525630. Catch track density maps and bottom contact maps of PTR fishing activity indicate that fishing for pollock is widespread year-round because it combines west-side A season fishing and east side B season pollock fishing. However, minimal to no fishing occurs in the proposed closure areas or the adjacent statistical areas during the seasonal closure duration options (Option 2a and 2b), confirming the importance of the east side area to B season pollock fishing. This demonstrates that seasonal closures may have little effect on pollock PTR fishing and associated Tanner crab PSC, but the year-round closure could have a large impact on B season fishing locations.

If fishing were displaced during the year-round closure duration option (Option 1), displaced NPT and PTR fishing may also occur in other areas of historical fishing that overlap known concentrations of Tanner crab, such as 515700 and 515730. Tanner crab PSC rates are not yet available for those statistical areas, but these areas were in the top five for average Tanner crab PSC counts for both gear types. Displacement to these areas may also marginally offset the conservation benefits accrued by either proposed closure area.

Gear types (Alternative 2, Element 3, Options 1 and 2)

The Council proposes to minimize groundfish fishery interactions on Tanner crab from gear types using time and/or area-based gear closures. By gear type, nonpelagic trawl gear catches the highest amount of Tanner crab PSC, followed far behind by PTR and then POT gear (at least since 2018). This is in part because NPT gear is used to target fisheries, like shallow-water flatfish and arrowtooth flounder, that are normally concentrated near the seafloor with gear selectivity that could result in higher levels of observed Tanner crab PSC relative to PTR targeting pollock. It should be noted that although PTR PSC counts are lower, those PSC counts may not be representative of gear interactions with crab because the gear does not retain crab very well, and therefore unobserved mortality may be a factor (see Section 5.3.1.5). Under either Alternative 2, Element 3, Option 1 or 2, restricting NPT from this area may provide the greatest localized conservation benefits by reducing observed and unobserved mortality, but it is difficult to ascertain population level impacts. Under Alternative 2, Element 3, Option 1, additional restrictions to PTR fishing from this area would presumably provide further conservation benefits to Tanner crab due to reduced unobserved crab mortality. Tanner crab PSC from the use of pot gear is very low in the proposed closure areas (Alt. 2, Element 1, Options 1 & 2) as fishing efforts have shifted elsewhere since 2018, and therefore a restriction on this gear type (Alt. 2, Element 3, Option 1) would provide minimal to no conservation benefits if status quo fishing activities continue. However, Tanner crab PSC from groundfish POT gear has potential to change or become an important consideration if the Pacific cod TAC increases in the future.

As noted in Table 5-25, the highest amount of Tanner crab PSC from NPT occurred in the custom closure area (Alternative 2, Element 1, Option 2), although in the past five years, the amount of NPT Tanner crab PSC was very similar between both closure options (i.e., statistical area 525702 and the custom closure) when evaluated under a year-round closure (Alternative 2, Element 2, Option 1). However, the amount of nonpelagic trawl Tanner crab PSC observed in both closure options throughout the calendar year was greater than the observed Tanner crab PSC in statistical areas 525630 and 535632 which are only partially encompassed within the custom closure. The lower observed Tanner crab PSC in statistical areas 525630 and 535632 relative to the closure options under consideration is likely due to natural breakpoints in where the groundfish fisheries are prosecuted rather than lower Tanner crab abundance. This pattern can be observed in Figure 5-11, Figure 5-15, Figure 5-16, and Figure 5-17 that show the distribution of Tanner crab across the custom closures and in immediately proximate areas. If vessels using nonpelagic trawl gear were displaced from either statistical area 525702 or the custom closure for an entire year, and these vessels moved immediately south/southwest the potential conservation benefits to Tanner crab could be marginalized to some degree.

Potential Impacts from Displacement

This action has potential to restrict fishing due to area closures, time closures, or gear limitations, which could displace fishing efforts elsewhere. Under Alt. 2, Element 3, Option 1 (POT, PTR, and NPT), vessels that target open access shallow-water flatfish, arrowtooth, and Pacific cod with NPT would be most impacted in this region, followed by vessels that target open access pollock with PTR (Table 3-16). The proposed closure areas encompass the highest concentration of shallow-water flatfish harvest using NPT gear, a large volume of arrowtooth harvest from nonpelagic trawl gear, and a moderate volume of pollock harvested by pelagic trawl gear as compared to elsewhere (Section 3.1.3.2 and 3.1.4.2).

Historical fishing in these fisheries occurs in statistical areas immediately adjacent to the proposed closures that contain portions of the Barnabas and Chiniak gully system, which are also productive areas for the local Tanner crab population (see catch density maps, in Figure 3-1 and Figure 3-2). Changes to fishing activity in a given area, CPUE, and resulting PSC from displacement cannot be predicted at this time; however, it is reasonable to assume that a redistribution of some or all of the fishing activity could result in increased Tanner crab PSC and unobserved mortality elsewhere. Potential increases in Tanner crab PSC outside the closure area options would depend on factors such as co-location of fishing activities over an area of known Tanner crab abundance and CPUE. Some predicted hotspots of male and all Tanner crab abundance from SDMs are on or outside the southern border of the proposed closure areas (Alt. 2, Element 1, Options 1 & 2), and to the southwest. These hotspots coincide with areas of historical nonpelagic and pelagic trawl fishing and further indicate potential for an offset to potential conservation benefits.

As noted above, groundfish CPUE and Tanner crab PSC rates vary by time of year and area. The combination of the year-round closure duration (Alt. 2, Element 2, Option 1) and the custom closure area (Alt. 2, Element 1, Option 2) could displace the most NPT and PTR fishing. According to NPT historical catch, there are high concentrations of shallow-water flatfish in both proposed area closure options (Alt. 2, Element 1, Options 1 and 2), and the highest volume of arrowtooth flounder harvest as compared to elsewhere. If fishing with NPT for these targets were displaced by a year-round closure, and displaced fishing occurred just to the south in statistical area 525630 (Table 5-28) where PSC rates are currently lower, the impacts to PSC amounts may be lessened. If NPT fishing were displaced more to the southwest in statistical area 535632, PSC rates are higher, and impacts to PSC amounts may be adverse and at least marginally offset accrued benefits to the Tanner crab population.

Fishing with PTR in the open access pollock fishery in the proposed closure areas mainly occurs during the B season (Sept/Oct), therefore the year-round closure would displace a large volume of B season pollock fishing elsewhere. According to the catch density map (Figure 3-1), other B season fishing locations could be just south or southwest of the proposed closure areas in areas of varying Tanner crab PSC, or to the northeast in Chiniak Gully where Tanner crab PSC occurs but PSC rates are not yet known.

The seasonal closure duration from Feb 15 – June 15 (Alt. 2, Element 2, Option 2a), could displace a portion of fishing with NPT gear, presumably to nearby locations of historical fishing, such as statistical area 525630. This location has comparatively lower Tanner crab PSC rates from NPT than 525702 and may therefore decrease Tanner PSC amounts if PSC rates stayed the same during periods of higher fishing intensity in the fall. This seasonal closure option is not expected to displace much, if any, fishing for pollock with PTR.

The seasonal closure duration from Apr 1 – June 15 (Alt. 2, Element 2, Option 2b) could displace a smaller portion of historical fishing with NPT relative to the other seasonal closure (Alt. 2, Element 2, Option 2a), again, presumably to a nearby location of historical fishing such as statistical area 525630 or 535632. This seasonal closure option is not expected to displace much, if any, fishing for pollock with PTR.

Although Tanner crab seem to be fairly predictable in location and tagging suggests that large males do not move beyond regulatory boundaries, the connectivity between gully systems is unknown. If, for instance, connectivity is lower, impacts from observed and unobserved mortality from fishing may have greater impact on the local population and vice versa. If fishing pressure that was once spread across the length of Barnabas Gully is displaced from options under Alternative 2 and concentrated in a smaller area of the gully system, the impacts to the local Tanner crab stock from increased fishing intensity is unknown.

5.3.6 Effects From Reasonably Foreseeable Environmental Trends and Planned Action in the Action Area on Tanner crab

With lower recruitment in recent years (Figure 5.16), and a smaller cohort of male crab projected to recruit to legal size, the potential for future closed fishing seasons due to stock size is likely.

Potential sources of mortality on Tanner crab other than that from directed fishing are included in Section 5.3.1.5, and are not repeated here, but should be considered as potential impacts to Tanner crab in this area. Additional potential sources of mortality are from handling and discard, and disease. Causes of discard mortality may be attributed to handling which may result in physical injury, on-deck anoxia, and/or cold (freezing) temperature stress. Mortality from being discarded can occur immediately at the time of capture or can be delayed after the organism is returned to the sea. As a comparison in Bering Sea fisheries, the 2025 Stock Assessment and Fishery Evaluation (SAFE) Report for Eastern Bering Sea Tanner crab assumes discard mortality rates of 31.2% in crab fisheries, 50% in fixed gear groundfish fisheries, and 80% in trawl sector groundfish fisheries. The differences in gear type and handling procedures account for the variation in assumed mortality rates for the fisheries. It is not clear how these mortality rates would translate to current Gulf of Alaska fisheries. ADF&G does not collect information on bycatch and discard mortality in this region for the directed Tanner crab fishery (see Section 5.3.1). In a study of Kodiak area Dungeness crab, Kruse et al. (1994) found that soft-shelled crab were much more susceptible to handling mortality and expected the number to be greater during normal commercial fishing operations.

Bitter Crab Syndrome (BCD), caused by a parasitic dinoflagellate, is a chronic and lethal disease affecting Alaskan crabs, including Tanner crab. Small crab may be infected more frequently with a shorter time until fatality due to the effects of the disease (Meyers et al, 1987; Meyers et al., 1996; Sideek et al., 2010). According to the ESP, high visual BCD prevalence often coincides with large recruitment events of small (20-40 mm) Tanner crab, which may contribute to reduced survival to larger juvenile size classes. However, it is unclear if BCD has large and lasting effects on the stock (Hennessey, Garber-Yonts, 2025).

Data are unavailable as to the impact of climate change specifically on the GOA Tanner crab stock, but climate indicators are considered during the annual stock assessment process in the ecosystem considerations chapter of the SAFE Report for King and Tanner Crab of the Bering Sea and Aleutian Islands Management Area (NPFMC 2025), as well as the EBS Tanner crab ESP (SAFE Appendix D, NPFMC 2025). Temperature, tidal current patterns, sediment type, bathymetric characteristics, phytoplankton bloom timing, and zooplankton abundance are examples of covariates thought to impact crab survival (Hennessey and Garber-Yonts, 2025). See Section 5.3.1.1 and Appendix 2 for other covariates that impact mature male and female crab. A longer larval stage associated with cooler temperatures may leave larvae more vulnerable to pelagic predators. Historical larval year-class failures have coincided with low zooplankton abundance, suggesting that increased larval mortality is related to less favorable feeding conditions and mismatches between larval release and the spring bloom (Somerton, 1982; Hennessey and Garber-Yonts, 2025). Both settlement intensity and early benthic survival are likely critical determinants of year-class strength in Tanner crab, and successful advection to areas of suitable benthic substrate and temperature are thought to be critical for juvenile survival (Ryer et al., 2016). While 2°C may represent a critical lower temperature threshold for juveniles, negative effects on metabolic processes are not apparent until 12°C. (Ryer et al., 2016). See the 2025 ESP for the Tanner crab stock in the Eastern Bering Sea for more information by life stage (Hennessey and Garber-Yonts, 2025).

5.4 Chinook PSC

5.4.1 Background

In the GOA, the primary species of concern for salmon bycatch is Chinook salmon (*Oncorhynchus tshawytscha*), which is caught almost exclusively in trawl gear. The Chinook salmon is the largest of all Pacific salmon species, with weights of individual fish commonly exceeding 30 pounds. North Pacific Chinook salmon are the subject of commercial, subsistence, personal use, and sport/recreational (used interchangeably) fisheries. Chinook salmon are the least abundant of the five salmon species found on both sides of the Pacific Ocean and the least numerous in the Alaska commercial harvest. In North America, Chinook salmon range from the Monterey Bay area of California to the Chukchi Sea area of Alaska. On the Asian coast, Chinook salmon occur from the Anadyr River area of Siberia southward to Hokkaido, Japan. In Alaska, they are abundant from the southeastern panhandle to the Yukon River.

Coded-wire tagged Chinook salmon recovered as bycatch in the GOA have been identified as salmon originating from Alaska, British Columbia, Washington, Idaho, and Oregon for 2001–2023 (NMFS 2023). Traditionally, large runs of Chinook salmon have occurred in large river systems flowing into the GOA including the Karluk, Chignik, Kenai, Sustina, Copper, Stikine, Taku, Chilkat and Unuk Rivers. Of the rivers on this list, only the Karluk River is located on Kodiak Island. The current abundance and productivity of Chinook salmon populations statewide began to decline in 2007 and have been lower than the historical average since 2008, including for runs in the GOA (ADF&G 2022). In the Taku River in Southeast Alaska, runs of spawning Chinook salmon have remained below the upper run goal since 2007 and have missed the run goal since 2016¹⁸.

Pacific salmon are caught incidentally in fisheries utilizing pelagic trawl gear in both the BSAI and GOA management areas. Salmon in the BS and GOA exist in the same times, locations, and depths as pollock and are thus caught in the nets of fishermen targeting pollock. Of the five species of Pacific salmon found in Alaska's waters, Chinook salmon and chum salmon are most often encountered in the BSAI and GOA groundfish fisheries.

In the GOA, Chinook salmon are primarily taken by vessels participating in the pollock fishery operating in the Western and Central GOA areas, as well as vessels participating in the Rockfish Program. All salmon species that are intercepted in the pollock trawl fisheries in the Western and Central Regulatory Areas and adjacent State of Alaska waters in the GOA must be retained consistent with regulatory requirements. All salmon must be retained until an observer is provided the opportunity to count the number of salmon and to collect scientific data or biological samples from the salmon. Requirements for retaining and handling intercepted salmon species will be established in regulations implementing the FMP.

Attainment of a Chinook salmon PSC limit will result in the closure of the respective fishery for the remainder of the season or the year. The following list provides the Chinook salmon PSC limits by area and by sector for the non-pollock trawl fishery.

- Central GOA pollock trawl fishery: The annual PSC limit for Chinook salmon in the directed fishery for pollock in the Central Regulatory Area and adjacent State waters is 18,316 Chinook salmon.
- Western GOA pollock trawl fishery: The annual PSC limit for Chinook salmon in the directed fishery for pollock in the Western Regulatory Area and adjacent State waters is 6,684 Chinook salmon.
- Central and Western GOA non-pollock trawl fishery, catcher/processor sector: The annual base PSC limit for Chinook salmon in all directed non-pollock trawl fisheries in the Western and

¹⁸ See https://www.adfg.alaska.gov/index.cfm?adfg=chinookinitiative_taku.main.

Central Regulatory Areas and adjacent State waters is 3,600 Chinook salmon. No more than 66 percent of the annual PSC limit can be taken by the catcher/processor sector before June 1.

- Central and Western GOA non-pollock trawl fishery, catcher vessel sector: The annual PSC limit for Chinook salmon in all directed non-pollock trawl fisheries in the Western and Central Regulatory Areas and adjacent State waters is 3,900 Chinook salmon. From this total, 1,200 Chinook salmon are for use during fishing activity that takes place under the authority of a Central GOA Rockfish Program cooperative quota permit, between April 1 and November 15. The limit for all other GOA trawl catcher vessel activity is 2,700 Chinook salmon. If more than 150 Chinook salmon PSC are available to the Central GOA Rockfish Program catcher vessel sector on October 1, the Regional Administrator may reapportion Chinook salmon PSC to the Non-Rockfish Program catcher vessel sector, so long as no fewer than 150 Chinook salmon PSC remain with the Rockfish Program catcher vessel sector. Any Chinook salmon PSC that remain available to the Central GOA Rockfish Program catcher vessel sector on November 15 may be made available to the Non-Rockfish Program catcher vessel sector upon that date.

NMFS determines salmon PSC with a combination of partial observer coverage, cameras, and EM in the GOA pollock fishery (NMFS 2023). Biological and genetic samples, as well as coded wire tag samples, are collected from the salmon bycatch and analyzed by the Alaska Fisheries Science Center to understand the stock of origin (NMFS 2023).

As noted in Table 5-31, statistical area 525702 (Alt. 2, Element 1, Option 1) pelagic trawl averaged for the entire time series 1,275 Chinook salmon, which is approximately 9% of the CGOA average in the same time period. The annual Chinook salmon PSC during the 2012 through 2025 period ranged from a low of 176 salmon in 2020 to high of 4,887 salmon in 2016. The custom closure (Alt. 2, Element 1, Option 2) in that same table averaged 1,606 Chinook salmon for pelagic trawl gear, which is approximately 12% of the CGOA average in the same time period. Annual Chinook salmon PSC in the custom area ranged from a low of 219 salmon in 2020 to a high of 7260 salmon in 2016. Other statistical areas adjacent to 525702 and the custom closure area reported far less Chinook salmon PSC during 2012-2025, with 525630 having the highest average at 565 and 535632 at 156 Chinook salmon.

For nonpelagic trawl, average Chinook salmon PSC in statistical area 525702 and the custom area during 2012 through 2025 was lower. In statistical area 525702, nonpelagic trawl averaged 297 Chinook salmon during 2012 through 2025, while in the custom area, nonpelagic trawl averaged 347 Chinook during the same period. Annually, Chinook PSC in statistical area 525702 for nonpelagic trawl ranged from a low of 7 salmon in 2025 to a high of 916 salmon in 2016, while in the custom area, annual Chinook salmon PSC ranged from a low 7 salmon in 2025 to a high of 1,318 salmon in 2014. Statistical area 525630 showed the highest average Chinook salmon PSC for nonpelagic trawl from 2012 through 2025 at 396 salmon, which also showed the highest annual Chinook salmon PSC for the gear at 3,323 salmon in 2013.

Table 5-31 Central Gulf of Alaska Chinook salmon PSC with identified statistical areas by gear, 2012-2025 (number of salmon). Note: no Chinook salmon PSC for groundfish pot. **Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	2,934	10,856	3,154	3,516	2,583	1,321	1,816	2,482	853	2,391	1,097	1,382	2,207	1,955	2,753
525630	126	3,323	85	339	330	44	122	469	12	429	2	56	73	1	386
525702	459	692	248	559	916	74	547	203	*	396	*	19	0	7	297
535632	24	83	8	44	92	6	92	54	*	3	*	0	0	0	29
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom**	437	1,318	239	571	889	75	517	282	8	443	23	29	15	7	347
Other CG	2,324	6,758	2,812	2,575	1,245	1,198	1,054	1,755	834	1,563	1,066	1,307	2,134	1,947	2,041
Pelagic Trawl	10,311	10,666	7,599	9,950	13,077	15,080	9,721	7,475	9,254	7,710	8,268	13,922	20,826	11,245	10,903
525630	77	278	792	361	4,219	*	644	52	63	68	*	*	*	13	565
525702	1,386	602	1,165	748	4,887	404	1,071	753	176	461	475	547	4,425	761	1,275
535632	0	0	393	*	*	*	120	123	47	259	251	*	*	307	156
535704	0	0	0	*	*	0	0	0	0	0	*	0	0	0	2
Custom**	1,402	749	1,680	947	7,260	1,072	1,443	794	219	548	532	645	4,368	821	1,606
Other CG	8,848	9,785	5,248	8,706	3,668	13,487	7,885	6,548	8,968	6,922	7,512	13,028	16,332	10,164	8,905
Total	13,244	21,522	10,753	13,467	15,659	16,402	11,537	9,957	10,107	10,101	9,364	15,304	23,033	13,200	13,657

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

*No Chinook Salmon PSC for Pot

**Custom closure is a portion of 525630, 525702, 535632 and 535704

Looking at Chinook salmon PSC during the two proposed closure periods (February 15 – June 15 and April 1 – June 15) combined with the two proposed closures, average and annual PSC numbers were significantly lower for both proposed closure periods relative to observations on annual basis.

Table 5-32 shows annual and average Chinook salmon PSC by identified statistical area for pelagic and nonpelagic trawl gear during the February 15 to June 15 (Alternative 2, Element 2, Option 2a). Average Chinook salmon PSC for pelagic trawl for statistical area 525702 and custom area was 11 salmon and 14 salmon, respectively. For most years during the 2012 through 2025 period, pelagic trawl gear reported no Chinook salmon from during the February 15 through June 15 period for both 525702 and the custom closure area. For nonpelagic trawl, Chinook salmon PSC averaged 103 salmon for 525702 and 150 salmon for the custom area. Annual Chinook salmon PSC for nonpelagic trawl for statistical area 525702 ranged from a low of zero salmon in 2024 and 2025 to high of 506 salmon in 2013, while for the custom area, Chinook salmon PSC ranged from a low zero salmon in 2016, 2024, and 2025 to a high of 1,030 salmon in 2013. Adjacent statistical areas also showed low Chinook salmon PSC during the February 15 to June 15 proposed closure period relative to the annual observations. For pelagic trawl, statistical area 525630 had an average Chinook salmon PSC of 7 salmon during the 2012 through 2025 period. For nonpelagic trawl, statistical area 525630 had an average Chinook salmon PSC of 275 salmon during the same period.

Table 5-32 Central Gulf of Alaska Chinook salmon PSC with identified statistical areas by gear Feb 15 to Jun 15, 2012-2025 (number of salmon). Note: no Chinook salmon PSC in groundfish pot gear. **Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	1,411	7,714	1,205	3,008	59	662	386	2,253	494	797	483	908	694	538	1,472
525630	105	2,748	82	327	0	40	2	460	7	43	0	31	0	0	275
525702	95	506	49	494	0	59	7	194	1	10	*	17	0	0	103
535632	18	38	3	41	0	0	0	54	0	0	0	0	0	0	11
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom**	107	1,030	61	510	0	61	6	272	3	18	*	21	0	0	150
Other CG	1,193	4,421	1,071	2,146	59	563	377	1,545	486	745	475	860	694	538	1,084
Pelagic Trawl	3,092	511	2,865	5,825	1,666	5,835	2,629	396	2,736	1,840	2,586	3,901	1,799	980	2,822
525630	0	0	0	*	0	0	0	0	0	0	0	*	0	0	7
525702	0	0	0	129	*	0	0	0	*	*	0	*	0	0	11
535632	0	0	0	0	*	0	0	0	0	0	0	0	0	0	*
535704	0	0	0	*	0	0	0	0	0	0	0	0	0	0	*
Custom**	0	0	0	110	*	0	0	0	*	*	0	*	0	0	14
Other CG	3,092	511	2,865	5,676	1,663	5,835	2,629	396	*	*	2,586	3,787	1,799	980	2,803
Total	4,503	8,225	4,070	8,833	1,726	6,498	3,015	2,649	3,230	2,637	3,069	4,809	2,493	1,518	4,294

Table 5-33 shows annual and average Chinook salmon PSC by identified statistical area for pelagic and nonpelagic trawl gear during the April 1 to June 15 (Alternative 2, Element 2, Option 2b). Average Chinook salmon PSC for pelagic trawl for the custom area was 5 salmon. The average Chinook salmon PSC for statistical area 525702 was masked to prevent release of confidential information. For most years during the 2012 through 2025 period, pelagic trawl gear reported no Chinook salmon PSC during the April 1 through June 15 period for both statistical area 525702 and the custom area. For nonpelagic trawl, Chinook salmon PSC averaged 72 salmon for statistical area 525702 and 103 salmon for the custom area. Annual Chinook salmon PSC for nonpelagic trawl for statistical area 525702 ranged from a low of zero salmon for several years to high of 491 salmon in 2015, while for the custom area, Chinook salmon PSC ranged from a low of zero salmon in several years to a high of 725 salmon in 2013. Adjacent areas also showed low Chinook salmon PSC during the February 15 to June 15 proposed closure period relative to the annual observations. For pelagic trawl, statistical area 525630 had no Chinook salmon PSC for nearly all years during the 2012 through 2025 period. For nonpelagic trawl, statistical area 525630 had an average Chinook salmon PSC of 185 salmon during the 2012 through 2025 period.

Table 5-33 Central Gulf of Alaska Chinook salmon PSC with identified statistical areas by gear Apr 1 to Jun 15, 2012-2025 (number of salmon). Note: no Chinook salmon PSC in groundfish pot gear. **Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	1,042	6,229	965	2,889	57	238	348	1,615	492	767	444	850	680	538	1,225
525630	0	1,969	32	320	0	1	0	186	7	42	0	28	0	0	185
525702	0	347	4	491	0	23	3	128	0	0	0	12	0	0	72
535632	0	38	0	40	0	0	0	54	0	0	0	0	0	0	9
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom**	0	725	10	506	0	20	2	156	1	9	0	16	0	0	103
Other CG	1,042	3,875	929	2,038	57	214	346	1,247	485	725	444	810	680	538	959
Pelagic Trawl	499	0	108	669	46	68	0	49	24	77	327	917	613	980	311
525630	0	0	0	0	0	0	0	0	0	0	0	*	0	0	*
525702	0	0	0	0	0	0	0	0	0	0	0	*	0	0	*
Custom**	0	0	0	0	0	0	0	0	0	0	0	*	0	0	5
Other CG	499	0	108	669	46	68	0	49	24	77	327	803	613	980	303
Total	1,542	6,229	1,072	3,558	103	305	348	1,664	516	844	771	1,767	1,293	1,518	1,537

Table 5-34, Table 5-35, and Table 5-36 provides annual Chinook salmon PSC rates and proposed closure periods for nonpelagic and pelagic trawl and identified statistical areas from 2012 through 2025. The PSC rate is the number of Chinook salmon per ton of groundfish in all groundfish fisheries combined. In general, Chinook salmon PSC rates are low. For example, for nonpelagic trawl, the average annual Chinook PSC rate in statistical area 525702 and the custom area was 0.05 salmon per mt of groundfish, while the PSC rate is slightly higher for pelagic trawl at 0.14 Chinook salmon per mt of groundfish (see Table 5-34). These annual PSC rates for Chinook PSC salmon are similar in adjacent areas like 525630. Looking at PSC rates by proposed time closure options (Table 5-35 and Table 5-36), there is little difference in PSC rates between the two proposed time closure options (February 15-June 15 and April 1-June 15) and PSC rates on an annual basis. In general, Chinook PSC rates for both shorter time closure options are slightly less than annual Chinook PSC rates.

Table 5-34 Central Gulf of Alaska Chinook salmon PSC rate with identified statistical areas 2012-2025, (salmon per ton of groundfish). Note: no Chinook salmon PSC in groundfish pot gear. **Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	0.04	0.14	0.03	0.05	0.04	0.02	0.03	0.04	0.02	0.06	0.03	0.04	0.05	0.05	0.05
525630	0.02	0.32	0.01	0.08	0.07	0.01	0.03	0.08	0.00	0.37	0.00	0.05	0.03	0.00	0.09
525702	0.05	0.08	0.02	0.06	0.09	0.01	0.09	0.02	0.00	0.10	0.01	0.01	0.00	0.00	0.05
535632	0.02	0.04	0.01	0.08	0.10	0.00	0.05	0.08	0.00	0.00	*	0.00	0.00		0.03
535704				*			*	*							0.00
Custom**	0.05	0.13	0.02	0.06	0.09	0.01	0.08	0.03	0.00	0.12	0.01	0.02	0.00	0.00	0.05
Other CG	0.05	0.12	0.04	0.05	0.03	0.02	0.03	0.04	0.02	0.05	0.03	0.04	0.06	0.06	0.04
Pelagic Trawl	0.15	0.14	0.06	0.07	0.11	0.11	0.08	0.08	0.10	0.09	0.07	0.12	0.20	0.09	0.10
525630	0.21	0.08	0.10	0.03	0.24	0.13	0.12	0.10	0.13	0.11	0.09	*	0.15	0.04	0.14
525702	0.17	0.09	0.09	0.05	0.19	0.04	0.10	0.10	0.06	0.13	0.11	0.17	0.62	0.09	0.14
535632		*	0.24	0.04	0.35	*	0.26	0.21	0.09	0.33	0.10	0.16	*	0.15	0.16
535704				*	*						*				0.10
Custom**	0.17	0.09	0.09	0.04	0.21	0.07	0.11	0.10	0.06	0.14	0.10	0.18	0.61	0.09	0.14
Other CG	0.14	0.15	0.05	0.08	0.05	0.12	0.07	0.08	0.10	0.08	0.07	0.12	0.17	0.08	0.10
Total	0.10	0.14	0.05	0.07	0.09	0.08	0.06	0.06	0.07	0.08	0.06	0.10	0.15	0.08	0.08

Table 5-35 Central Gulf of Alaska Chinook salmon PSC rate with identified statistical areas, Feb 15-Jun 15, 2012-2025, (salmon per ton of groundfish). Note: no Chinook salmon PSC in groundfish pot gear. **Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	0.05	0.24	0.03	0.11	0.00	0.02	0.02	0.08	0.02	0.07	0.03	0.08	0.04	0.04	0.06
525630	0.03	0.37	0.01	0.21	0.00	0.01	0.00	0.11	0.00	0.18	0.00	0.08	0.00	0.00	0.11
525702	0.04	0.15	0.02	0.21	0.00	0.02	0.00	0.05	0.00	0.03	0.01	0.03	0.00	0.00	0.05
535632	0.03	0.03	0.01	0.17	0.00	0.00	0.00	0.15	0.00	*		*	0.00		0.02
535704				*			*								0.00
Custom**	0.03	0.22	0.02	0.21	0.00	0.02	0.00	0.06	0.00	0.05	0.01	0.04	0.00	0.00	0.06
Other CG	0.06	0.22	0.04	0.09	0.00	0.03	0.02	0.08	0.02	0.07	0.04	0.08	0.05	0.05	0.06
Pelagic Trawl	0.08	0.02	0.04	0.07	0.04	0.11	0.05	0.01	0.07	0.04	0.04	0.06	0.03	0.06	0.05
525630				*	*	*	*				*	*		0.04	0.21
525702		*		0.13	*	*			*	*	*	0.13			0.12
535632					*										0.02
535704				*											0.19
Custom**		0.00		0.12	0.02	0.02	0.00		*	*	0.00	0.29		0.04	0.13
Other CG	0.08	0.02	0.04	0.07	0.04	0.11	0.05	0.01	0.07	0.04	0.04	0.06	0.03	0.06	0.05
Total	0.07	0.15	0.04	0.08	0.02	0.08	0.04	0.04	0.05	0.04	0.04	0.06	0.03	0.06	0.06

Table 5-36 Central Gulf of Alaska Chinook salmon PSC rate with identified statistical areas, Apr 1-Jun 15, 2012-2025, (salmon per ton of groundfish). Note: no Chinook salmon PSC in groundfish pot gear. **Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	0.06	0.37	0.03	0.14	0.00	0.01	0.02	0.08	0.02	0.09	0.04	0.08	0.05	0.05	0.07
525630	0.00	0.58	0.01	0.37	0.00	0.00	0.00	0.18	0.00	0.22	0.00	0.10	0.00	0.00	0.13
525702	0.00	0.20	0.00	0.33	0.00	0.01	0.00	0.06	0.00	*	*	0.03	0.00	0.00	0.05
535632	0.00	0.35	0.00	0.35	0.00	0.00	0.00	0.24	0.00			*	0.00		0.05
535704							*								0.00
Custom**	0.00	0.32	0.00	0.34	0.00	0.01	0.00	0.08	0.00	0.13	0.00	0.04	0.00	0.00	0.06
Other CG	0.08	0.33	0.04	0.11	0.00	0.01	0.03	0.08	0.02	0.08	0.04	0.09	0.07	0.06	0.07
Pelagic Trawl	0.23	0.00	0.03	0.03	0.01	0.02	0.00	0.01	0.00	0.01	0.02	0.07	0.05	0.05	0.03
525630							*	*			*	*		0.04	0.23
525702							*					0.13			0.13
Custom**						0.00	0.00				0.00	0.29		0.04	0.18
Other CG	0.23	0.00	0.03	0.03	0.01	0.02	0.00	0.01	0.00	0.01	0.02	0.06	0.05	0.05	0.03
Total	0.08	0.36	0.03	0.08	0.00	0.01	0.02	0.07	0.02	0.05	0.03	0.08	0.05	0.05	0.06

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

*No Chinook Salmon PSC for Pot

**Custom closure is a portion of 525630, 525702, 535632 and 535704

5.4.2 Effects of Alternatives on Chinook PSC

Under either the No Action alternative or Alternative 2, it is expected that Chinook salmon bycatch will be difficult to consistently avoid. As a result, there is an adverse impact on Chinook salmon as the species is taken as incidental catch in the groundfish fisheries under the No Action alternative and Alternative 2.

It is evident that the highest amount of Chinook salmon PSC comes from vessels using pelagic trawls, most of which are targeting pollock. The second highest source of Chinook PSC is from nonpelagic trawl, with no Chinook bycatch from groundfish pot gear. Of the two closure area options (Alt. 2, Element 1, Options 1 and 2), pelagic trawl Chinook PSC is higher in the custom closure, but in some years the totals

are very similar. Almost all pelagic Chinook PSC occurs outside the proposed time closure windows (Alt. 2, Element 2, Options 2a and 2b; Table 5-31, Table 5-32, and Table 5-33). If pelagic trawl vessels expand fishing effort during the remainder of the year in areas open to groundfish fishing in CGOA to recuperate lost revenue from the area and/or time closures, Chinook PSC could increase slightly in some cases since annual average PSC rates associated with some areas are slightly higher (see Table 5-34, Table 5-35, and Table 5-36). Despite the potential for slightly higher changes in Chinook salmon PSC from the proposed action relative to the No Action alternative, the impact to Chinook salmon PSC would be minimal since the Chinook salmon bycatch rates in the groundfish fishery are very low for adjacent statistical areas as well as other CGOA areas.

Nonpelagic trawl gear is mainly used to target arrowtooth, shallow-water flatfish, Pacific Ocean perch (POP), and Pacific cod both through the open access fisheries and the Rockfish Program. According to the latest Central GOA Rockfish Program Report, the variability of Chinook salmon PSC rates highlights the difficulties associated with avoiding Chinook salmon, even when the gear is modified to allow some salmon to escape and the fleet communicates bycatch hot spots. As noted in Table 5-34, the average Chinook salmon PSC rates are the same between the two closure area options and nearly the same for other areas noted in the table for the year-round time closure option (Alt. 2, Element 2, Option 1). As a result, any displacement of fishing effort from one of the proposed closure areas to other areas noted in the table would likely result in minimal changes in Chinook PSC when compared to the No Action alternative. Comparing Chinook PSC estimates under the different time closures options, which are shown in Table 5-31 (Alt. 2, Element 2, Option 1), Table 5-32 (Alt. 2, Element 2, Option 2a), and Table 5-33 (Alt. 2, Element 2, Option 2b), there is some potential for slight changes in a Chinook PSC between the different time closure options, but given the Chinook PSC rates for nonpelagic trawl between the different time closures options are very similar the resulting changes in PSC would be minimal between the options and the No Action alternative.

Overall, as noted in the Chinook PSC estimates in Table 5-31 through Table 5-33, the observed Chinook salmon PSC for both pelagic or nonpelagic trawl gear for the proposed closure areas and the adjacent statistical areas or for the proposed closure periods during the 2012 through 2025 period were limited relative to the total CGOA Chinook PSC. Additionally, as noted in Table 5-34 through Table 5-36, Chinook PSC rates for both pelagic and nonpelagic trawl gear for proposed closure areas and their adjacent statistical areas along with the proposed closure periods during 2012 through 2025 period were very low. As for pot gear, there was no reported Chinook salmon PSC associated with this gear during the 2012 through 2025 period. As a result, relative to the No Action Alternative, it is not expected that Chinook PSC for pelagic and nonpelagic trawl gear and pot gear under the proposed area closures and/or time closures would reach a significant threshold that is likely to affect the sustainability of the species.

5.4.3 Effects From Reasonably Foreseeable Environmental Trends and Planned Action in the Action Area on Chinook PSC

Reasonably foreseeable environmental trends and management actions on Chinook salmon PSC in the GOA are expected to be limited and not significant at the population level. Environmental trends, including climate variability, changing ocean conditions, and ecosystem shifts, may influence Chinook salmon productivity, distribution, and stock composition in the GOA. However, these effects are uncertain and are generally expected to fall within the range of natural variability affecting salmon populations across the North Pacific. Reasonably foreseeable future actions—such as continued refinement of PSC limits, inseason reapportionment authority, and adaptive bycatch management programs—are intended to maintain or further reduce Chinook PSC while providing operational flexibility to fisheries.

5.5 Halibut PSC

5.5.1 Background

According to the International Pacific Halibut Commission, Pacific halibut are found on the continental shelf of the northern Pacific Ocean and the Bering Sea. They have been recorded on the North American coast from Santa Barbara, California to Nome, Alaska and also occur along the western Pacific Ocean coast from the Gulf of Anadyr, Russia to Hokkaido, Japan. Pacific halibut are demersal (i.e. living on or near the bottom), and are routinely found in water temperatures ranging from 35°F to 40°F (3°C to 8°C). Although Pacific halibut have been caught as deep as 4,000 feet (1,200 m), they are most often caught between 90 and 900 feet (30 and 270 m).

Countering the egg drift that occurs with counter-clockwise ocean currents, the young Pacific halibut migrate long distances in a clockwise direction. One- and two-year-old Pacific halibut are commonly found in inshore areas of central and western Alaska, with settlement areas in North America extending more broadly from at least northern British Columbia through the southeast Bering Sea, and westward into the central Aleutian Islands. Juvenile Pacific halibut tend to move further offshore at age two or three and can be found coastwide by age five or six.

By the time Pacific halibut become large enough to be caught by the commercial fishery, much of the extensive counter-migration that balances egg and larval drift has apparently taken place. However, many adult Pacific halibut continue to migrate along the continental shelf and also migrate across the shelf annually, moving to deeper depths on the slope during the winter for spawning, and returning to shallow coastal waters in the summer months for feeding.

NMFS manages halibut PSC in groundfish fisheries under the authority of the Magnuson-Stevens Act. Prohibited species catch in the GOA is catch that may not be retained unless required under Section 3.6 of the FMP. The FMP and implementing regulations currently authorize the Council to recommend, and NMFS to approve, annual halibut PSC limits as a component of the proposed and final groundfish harvest specifications. Consistent with the Magnuson-Stevens Act's National Standard 1 and National Standard 9, NMFS uses halibut PSC limits to minimize halibut bycatch in the groundfish fisheries to the extent practicable, while achieving, on a continuing basis, the optimum yield from the groundfish fisheries. The use of halibut PSC limits in the groundfish fisheries reduces halibut bycatch and promotes conservation of the halibut resource. NMFS manages halibut bycatch in the GOA by (1) establishing annual halibut PSC limits, and (2) apportioning those limits to fishery categories and seasons to accommodate halibut PSC needs in specific groundfish fisheries.

Except as provided under the prohibited species donation program, retention of prohibited species captured while harvesting groundfish is prohibited to prevent covert targeting on these species. The prohibition removes the incentive that groundfish fishers might otherwise have to target on the relatively high valued prohibited species, and thereby, results in a lower incidental catch. It also eliminates the market competition that might otherwise exist between halibut fishers and groundfish fishers who might land halibut in the absence of the prohibition. Halibut that are taken as PSC in the trawl and fixed gear fisheries result in fishing mortality even though the FMP requires that these species be discarded. Survival rates of halibut PSC are typically less than 100 percent and may approach zero for some fisheries and some gear.

When a PSC limit is reached, further fishing with specific types of gear or modes of operation during the year is prohibited in an area by those who take their PSC limit in that area. All other users and gear would remain unaffected.

However, when the fishery to which a PSC limit applies has caught an amount of prohibited species equal to that PSC limit, the Secretary may, by notice, permit some or all of those vessels to continue to engage in fishing for groundfish in the applicable regulatory area, under specified conditions. These conditions

may include the avoidance of certain areas of prohibited species concentrations and will be determined on a case-by-case basis. Annual GOA-wide Pacific halibut PSC limits for trawl and non-trawl gear fisheries are established in regulation and may be amended by regulatory amendment.

Apportionments of PSC limits to target fishery categories, and seasonal allocations thereof, will be determined annually by the Secretary of Commerce in consultation with the Council. Separate PSC limits may be established for specific gear. The current halibut PSC apportionments can be found at [50 CFR Part 679](#), of the GOA Final 2025 and 2026 Harvest Specification for Groundfish and in Table 5-37 below.

Table 5-37 Final 2025 and 2026 Pacific halibut Prohibited Species Catch (PSC) limits, allowances, and apportionments (metric tons). Note: ¹The Pacific halibut prohibited species catch (PSC) limit for hook-and-line gear is assigned to the DSR fishery in the SEO District and to the hook-and-line fisheries other than the DSR fishery. The fixed gear sablefish IFQ fishery is exempt from halibut PSC limits, as are pot and jig gear for all groundfish fisheries. Source: Table 14, GOA Final 2025 and 2026 Harvest Specifications for Groundfish.

Trawl gear			Hook-and-line gear ¹				
Season	Percent	Amount	Other than DSR			DSR	
			Season	Percent	Amount	Season	Amount
January 20-April 1	30.5	520	January 1-June 10	86	220	January 1-December 31	9
April 1-July 1	20.0	341	June 10-September 1	2	5		
July 1-August 1	27.0	460	September 1-December 31	12	31		
August 1-October 1	7.5	128					
October 1-December 31	15.0	256					
Total		1,705			256		9

Of the three gears under consideration in the proposed action, nonpelagic trawl reported the largest share of CGOA halibut PSC. As noted in Table 5-38, average halibut PSC during the 2012 through 2025 period was 140 mt in statistical area 525702 and 147 mt in the proposed custom area closure, which was approximately 16% and 17% of the CGOA wide average, respectively. For pelagic trawl gear and pot gear, the average percentage of halibut PSC was less than 1% of the total CGOA wide halibut PSC of these three gears combined. Annually, halibut PSC in statistical area 525702 for nonpelagic trawl ranged from a low of 19 mt in both 2022 and 2023 to a high of 269 mt in 2015, while in the custom area, annual halibut PSC ranged from a low 19 mt in 2019 to a high of 269 mt in 2015. Annual halibut PSC for pot gear and pelagic trawl gear were generally nonexistent (pot gear) to relatively small amounts of halibut PSC (pelagic trawl gear).

Table 5-38 Central Gulf of Alaska halibut PSC with identified statistical areas by gear, 2012-2025 (tons of mortality). *Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	1,512	1,072	1,255	1,305	1,176	1,163	1,108	1,039	730	284	322	245	477	236	851
525630	171	164	210	*	87	204	120	100	51	18	*	22	52	12	97
525702	197	146	186	269	256	117	166	239	116	44	19	19	131	59	140
535632	46	31	11	12	23	47	*	21	64	9	*	6	31	0	27
535704	0	0	0	*	0	0	*	0	0	0	0	0	0	0	0
Custom*	213	166	210	269	248	150	178	235	117	43	19	22	129	55	147
Other CG	1,098	731	848	887	809	794	754	680	499	214	288	198	262	164	587
Pot	27	8	5	18	33	7	1	1	0	6	21	11	5	14	11
525630	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0
525702	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0
535632	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom*	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Other CG	21	7	5	15	31	7	1	1	0	6	21	10	5	14	10
Pelagic Trawl	5	19	1	13	12	14	38	15	32	37	16	12	1	1	16
525630	0	0	0	1	2	1	4	0	0	0	0	0	0	0	1
525702	2	6	0	2	8	1	10	1	0	0	0	1	0	0	2
535632	0	0	0	1	0	0	1	0	0	0	3	0	0	0	0
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom*	2	6	0	3	9	1	12	1	0	0	1	1	0	0	3
Other CG	3	13	1	9	2	12	23	14	32	37	13	11	1	1	12
Total	1,544	1,099	1,261	1,335	1,220	1,184	1,147	1,055	762	327	359	268	483	251	878

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

*Custom closure is a portion of 525630, 525702, 535632 and 535704

Looking at halibut salmon PSC during the two proposed closure periods (February 15 – June 15 and April 1 – June 15) combined with the two proposed closures, average and annual PSC numbers were lower for both proposed closure periods relative to observations on annual basis. Table 5-39 shows annual and average halibut salmon PSC by identified statistical area for pelagic and nonpelagic trawl gear and pot gear during the February 15 to June 15 (Alternative 2, Element 2, Option 2a). Focusing only on nonpelagic gear since pelagic trawl and pot gear reported little or no halibut PSC, average halibut PSC for nonpelagic trawl for statistical area 525702 and custom area was 53 mt and 60 mt, respectively. Annual halibut PSC for nonpelagic trawl for 525702 ranged from a low of 4 mt in 2021 to high of 101 mt in 2016, while for the custom area, halibut PSC ranged from a low of 4 mt in 2021 to a high of 120 mt in 2017. Adjacent areas also showed lower halibut PSC during the February 15 to June 15 proposed closure period relative to the annual observations.

Table 5-40 shows annual and average halibut salmon PSC by identified statistical area for pelagic and nonpelagic trawl gear and pot gear during the April 1 to June 15 (Alternative 2, Element 2, Option 2b). Once again, focusing only on nonpelagic gear only since pelagic trawl and pot gear reported little or no halibut PSC, average halibut PSC for nonpelagic trawl for statistical area 525702 and custom area was 41 mt and 44 mt, respectively. Annual halibut PSC for nonpelagic trawl for 525702 ranged from a low of 1 mt in 2021 to high of 84 mt in 2017, while for the custom area, halibut PSC ranged from a low of zero mt in 2021 to a high of 91 mt in 2017. Adjacent areas also showed lower halibut PSC during the February 15 to June 15 proposed closure period relative to the annual observations.

Table 5-39 Central Gulf of Alaska halibut PSC with identified statistical areas by gear Feb 15 – Jun 15, 2012-2025 (tons of mortality). *Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	745	522	506	474	551	658	472	384	470	64	148	114	211	92	386
525630	98	124	102	48	48	187	60	70	27	*	5	6	*	4	57
525702	74	55	43	72	101	90	37	76	68	4	7	9	64	36	53
535632	17	21	3	*	14	10	*	8	56	0	0	0	*	0	13
535704	0	0	0	*	0	0	*	0	0	0	0	0	0	0	0
Custom*	87	76	60	75	100	120	48	83	69	4	7	9	63	33	60
Other CG	556	323	358	347	389	371	353	230	319	59	136	98	103	52	264
Pot	5	3	0	2	11	5	0	0	0	4	18	5	2	8	4
525630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
525702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
535632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other CG	5	3	0	2	11	5	0	0	0	4	18	5	2	8	4
Pelagic Trawl	2	9	0	6	1	4	2	3	11	7	11	5	1	1	5
525630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
525702	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
535632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
535704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom*	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Other CG	2	9	0	6	1	4	2	3	11	7	11	4	1	1	4
Total	751	534	507	482	563	667	474	387	481	74	177	124	213	101	395

Table 5-40 Central Gulf of Alaska halibut PSC with identified statistical areas by gear Apr 1 – Jun 15, 2012-2025 (tons of mortality). *Custom closure is a portion of 525630, 525702, 535632 and 535704. Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	455	302	423	408	450	433	385	247	320	40	128	106	197	84	284
525630	55	64	82	42	43	73	28	24	8	0	4	6	23	4	33
525702	48	32	37	63	79	84	21	48	46	1	4	9	64	35	41
535632	4	1	1	6	10	10	*	*	6	0	0	0	21	0	*
535704	0	0	0	0	0	0	*	0	0	0	0	0	0	0	*
Custom*	54	42	50	66	80	91	28	48	43	0	4	9	63	32	44
Other CG	347	204	303	296	317	266	314	168	260	40	120	91	90	45	204
Pot	0	0	0	0	1	3	0	0	0	2	13	4	1	6	2
525630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
525702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Custom*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other CG	0	0	0	0	1	3	0	0	0	2	13	4	1	6	2
Pelagic Trawl	2	0	0	3	1	4	2	3	11	1	2	5	1	1	2
525630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
525702	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Custom*	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Other CG	2	0	0	3	1	4	2	3	11	1	2	3	1	1	2
Total	456	302	423	411	452	441	387	250	331	44	144	114	199	91	289

Table 5-41, Table 5-42, and Table 5-43 provides annual and average halibut PSC rates for proposed closure options for nonpelagic and pelagic trawl and pot gear by identified statistical areas and proposed custom area from 2012 through 2025. The halibut PSC rate is kilograms of halibut PSC per ton of groundfish in all groundfish fisheries combined. Of the three different gears included in this proposed

action, nonpelagic trawl gear had the highest halibut PSC during the 2012 through 2025 period. For nonpelagic trawl gear, the average halibut PSC rate for the entire CGOA was 13.72 kg of halibut per mt of groundfish, while the annual average halibut PSC rates for pelagic trawl and pot gear during the same period was 0.16 kg and 0.86 kg of halibut per mt of halibut, respectively.

Focusing on nonpelagic trawl gear, the average annual halibut PSC rate in statistical area 525702 and the custom area was 20.63 kg and 20.83 kg of halibut per mt of groundfish (see Table 5-41). These annual PSC rates for halibut PSC are similar in adjacent areas like 525630. Looking at PSC rates by proposed time closure options (Table 5-42, and Table 5-43), the February 15-June 15 closure shows a lower halibut PSC rate when compared to the April 1-June 15 closure. However, Chinook PSC rates for both shorter time closure options in statistical area 525702 and the custom area are higher than annual halibut PSC rates.

Table 5-41 Central Gulf of Alaska halibut PSC rate with identified statistical areas by gear, 2012-2025 (kilogram of halibut mortality per ton of groundfish). Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	23.06	13.79	13.10	19.24	18.13	17.40	19.16	16.25	12.14	6.15	6.16	5.94	8.14	4.69	13.72
525630	26.16	15.82	22.49	32.43	17.60	35.03	26.96	16.83	15.57	14.83	17.12	19.65	20.90	5.78	21.77
525702	23.19	15.94	17.57	28.62	24.99	21.03	26.68	23.84	15.43	11.22	10.17	14.12	22.57	11.78	20.63
535632	33.37	14.18	9.65	22.17	26.02	41.35	32.27	32.00	29.01	15.57	26.39	*	22.65		25.60
535704				*			*	*							34.01
Custom*	23.72	15.90	18.37	28.94	24.24	23.96	26.92	23.01	15.64	11.50	10.64	15.12	22.42	11.24	20.83
Other CG	22.34	13.05	11.35	16.53	16.60	14.62	16.74	14.36	10.59	5.29	5.81	5.13	5.37	3.81	11.80
Pot	1.18	0.52	0.23	0.73	1.53	0.61	0.22	0.15	0.00	0.80	1.93	1.34	0.47	1.16	0.88
525630	1.25	0.40	0.30	2.02	2.21	*			0.00	0.91	1.10	*	*	*	0.98
525702	2.00	0.37	0.26	0.39	1.57	0.73				*	*	*	*	4.22	0.94
535632	2.26	0.76	*	2.13	2.82	0.11				*				*	1.60
535704	*	*	*		*	*				*			0.03		0.41
Custom*	1.67	0.38	0.26	0.51	1.68	0.68			0.00	0.14	0.14	*	0.22	4.20	0.91
Other CG	1.08	0.55	0.23	0.71	1.51	0.62	0.22	0.15	0.00	0.81	1.94	1.34	0.47	1.14	0.87
Pelagic Trawl	0.07	0.25	0.01	0.10	0.11	0.10	0.30	0.16	0.40	0.45	0.16	0.12	0.02	0.03	0.16
525630	0.03	0.00	0.00	0.08	0.13	0.12	0.79	0.01	0.54	0.04	0.30	0.10	*	0.00	0.15
525702	0.20	0.96	0.00	0.12	0.32	0.05	0.93	0.12	0.01	0.10	0.01	0.51	0.03	0.02	0.26
535632		*	0.00	0.45	0.04	*	1.78	0.00	0.05	0.00	1.40	0.02	0.00	0.00	0.45
535704				*	*						*				0.00
Custom*	0.20	0.73	0.00	0.12	0.26	0.08	0.91	0.12	0.05	0.09	0.16	0.45	0.02	0.02	0.24
Other CG	0.06	0.20	0.01	0.08	0.03	0.11	0.21	0.16	0.41	0.48	0.14	0.11	0.02	0.03	0.15
Total	9.71	6.48	5.29	5.92	6.10	5.51	6.19	6.50	5.32	2.41	2.16	1.76	3.27	2.45	5.16

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

*Custom closure is a portion of 525630, 525702, 535632 and 535704

Table 5-42 Central Gulf of Alaska halibut PSC rate with identified statistical areas by gear Feb 15 to Jun 15, 2012-2025 (kilogram of halibut mortality per ton of groundfish). Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	27.01	16.39	13.15	17.53	18.78	24.52	23.05	13.26	14.33	4.77	8.25	7.47	10.73	6.07	15.69
525630	27.28	16.76	18.06	31.32	15.62	39.08	25.45	16.22	15.16	2.95	27.38	16.20	30.71	11.48	22.06
525702	28.81	16.26	18.10	30.72	25.73	30.56	22.76	19.12	16.95	11.53	13.17	16.78	35.59	15.59	22.51
535632	30.57	17.34	7.82	29.77	46.31	34.06	32.21	23.22	28.85	*		5.07	*		27.93
535704				*			*								38.59
Custom*	28.45	16.44	18.02	30.78	24.24	32.92	24.04	18.55	17.07	10.43	14.10	16.62	35.42	15.43	22.49
Other CG	26.65	16.22	11.92	15.13	17.62	19.72	22.31	11.32	12.72	4.59	7.90	6.89	6.16	4.17	13.71
Pot	0.49	0.37	0.05	0.19	1.16	0.89	0.10	0.15	0.00	1.21	3.53	1.22	0.40	1.36	0.80
525630						*					*	*	*		0.84
525702						0.96					*	*			1.20
535632						*									0.07
Custom*						0.96					*	*	*		1.18
Other CG	0.49	0.37	0.05	0.19	1.16	0.89	0.10	0.15	0.00	1.21	3.54	1.21	0.40	1.36	0.80
Pelagic Trawl	0.04	0.39	0.01	0.07	0.03	0.08	0.04	0.08	0.32	0.15	0.19	0.09	0.01	0.04	0.09
525630				*	*	*	*				*	*		0.01	0.38
525702		*		0.23	*	*			0.01	*	*	6.32			1.05
535632					*										0.00
535704				*											0.00
Custom*		0.00		0.31					0.01	0.00	*	4.53		0.01	0.93
Other CG	0.04	0.39	0.01	0.07	0.03	0.08	0.04	0.08	0.32	0.15	0.19	0.07	0.01	0.04	0.09
Total	9.72	8.57	4.36	4.03	6.73	8.00	6.01	5.98	6.97	1.20	2.15	1.53	2.93	1.96	5.08

Table 5-43 Central Gulf of Alaska halibut PSC rate with identified statistical areas by gear Apr 1 to Jun 15, 2012-2025 (kilogram of halibut mortality per ton of groundfish). Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_PSC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2012-2025
Non-pelagic Trawl	26.27	17.82	15.11	20.03	18.93	21.11	23.45	12.70	11.09	3.64	8.28	7.92	12.08	6.33	15.23
525630	29.33	19.10	21.24	48.51	15.04	32.10	29.01	23.31	5.80	*	*	*	30.71	14.14	22.63
525702	30.36	18.43	20.07	43.16	31.02	31.09	23.84	23.60	14.84	*	*	19.76	35.59	16.67	25.44
535632	36.47	12.68	17.11	51.57	48.07	34.90	32.80	30.77	7.89			*	63.37		*
535704							*								*
Custom*	30.15	18.62	20.46	43.85	27.78	31.27	25.89	23.61	13.89	7.02	25.56	19.64	35.42	16.59	25.02
Other CG	25.30	17.41	13.63	16.54	17.49	17.45	22.58	10.41	11.02	3.66	7.92	7.25	6.67	4.10	13.27
Pot		0.60	0.39	0.83	1.26	2.37	0.65	0.50	0.00	1.64	6.51	2.78	0.46	2.50	2.43
525630											*	*	*		0.96
525702						*						*			1.98
Custom*						*					*	*	*		1.90
Other CG		0.60	0.39	0.83	1.26	2.44	0.65	0.50	0.00	1.64	6.52	2.78	0.46	2.50	2.44
Pelagic Trawl	0.82	0.05	0.09	0.12	0.14	1.30	0.51	0.68	1.70	0.10	0.15	0.34	0.05	0.05	0.30
525630						*	*				*	*		0.01	0.16
525702						*						6.32			6.24
Custom*						0.00	0.00				*	4.53		0.01	2.92
Other CG	0.82	0.05	0.09	0.12	0.14	1.30	0.54	0.68	1.70	0.10	0.15	0.26	0.05	0.05	0.29
Total	23.44	17.39	13.22	9.26	14.51	17.63	18.69	10.47	9.28	1.98	4.63	4.06	6.94	2.89	10.36

5.5.2 Effects of Alternatives on Halibut PSC

Nonpelagic trawl catches the highest amount of halibut PSC while targeting groundfish in the proposed closure areas, with very minimal amounts of halibut PSC in these same areas for pelagic trawl and pot gear. Across the 2012-2025 period, nonpelagic trawl halibut PSC varies greatly year to year, but on average, both of the closure area options had similar halibut PSC (Table 5-38) for the year-round option (Element 2, Option 1). For the seasonal closures (Element 2, Options 2a and 2b), halibut PSC are again very similar between closure area options, while average annual PSC amounts were slightly higher during the February 15-June 15 proposed closure period (Element 2, Option 2a) than the April 1-June 15 proposed closure period (Element 2, Option 2b).

Overall, this indicates that a year-round closure option in either proposed closure area would have the most impact on PSC. Presumably, if fishing effort for groundfish is displaced from these proposed area closures, then the potential for halibut PSC would shift elsewhere. However, as noted in Table 5-41, Table 5-42, and Table 5-43, other adjacent areas where fishing has potential to be displaced also have similar or slightly higher halibut PSC rates compared to statistical area 525702 and the custom area. Additionally, either seasonal closure option would also impact halibut PSC by displacing fishing efforts to other locations during these closure dates. It is reasonable to assume that fishing will shift to other locations where nonpelagic fishing already occurs, potentially increasing the fishing intensity and PSC in those locations. However, as noted Table 5-41, Table 5-42, and Table 5-43, other locations immediately adjacent to the proposed closure areas have similar or slightly higher average halibut PSC rates. As a result, relative to the No Action Alternative, it is not expected that halibut PSC for pelagic and nonpelagic trawl gear and pot gear under the proposed area closures and/or time closures would reach a significant threshold that is likely to affect the sustainability of the species.

5.5.3 Effects From Reasonably Foreseeable Environmental Trends and Planned Action in the Action Area on Halibut PSC

Reasonably foreseeable environmental trends and management actions on GOA halibut PSC are generally considered limited and not expected to be significant at the population level. Environmental trends such as climate variability and regime shifts may influence halibut recruitment, growth, and prey dynamics, but these effects remain uncertain and are expected to fall within the range of natural variability.

5.6 Habitat

5.6.1 Prevailing Ecosystem Conditions

The waters around the Kodiak Archipelago are a complex and physical environment, shaped by a history of glaciation, tectonic activity, and oceanic processes creating a wide range of habitat types that support the diverse ecosystem of the Gulf of Alaska. The GOA ecosystem around Kodiak provides habitat for species of groundfish and crab, characterized by a mix of physical and environmental factors, including diverse seafloor types, depths, and oceanographic conditions. Much of the Kodiak continental shelf and the deeper parts of its bays and fjords are characterized by soft substrates, primarily composed of mud, silt, and fine sand. These sediments are largely derived from glacial runoff and river discharge, creating vast, flat plains and gullies. This type of habitat is crucial for Tanner crab, especially at vulnerable life stages to bury themselves for protection from predation (Ryer et al., 2015). In addition to soft sediment substrates, there are also significant areas of high-relief, rocky habitat, including submerged cliffs, rocky ledges, and fields of boulders and cobbles. These areas provide structural complexity, offering shelter and attachment points for a wide variety of marine life. Groundfish species like Pacific cod and Pacific ocean perch, other rockfish, as well as many invertebrates, are strongly associated with these habitats. While areas of soft sediment and rocky habitat exist, many areas of the Kodiak coastal waters are made up of

mosaics of the two, creating transitional zones that can be utilized by multiple species, depending on their feeding and life-stage requirements.

The diverse and dynamic geography of the seafloor and oceanographic processes contribute to characterizations of essential fish habitat (EFH) for many important fisheries. The Magnuson-Stevens Act defines EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” (16 U.S.C. § 1802(10)). The Council and NMFS have a mandatory, collaborative process for conducting a review every five years of EFH provisions in Alaska's Fishery Management Plans. The process involves synthesizing and updating new information across ten specific EFH components, including refining maps and descriptions for each FMP species' life stage, assessing the impacts of both fishing and non-fishing activities on EFH, and identifying new Habitat Areas of Particular Concern (HAPCs). The Council uses the EFH 5-year reviews to determine whether revisions to the FMPs are warranted. The review process is highly transparent, soliciting input from scientists, fishermen, and the public, and ultimately serves to guide future research and management decisions to protect the long-term productivity of Alaska's valuable fisheries. Within the spatial extent and surrounding areas of this proposed GOA Tanner crab action, EFH is present for many FMP species. It is important to note that there is not an FMP for GOA crab species, therefore there is no defined EFH for Tanner crabs in the GOA. There are 34 species of GOA groundfish with EFH identified near Barnabas Gully in the action area, including pollock, Pacific cod, and rockfish and flatfish species complexes (Appendices D and E, GOA Groundfish FMP, NPFMC 2024a).

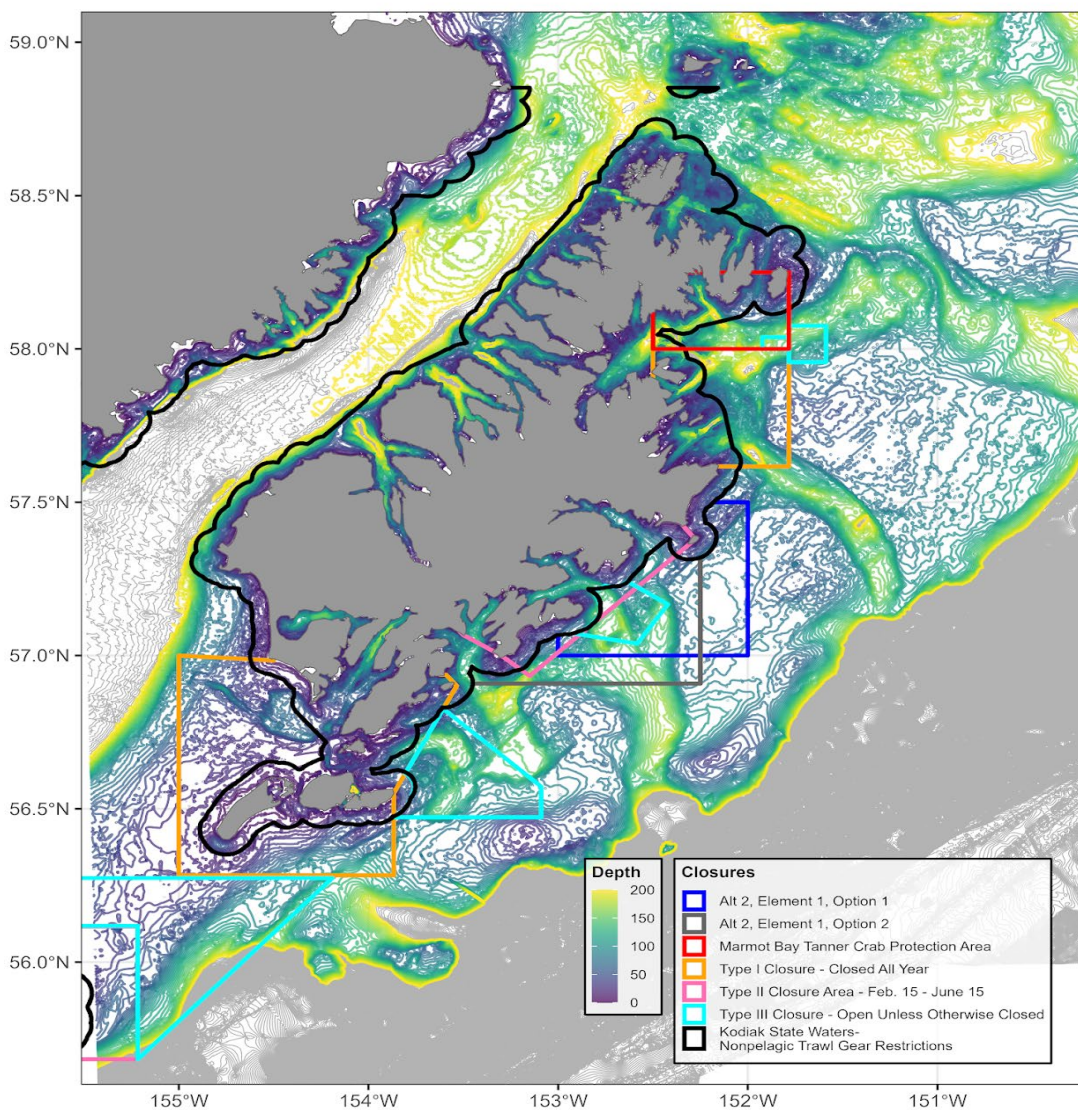


Figure 5-18 A map of depth via increments of 5 meter bathymetric contour lines from 0 (purple) to 200 (yellow) meters. Grey contour lines are areas deeper than 200m. Areas where there is very small space in between contour lines indicate steeper sloped areas (e.g. slopes and ridges) compared to larger spaces between lines indicate less steep (e.g. shelves and gullies). The pink and black polygons indicate the current federal and state closure areas, while the blue and grey polygons represent the Alternative 2, Element 1 option closures for this proposed action.

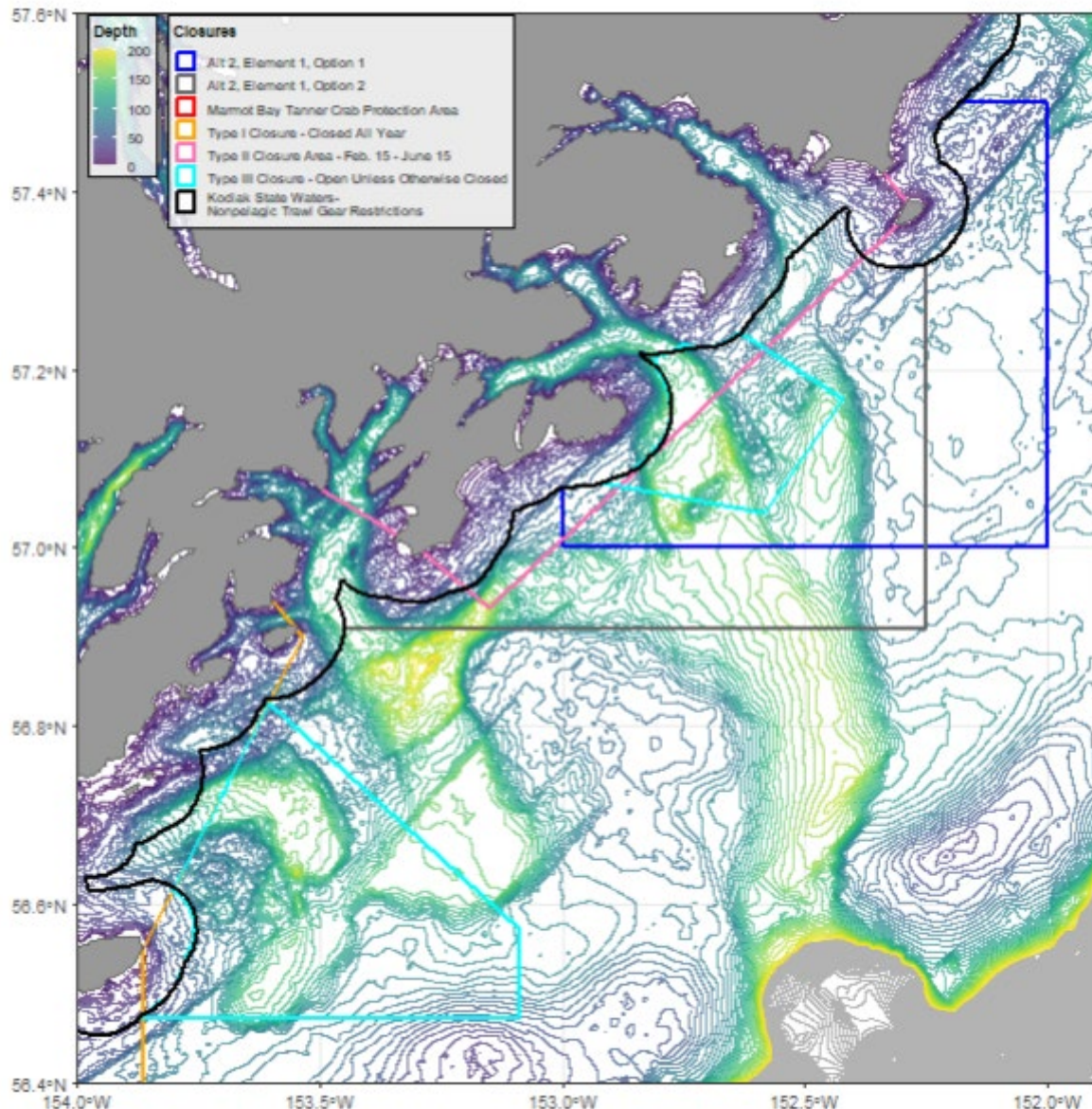


Figure 5-19 A zoomed in map of depth via increments of 5 meter bathymetric contour lines from 0 (purple) to 200 (yellow) meters. Grey contour lines are areas deeper than 200m. Areas where there is very small space in between contour lines indicate steeper sloped areas (e.g. slopes and ridges) compared to larger spaces between lines indicate less steep (e.g. shelves and gullies). The pink and black polygons indicate the current federal and state closure areas, while the blue and grey polygons represent the Alternative 2, Element 1 option closures for this proposed action.

5.6.2 2022 Fishing Effects Model and Evaluation Results

The most recent evaluation of FE on EFH was performed for species of groundfish and crabs, including 42 GOA species, 27 AI species, and 34 EBS species (Zaleski et al. 2024). Stock authors reviewed the results of the FE model and were given the opportunity to provide an evaluation for their stocks. None of the stock authors concluded that habitat disturbance within the core EFH area for their species was affecting their stocks in ways that were more than minimal or not temporary. None of the stock authors recommended elevating the species for mitigation measures against impacts of fishing on EFH at the conclusion of the 2022 FE evaluation (Zaleski et al. 2024).

The 2028 EFH 5-year Review workplan was launched at the December 2025 and February 2026 Council meetings. This cycle will include an evaluation of prioritized FMP species in the BSAI and GOA regions, and methodological advancements and updates to species distribution models (SDMs; EFH Component 1) and to the FE model (EFH Component 2). However, Gulf of Alaska Tanner crab is not an FMP species, and therefore is not included in the EFH 5-year Review work plan, and a stock assessment and fishery evaluation (SAFE) report is not produced. Additionally, results from the EFH 5-year Review process are at a broad scale and resulting outputs are for all fishing gears combined, the spatial and temporal elements of which would not be tailored for this analysis. Nonetheless, the same approach for both the SDM and FE model outputs are used in this analysis to predict Tanner crab distribution and to characterize the potential for fishing gear interactions.

See Section 5.1 for more information on model methods and limitations.

5.6.3 2025 Estimates of Bottom Contact for the Kodiak Region

The FE model was utilized to produce a mid-model product of estimated bottom contact area (see), which, for the purposes of this analysis, is an estimated potential extent to which fishing gear may interact with crab in the region surrounding the two proposed closure areas on the eastside of Kodiak. This analysis focuses on the potential for fishing gear interactions with benthic habitat through estimated bottom contact area. Bottom contact area can be used as a proxy for habitat disturbance, though the overall estimated habitat disturbance depends on the area selected for analysis because of differing fishing efforts and habitat features would affect FE model results through differing overlapping fishing events and susceptibility and recovery rates for different habitat features. Estimated bottom contact in time series graphs and tables are reported below.

Results

Overall trends in estimated bottom contact area were similar between the two proposed closure area options (Alternative 2, Element 1, Options 1 and 2; rows in Figure 5-20). Nonpelagic trawl gear had the highest estimated bottom contact area over time across all years, followed by pelagic trawl gear. Estimated bottom contact areas for groundfish pot gear was minimal (from 0 to a maximum of 27 km²). For nonpelagic trawl gear, the bottom contact area between both closure area options was similar, and was markedly decreased in either seasonal closure duration option as compared to the year-round estimated bottom contact estimates. This indicates that much of the estimated bottom contact area from fishing with nonpelagic trawl gear occurs between July and January. The same trends hold for pelagic trawl gear, although to a lesser degree as estimated bottom contact is comparatively less than that from nonpelagic trawl gear (Figure 5-20, Table 5-44, Table 5-45, and Table 5-46).

The year-round closure duration option had the most fishing activity as measured by estimated bottom contact area. Within that option, estimated bottom contact area for nonpelagic trawl varied year to year between proposed closure area options, with equal numbers of years marginally higher for Alternative 2, Element 2, Option 1 as there was for Option 2. For groundfish pot gear, estimated bottom contact areas were relatively smaller than for nonpelagic trawl gear, but marginally higher for statistical area 525702, the other closure area option. For pelagic trawl gear, the estimated bottom contact area was higher in the custom closure (Alternative 2, Element 1, Option 1), but in some years by only a few km².

For the seasonal closure options (Alternative 2, Element 2, Options 2A and 2B), both pelagic trawl gear and groundfish pot gear had minimal estimated bottom contact area. For nonpelagic trawl gear, there was less activity during the April – June closure duration option, and within either closure duration option, the bottom contact area varied across time between the two closure area options.

Nonpelagic trawl gear bottom contact area varied by year and proposed closure duration, but similar spatial patterns emerge across years. Estimated bottom contact area is most concentrated in the gully

system south of Ugak Bay, spanning both of the proposed closure area options and statistical area 525630, as well as further north in Chiniak Gully. Bottom contact area also occurs in areas nearby. The same spatial patterns are evident in both seasonal closure options (Alternative 2, Element 2, Options 2a and 2b).

Pelagic trawl gear estimated bottom contact area varied by year and proposed closure duration, but similar patterns emerge across years within the year-round closure option (Alternative 2, Element 2, Option 1). Similar to nonpelagic trawl gear, estimated bottom contact area is most concentrated in both of the proposed closure options south of Ugak Bay, sometimes extending south into 525630. In many of the available years, estimated bottom contact area is also concentrated in Chiniak Gully to the north. For the February – June seasonal closure duration (Alternative 2, Element 2, Option 2a), little pelagic trawl gear bottom contact area is found in both closure area options, as well as statistical area 525630, with minimal activity in adjacent areas. For the April – June closure duration option (Alternative 2, Element 2, Option 2a), there is minimal to no estimated bottom contact area in either proposed closure area option, or in any of the surrounding area within the mapped extent.

Groundfish pot gear had the least estimated bottom contact area as compared to nonpelagic trawl and pelagic trawl; however, spatial patterns indicate fishing activity occurred in the identified statistical areas and closure options. During the year-round closure option, pot fishing was most widespread from 2012 – 2017, after which estimated bottom contact areas completely switched to the Gulf of Alaska shelf edge, just outside statistical area 525630, with some estimated bottom contact area nearer to shore near the entrance to Sitkalidak Strait (east of Old Harbor), and in Chiniak Gully to the northeast. During the Feb – June seasonal closure option (Alternative 2, Element 2, Option 2a), estimated bottom contact area was reduced but similar spatial patterns as those described above persist. During the April – June seasonal closure duration option (Alternative 2, Element 2, Option 2b), there was minimal estimated bottom contact during 2012-2017, but starting in 2018, there are similar spatial patterns of bottom contact area just along the continental shelf edge outside of either proposed closure area.

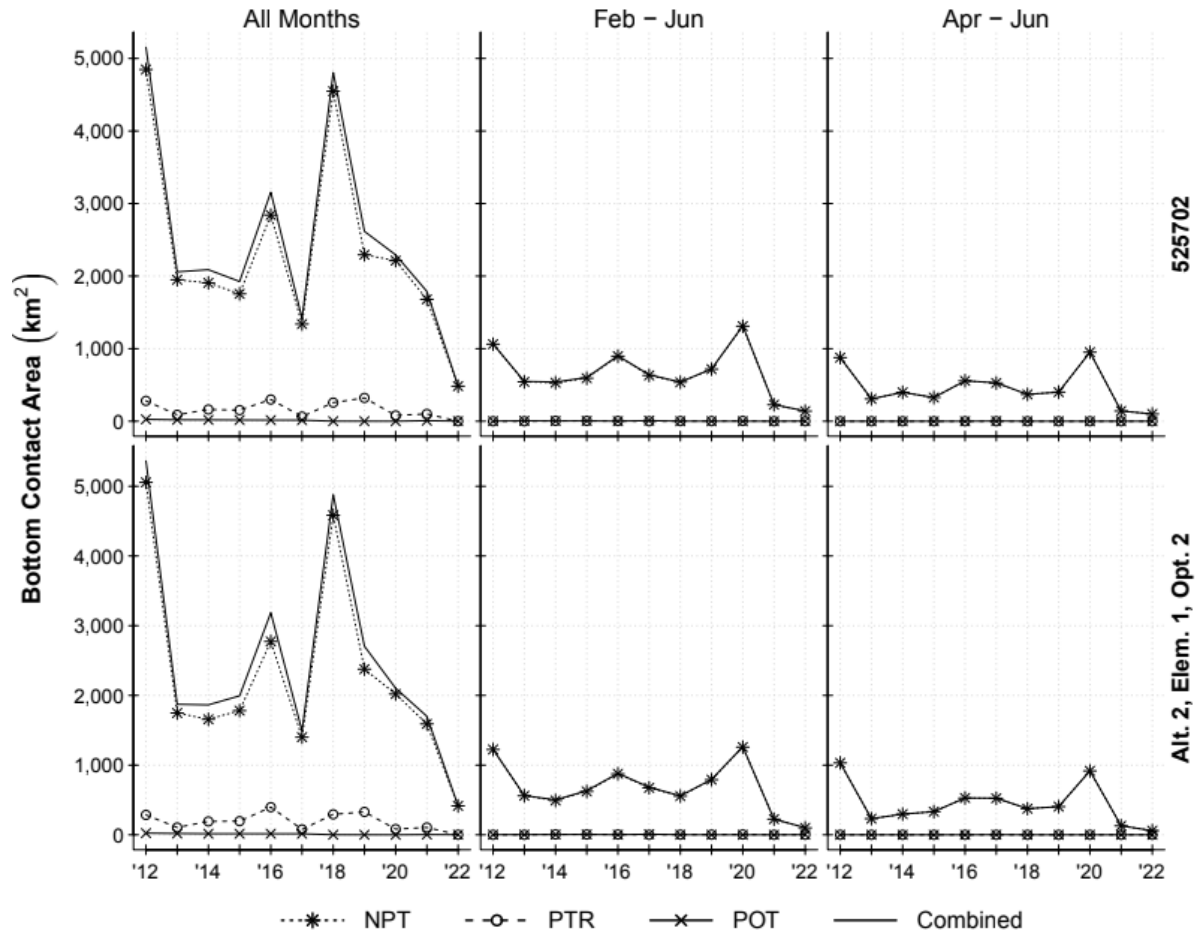


Figure 5-20 Bottom contact area (km²) by year (2012-2022) and gear type (NPT, PTR, POT, combined). Rows represent the proposed area closure options (Alt. 2, Element 1, Options 1 and 2); columns represent the proposed time closures (Alt. 2, Element 2, Option 1, Option 2, Suboptions 1 & 2). Source: FAST Lab. Values for these plots are found in the tables below.

Table 5-44 Bottom contact estimates in km² by gear type (NPT, POT, PTR, combined) and proposed closure options (Alt. Element 1, Options 1 & 2) for the year-round closure duration option (Alt. 2, Element 2, Option 1), 2012 to Aug 2022. Note: 2022 is a partial year due to availability of legacy CIA data. Source: FAST Lab.

Gear & closure option	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NPT	9,904	3,697	3,564	3,538	5,616	2,740	9,133	4,671	4,233	3,271	899
Alt. 2, Elem. 1, Opt. 1, 525702	4,848	1,950	1,907	1,756	2,842	1,340	4,548	2,294	2,213	1,680	484
Alt. 2, Elem. 1, Opt. 2	5,056	1,747	1,657	1,782	2,774	1,400	4,585	2,377	2,020	1,591	415
POT	51	39	35	33	31	31	2	1	0	12	4
Alt. 2, Elem. 1, Opt. 1, 525702	27	20	19	17	16	15	1	1	0	8	2
Alt. 2, Elem. 1, Opt. 2	24	19	16	16	15	15	1	1	0	4	2
PTR	566	194	355	349	697	142	551	650	163	207	2
Alt. 2, Elem. 1, Opt. 1, 525702	281	89	163	153	300	64	257	322	80	101	1
Alt. 2, Elem. 1, Opt. 2	285	106	192	196	397	78	294	328	82	106	1
NPT + PTR + POT	10,521	3,931	3,953	3,920	6,344	2,912	9,686	5,323	4,396	3,490	905
Alt. 2, Elem. 1, Opt. 1, 525702	5,155	2,059	2,089	1,926	3,158	1,419	4,806	2,617	2,293	1,790	487
Alt. 2, Elem. 1, Opt. 2	5,366	1,872	1,865	1,994	3,186	1,493	4,880	2,706	2,102	1,700	418

Table 5-45 Bottom contact estimates in km² by gear type (NPT, POT, PTR, combined) and proposed closure options (Alt. Element 1, Options 1 & 2) for the seasonal closure duration option from Feb 15-June 15 (Alt. 2, Element 2, Option 2a), 2012-2022. Note: 2022 is a partial year due to availability of legacy CIA data. Source: FAST Lab.

Gear & closure option	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NPT	2,287	1,104	1,024	1,215	1,773	1,306	1,093	1,509	2,569	453	240
Alt. 2, Elem. 1, Opt. 1, 525702	1,063	543	531	593	897	632	537	718	1,311	228	140
Alt. 2, Elem. 1, Opt. 2	1,224	560	493	622	876	674	556	791	1,259	225	100
POT	3	9	7	11	3	18	2	1	0	0	3
Alt. 2, Elem. 1, Opt. 1, 525702	2	6	3	5	1	9	1	1	0	0	2
Alt. 2, Elem. 1, Opt. 2	2	3	3	5	1	9	1	1	0	0	2
PTR	0	0	12	10	8	1	5	5	10	0	2
Alt. 2, Elem. 1, Opt. 1, 525702	0	0	6	5	4	0	3	2	5	0	1
Alt. 2, Elem. 1, Opt. 2	0	0	6	5	4	0	2	2	5	0	1
NPT + PTR + POT	2,290	1,113	1,042	1,236	1,784	1,324	1,100	1,515	2,579	453	245
Alt. 2, Elem. 1, Opt. 1, 525702	1,065	549	541	603	902	641	541	721	1,315	228	142
Alt. 2, Elem. 1, Opt. 2	1,226	563	502	633	882	683	559	795	1,263	225	103

Table 5-46 Bottom contact estimates in km² by gear type (NPT, POT, PTR, combined) and proposed closure options (Alt. Element 1, Options 1 & 2) for the seasonal closure duration option from Apr 1-June 15 (Alt. 2, Element 2, Option 2b), 2012-2022. Note: 2022 is a partial year due to availability of legacy CIA data. Source: FAST Lab.

Gear & closure option	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
NPT	1,909	540	696	660	1,086	1,052	745	807	1,869	271	161
Alt. 2, Elem. 1, Opt. 1, 525702	877	308	398	327	557	527	370	402	951	141	101
Alt. 2, Elem. 1, Opt. 2	1,032	232	297	332	529	524	375	405	917	129	60
POT	0	0	0	0	0	5	0	0	0	0	0
Alt. 2, Elem. 1, Opt. 1, 525702	0	0	0	0	0	2	0	0	0	0	0
Alt. 2, Elem. 1, Opt. 2	0	0	0	0	0	2	0	0	0	0	0
PTR	0	0	0	0	0	1	0	0	0	0	0
Alt. 2, Elem. 1, Opt. 1, 525702	0	0	0	0	0	0	0	0	0	0	0
Alt. 2, Elem. 1, Opt. 2	0	0	0	0	0	0	0	0	0	0	0
NPT + PTR + POT	1,909	540	696	660	1,086	1,057	745	807	1,869	271	161
Alt. 2, Elem. 1, Opt. 1, 525702	877	308	398	327	557	530	370	402	951	141	101
Alt. 2, Elem. 1, Opt. 2	1,032	232	297	332	529	527	375	405	917	129	60

5.6.4 Effects of the Alternatives on Habitat

The effects of the alternatives on habitat and identified GOA groundfish EFH would be based on limits of bottom contact of fishing gear in the proposed closure areas and the potential for shifting fishing effort to other locations outside of the proposed closure areas. Below is a qualitative assessment of bottom contact area and the presumed habitat disturbance that may result from the action alternatives.

Alt 1 - status quo

Under Alternative 1, fishing patterns and gear use in the areas around Kodiak would continue as status quo and the impacts to habitat would likely follow what has been observed. Under status quo, the estimates of bottom contact by the different gear types are expected to be similar to what is presented above. Habitat disturbance around Kodiak is also expected to be similar to what was quantified during the 2022 FE evaluation, as described above. In the 2022 evaluation, no GOA groundfish species were identified with habitat disturbances $\geq 10\%$ of the core EFH areas based on the fishing effects model and no species were elevated for mitigation measures against fishing gear impacts to benthic habitat. As mentioned above, specific analyses for pollock, Pacific cod, flatfish, or rockfish could be included for future discussions, but the fishing effects evaluations for those GOA groundfish species can be found in Appendix 5 of the 2022 Evaluation of Fishing Effects on EFH (Zaleski et al. 2024).

Alt 2 - closure areas

Under Alternative 2, a closure area will be implemented for a specific area, all or a portion of the year, and limiting fishing based on one or more gear types. While the variety of options in the three elements of Alternative 2 would result in different impacts to habitat, broadly a closure area off of Kodiak to fishing gear with bottom contact would decrease the expected cumulative bottom contact in the closure area. It may shift fishing effort outside the closure area and, depending on how that impacts fishing effort outside of the area, could result in an increase of bottom contact and gear interactions with benthic habitats in other locations. A qualitative impact assessment to habitat by the different element options is provided below.

Element 1 - Option 1: 525702 or Option 2: custom closure

Under both options in Element 1, the estimated bottom contact area would decrease in the proposed closure area off of Kodiak. Both proposed closure areas have similar estimates of bottom contact area, except for the 2012 comparison when Element 1, option 2 experienced slightly more bottom contact than Element 1, option 1 (Figure 5-20 and Table 5-44). Both options may shift fishing effort outside of the closed areas and could increase the estimated bottom contact where fishing occurs. The estimated habitat disturbance as a result of shifting effort and changes in bottom contact is dependent on the amount of fishing (less efficient could lead to longer fishing times and greater impacts to habitat) and the location of fishing.

Element 2 - option 1: year-round or option 2: (a) Feb 15-June 15, (b) Apr 1- June 15

Under Element 2, the year-round closure (Option 1) will result in the largest decrease of gear interactions with benthic habitat in a closure area. Intuitively, limiting fishing in an area for a full year rather than selected months will have a greater impact on bottom contact, and based on the estimates of bottom contact area in Table 5-44, Table 5-45, and Table 5-46, much of the bottom contact estimated in the two areas happens outside of the proposed partial closure times in Option 2. Depending on how much fishing effort has to move to other locations, that could potentially increase bottom contact outside of the closure areas, though a part of truly understanding what the impacts could be from changes in bottom contact rates are understanding where the fishing shifts (for susceptibility and recovery rates of habitat features) rather than just considering the vessel footprint on its own.

Comparing the partial closure ranges in Option 2, there would be a slightly larger decrease in bottom contact in either closure area with a longer closure (February 15 to June 15). The difference is driven by estimates of bottom contact in the areas by NPT impacts, with the April 1 to June 15 timing representing little-to-no bottom contact by POT or PTR gear (Table 5-46). Overall, the amount of estimated bottom contact during these shorter closure times is less than the Option 1 year-round closure, and the partial closures would have less of a positive impact on habitat within the proposed areas.

Element 3 - option 1: groundfish pot, NPT and PTR or option 2: NPT

The impacts to habitat from Element 3 are dependent on which option is selected for Element 2. If Element 2, Option 1 is selected, then Element 3, Option 1 will have the largest decrease in impacts to habitat for the closure area. The year-round closure will reduce the amount of estimated bottom contact not only for NPT gear, which is responsible for the majority of the estimated bottom contact (Table 5-44), but also for POT and PTR gear. The values of the estimates of bottom contact area increase from POT to PTR to NPT, and these estimates mirror those of the contact adjusted footprints in the entire GOA region reported in the 2022 FE Evaluation, where the order from smallest to largest footprint was JIG (0.25 km²), POT (2,025.9 km²), HAL (2,895.0 km²), PTR (8,226.9 km²), and NPT (32,786.8 km²) (see Table 1 in Zaleski et al. 2024).

If Element 2, Option 2 is selected, there would be a slightly larger decrease in impacts to habitat under Element 3, Option 1. As noted above, the estimates of bottom contact by POT and PTR gears during the partial closure months is minimal, with slightly more estimated bottom contact by those gear types during the February 15 to June 15 range (Table 5-45 and Table 5-46). Otherwise, most of the bottom contact is by NPT gear during those selected partial closure times, so either Element 3, Option 1 or Element 3, Option 2 would result in an overall decrease in habitat disturbance from estimated bottom contact by fishing gear.

This impact assessment is based on estimates of bottom contact area, which draws upon vessel track location and gear parameters. Analysts note that, for PTR gear, the bottom contact adjustments may change in the future as researchers and industry work together on pelagic trawl gear innovations¹³. Analysts also note that the shift in effort will likely cause increased habitat disturbance in areas outside of the proposed closure area, but those changes in location are not known and the impacts are therefore

unable to be predicted. In the context of habitat, any future evaluation of existing crab-based closure areas by the Council could include the removal or modification of such protections, which, while designed to meet crab conservation objectives, also provide indirect protection to benthic habitats. These closures limit mobile bottom-contact fishing gear, particularly nonpelagic trawl gear, in areas characterized by soft sediment habitats and complex gully systems that support a range of species and life stages. Although other fixed gear types, such as pots and longlines, may still operate within some of these areas, these closures nonetheless function to restrict the spatial footprint of nonpelagic trawl gear. While the overall magnitude of bottom contact at a regional scale may remain relatively unchanged due to redistribution of fishing effort, previously displaced trawl effort could be redirected into habitats that have experienced comparatively low levels of trawling disturbance over recent decades. This shift introduces uncertainty, as it may expose habitats to disturbance where species-specific affinities or dependencies have not been fully identified, potentially resulting in unintended impacts to benthic communities and habitat-dependent species.

5.6.5 Effects From Reasonably Foreseeable Environmental Trends and Planned Action in the Action Area on Habitat

The following reasonably foreseeable actions are identified as likely to have an impact on habitat within the action area and timeframe.

Pelagic trawl gear innovations: There are research projects to address concerns about bottom contact of pelagic trawl gear that are undergoing and discussed in the Pelagic Trawl Gear Discussion Paper (NPFMC 2025). Projects, including the Pollock Gear Project (FAST Lab) and the Gear Innovations Initiative (Pelagic Trawl Gear Industry Working Group), could result in gear modifications that would reduce bottom contact and habitat disturbance if implemented. These changes would have positive impacts on any areas where PTR efforts shift in response to the closure if Element 3, Option 1 was selected, and in any areas where PTR efforts are not limited.

Climate change: Extended periods of increased sea surface temperature (SST) can lead to marine heatwaves (Hobday et al. 2016). The GOA experienced a historic heat wave from 2014-2016, referred to as the “Warm Blob” or “The Blob” (Bond et al. 2015, Yang et al. 2019). In early 2014, the warm blob covered an area of ~ 2 million km², extending from Baja California to the GOA. The upper 100 m of the water column was more than 2.5°C warmer than the long-term climatological mean (1981–2010). Extreme biological impacts occurred throughout the marine ecosystem including prey availability, diet composition, shifts in distribution, and shifts in abundance (Cavole et al. 2016). As the frequency and intensity of marine heatwaves increases, biological responses and impacts, at the individual, stock, and population levels, will increase (Smith et al. 2023). Ocean acidification is an emerging stressor in the Alaska marine ecosystem. Ocean acidification is when the ocean pH levels decrease through the uptake of anthropogenic CO₂. The Ecosystem Status Reports (ESR) included ocean acidification as an ecosystem indicator to monitor trends. In the GOA, there was a long-term decreasing trend of bottom pH caused by ocean acidification, indicating the degradation of sensitive habitat and organisms (Ferriss 2023).

Considering the direct and indirect impacts of the proposed action when added to the impacts of past and present actions previously analyzed in other documents that are incorporated by reference and the impacts of the reasonably foreseeable future actions listed above, the aggregate impacts of the proposed action in Alternative 2 are determined to be beneficial to habitat in either proposed closure area. This is because, as described above, limiting fishing in either closure area will reduce estimates of bottom contact and the resulting habitat disturbance, though the degree of positive impacts depends on the options selected for each element of the action. The net impact to habitat may or may not differ, however, if fishing effort is similar after shifting locations from within to outside either proposed closure area.

6 Management Considerations for Alternative 2

6.1 Monitoring

Monitoring of federally managed fisheries in the GOA is conducted through an integrated system of at-sea observers, electronic monitoring (EM), vessel monitoring systems (VMS), and catch reporting requirements. Together, these programs provide the data necessary for inseason management, stock assessment, and enforcement of regulations under the Fishery Management Plan.

The cornerstone of monitoring in the GOA is the North Pacific Observer Program, which places trained, certified observers aboard vessels and at processing facilities to collect data on catch, bycatch (including prohibited species such as salmon and halibut), and biological characteristics of harvested species. Observers also document interactions with protected resources and verify compliance with regulations. These data are used directly for quota monitoring, stock assessments, and ecosystem research, and are considered the primary source of fishery-dependent information in the region.

All federally permitted groundfish and halibut vessels are assigned to either a full coverage or partial coverage monitoring category. Vessels in the full coverage category (e.g., catcher-processors and some catch share participants) are required to carry observers on 100% of fishing activity, while vessels in the partial coverage category are subject to randomized observer or EM selection based on an annual deployment plan developed by NMFS. This sampling-based approach is designed to achieve statistically reliable data while balancing monitoring costs.

Electronic monitoring has become an increasingly important component of the monitoring system. EM systems—typically consisting of onboard cameras, sensors, and data storage—are used to document catch handling, discards, and compliance with retention requirements. EM is widely implemented for fixed-gear vessels in the partial coverage category and has recently been expanded to include pelagic trawl pollock vessels and tenders in the GOA, where it is combined with shoreside observer sampling to estimate catch composition and monitor salmon bycatch.

In addition to observers and EM, many vessels operating in federal waters of the GOA are required to use Vessel Monitoring Systems (VMS). VMS units automatically transmit vessel location data at regular intervals, allowing NMFS Office of Law Enforcement to track vessel activity, ensure compliance with area closures, and verify fishing effort in regulated fisheries (e.g., pollock, Pacific cod, and vessels using nonpelagic trawl gear).

Catch accounting and reporting requirements further support monitoring. Vessels must submit logbooks, landing reports, and electronic reporting data, which are integrated with observer and EM data into centralized catch accounting systems. These systems enable near real-time tracking of quotas, bycatch limits, and seasonal allocations, supporting inseason management decisions such as fishery closures.

Finally, shoreside monitoring and sampling—particularly in trawl fisheries—provide additional verification of catch composition and collection of biological samples (e.g., salmon genetic stock identification).

Overall, the GOA monitoring system is considered comprehensive and multi-layered, combining human observers, electronic technologies, and reporting systems. This integrated approach supports accurate catch estimation, minimizes bycatch, enforces regulatory measures (including area closures), and provides the scientific information necessary for sustainable fisheries management under the Council process.

GOA EM Trawl Gear Pool

NMFS has issued a final rule to implement EM on pollock catcher vessels using pelagic trawl gear ([89 FR 60796, July 26, 2024](#)). Vessels must opt-in annually by 1 November, and be approved by NMFS, to participate in the EM Trawl category for the upcoming fishing year. Once approved, all trips where the

vessel targets pollock with only pelagic trawl gear will be subject to the EM Trawl regulations. Vessels must indicate prior to the trip whether they intend to deploy pelagic trawl gear during a trip and compliance monitoring with an EM system is required on every trip. In addition, observers will monitor EM deliveries by catcher vessels or tender vessels to shoreside processors. A vessel may make a request on which permitted EM Service Provider they wish to work with for the calendar year, but final selection will be done by NMFS through consideration of cost efficiency, cost competitiveness, past compliance on any contract terms, and data delivery success. Of the 114 vessels that applied and were approved by NMFS for the EM Trawl Gear pool for 2026, 44 are expected to fish in the GOA based on fishing effort within the last year.

For the EM Trawl strata in the GOA, NMFS will implement a dockside monitoring protocol that maximizes shoreside observer data collection and monitoring.

For vessels in the GOA pollock fishery that do not participate in the EM Trawl program and deliver to shoreside processors, observers in the processing plant will meet dockside monitoring data collection objectives; complete a total catch estimation and estimate prohibited species catch and discards for the offloads from trips that are randomly selected for at-sea observer coverage. Halibut PSC estimates will be based on sample data collected by at-sea observers using current Catch Accounting System methods. Biological sampling of catch will be completed through at-sea sampling by the vessel observer, as has been the norm in the past ([NMFS 2026](#)).

6.2 Management

Alternative 2 would result in a regulatory amendment to 50 CFR 679.22 to add the selected closure area and specify the sectors affected, and an amendment to the GOA Groundfish FMP to include a description of the new closure area in Section 3.5.2 Area Restrictions. Because the area closure would be either year-round or a set date range (February 15 to June 15, or April 1 to June 15) rather than a trigger-based closure, it would not require changes to inseason management for monitoring and closing fisheries.

Action Alternatives

Draft regulatory changes from Alternative 2 would implement a closure off Kodiak Island to either groundfish pot and trawl gear, or nonpelagic trawl gear. These draft regulatory changes could include adding a description, including spatial boundaries and specified fishing prohibitions to the existing regulations as a new paragraph under the closures listed at § 679.22 (b) GOA Closures.

Paperwork Reduction Act (PRA)

If necessary, any PRA implications of the action alternatives will be assessed prior to final action. At this time, the action alternatives do not contemplate changes to any existing collection of information requirements.

6.3 Enforcement

Under all alternatives, no changes to the existing enforcement tools are necessary. The Enforcement Precepts include high-level recommendations for the Council's consideration of closure areas, closure seasons, and/or gear restrictions. These recommendations are outlined in Sections 4.4 and 4.5 of the Enforcement Precepts document developed in 2015¹⁹.

Closure Areas

The closure areas outlined within Alternative 2, Element 1 are aligned with the closure area recommendations in the Enforcement Precepts. The boundaries of the proposed closure area in Element 1, Option 1, is defined by

¹⁹ Available at <https://meetings.npfmc.org/Meeting/Details/450>, agenda item D6.

existing ADF&G statistical areas and by polygons defined by latitude and longitude coordinates. Closure areas defined in this manner are easiest for both the regulated industry to understand and comply with, as well as enforcement entities to patrol and enforce. As recommended within the Enforcement Precepts, closure areas using “exact latitude/longitude, straight lines and rectangular shaped areas or center point and radius lines for most effective enforcement.”

Closed areas can be enforced by aerial patrols, at-sea boardings, advanced VMS features, electronic monitoring and reporting, and dockside inspection. It is effective and efficient for enforcement agencies to utilize advanced VMS features, which complement traditional surveillance platforms. In addition to providing law enforcement with information regarding vessel position and movements, VMS advanced features can also communicate information about the gear being utilized and the fish species being targeted. The Council could consider requiring vessels in federal fisheries in Alaska to employ advanced features of VMS to report their gear type and target species; this information is currently captured in logbooks that OLE can access.

The proposed closure areas present no noteworthy enforcement challenges. The proposed closure areas would be principally enforced by using information from VMS units aboard vessels required to carry VMS. Most of the vessels subject to the proposed closure areas are already required to carry VMS units due to their participation in existing fisheries subject to VMS requirements. The proposed areas are located relatively close to the Port of Kodiak, and would be expected to receive a relatively high amount of aerial and surface patrol by USCG platforms, as these patrols depart and arrive at the Kodiak USCG base. These proposed closure areas are also located in areas of high transit activity by the Kodiak and GOA-based fishing fleets and other maritime vessels. For this reason, potential closure violations may be reported by the fishing and maritime community.

Closure Seasons

Closure seasons can be enforced by at-sea boardings, electronic technologies, aerial patrols, and dockside monitoring. VMS technologies are useful in monitoring vessels before, during, and after open seasons to greatly aid enforcement. The Enforcement Precepts recommend that closures and stand-down periods are clearly defined, with dates/times defined to the minute, and that regulations should fully describe what activity is allowed to occur before, during, and after the closure (e.g. all gear must be hauled in prior to the closure, and gear may not be set prior to the opening). Depending on the gear types selected in any potential Council action on Alternative 2, the Council should consider providing recommendations on the precise timing of closures, and the activity that is allowed by different gear types surrounding these closures.

Gear Restrictions

The Enforcement Precepts recommend that closure areas should be closed to all activity if possible, and that grandfathering and other exemptions should be limited. The prohibitions considered under Alternative 2 would prohibit either all groundfish pot and trawl fishing, or nonpelagic trawl fishing. The existing Type I-III closures and Marmot Bay Tanner Crab Protection Area all prohibit nonpelagic trawl fishing, but allow for pelagic trawl fishing activities to occur.

Regulated gear areas are difficult to enforce, because this still requires an enforcement unit to gather evidence that the vessel operator used illegal gear in the closed area. If the proposed closure area prohibited only nonpelagic trawl gear activity, enforcement could be structured similarly to the enforcement of nonpelagic trawl fishing prohibitions in the Type I-III and Marmot Bay Tanner Crab Protection Area. As the existing, and considered, GOA closure areas to protect crab are based on gear type, OLE requires clear definitions of the gears addressed in this action to enforce closures²⁰. This includes groundfish pot gear, pelagic trawl gear, and nonpelagic trawl gear. A discussion of related regulations that identify legal groundfish gear in areas closed to nonpelagic trawl gear is included in Section 7.5.

²⁰ The Council recently took final action to recommend updates the regulatory definition of pelagic trawls in Alaska to clearly allow commonly used components in codends and bycatch excluder devices, allow instrumentation necessary to monitor and adjust net performance, and remove unnecessary outdated text. The draft for initial review/final action can be found at <https://meetings.npfmc.org/Meeting/Details/3087>.

7 Alternative 3 Discussion Overview

The Council has established several static fixed closure areas around Kodiak Island to protect GOA red king crab (*Paralithodes camtschaticus*) and Tanner crab (*Chionoecetes bairdi*) populations (Figure 2-1 and Table 2-1). Closure areas established for the protection of GOA red king crab populations are designated as Type I, II, or III areas. The Marmot Bay Tanner Crab Protection Area, located northeast of Kodiak Island, was implemented in 2014 specifically for the purpose of minimizing Tanner crab bycatch and to protect Tanner crab stocks from adverse effects of GOA groundfish fisheries. These areas are closed to fishing with trawl gear, except for directed fishing for pollock with pelagic trawl gear.

In its April 2025 motion²¹, the Council signaled that it intends to review the objective of each existing crab protection area around Kodiak Island and biological, fishery independent and dependent information available for the area and consider options for modifications or removal.

In its current form, Alternative 3 would not lead to rulemaking or an amendment to the GOA FMP, because the Council has not identified specific elements of existing Federal crab protection closures that it wishes to modify or remove. **Therefore, the reader should note that, at this time, it is not possible for the analysts to provide a quantitative analysis of the potential impacts that modifying or removing the existing crab closure areas would have on crab populations (including but not limited to Tanner crab) or Federally managed groundfish fisheries. This type of analysis would be completed after the Council identifies the elements of the existing closure areas it may wish to modify or remove.**

The Council is taking the approach outlined under Alternative 3 because a full evaluation of the existing closure areas surrounding Kodiak Island has not been completed since they were implemented in 1992 (Amendment 26), and Alternative 2 would add a new closure area establishing protections for Tanner crab populations. There is no formalized process for evaluation of closures, and few examples in scientific literature. Additionally, it can be difficult to quantify direct conservation benefits of closures, and to discern impacts to crab outside of survey areas (such as within the Chirikof Type II closure, see Section 7.3), though past closure actions can provide examples of potential approaches and metrics. At a high level, if an evaluation under Alternative 3 led to the removal of one or more closure areas, this Alternative would impact vessels using nonpelagic trawl gear by allowing the gear type to be used in an area where it is currently restricted from use. Type I, II, and III closure areas and the Marmot Bay closure area are all closed to nonpelagic trawl gear,²² and removing one or more of these closure areas could impact vessels that use nonpelagic trawl gear in the Central GOA. However the impacts vary widely depending on which (if any) areas around Kodiak Island are considered or selected for removal, and whether they were selected for removal in combination with the adoption of Alternative 2. For example, Type III closures have never been triggered since they were implemented in 1986 (see Section 2.1.1 for more detail). Therefore, the impacts of removing one or more Type III closure areas would be negligible compared to the impacts of removing a Type I or II closure area.

Given that a quantitative impact analysis is not possible at this time, the sections below contain information to help the Council identify elements of existing closure areas it may wish to modify or remove. Sections 7.1 and 7.2 provide information on the existing Federal crab protection closures around Kodiak Island, including a summary of their history and objectives, as well as a description of the rationale and analyses that supported the Council's decisions to implement the closures. Additionally, context on related groundfish regulations is provided within Section 7.5, which describes other regulations established for the protection of GOA crab species that apply to vessel operations occurring with the closure areas. An overview and summary of the policy and management considerations

²¹ April 2025 Council motion available at: <https://meetings.npfmc.org/CommentReview/DownloadFile?p=0f12351e-ab1c-4bfc-b28f-6282c4a03b0f.pdf&fileName=D2%20MOTION.pdf>

²² A description of each area closure is included in Table 2-1 and details the gear prohibitions applicable to each area closure.

highlighted for the Council's evaluation is included in Section 7.3. Section 7.4 includes ADF&G survey abundance, observer estimates, and PSC estimates for existing closures to help inform the Council during their evaluation process, and Section 7.5 details pathways the Council may take as next steps after reviewing the considerations and information provided within this document.

A summary of the information provided for Alternative 3 for consideration and decision-making is included within the Executive Summary.

7.1 History of Closures to Protect GOA Crab

Figure 7-1 below provides a map of the existing time and area closures surrounding Kodiak Island that apply to federal groundfish fisheries. This includes the Federal closure areas established to protect GOA crab stocks, which are being evaluated under Alternative 3, as well as other closures applicable to groundfish fisheries that may also provide incidental protections to king and Tanner crab. Many other closure areas in the GOA were instituted to reduce PSC of other species or reduce interactions with SSLs (described further in Section 2.1.1). The map is not inclusive of all types of time and area closures but does include the main restrictions to groundfish fisheries in this analysis. Figure 7-1 also includes the areas considered for closure under Alternative 2 of this action.

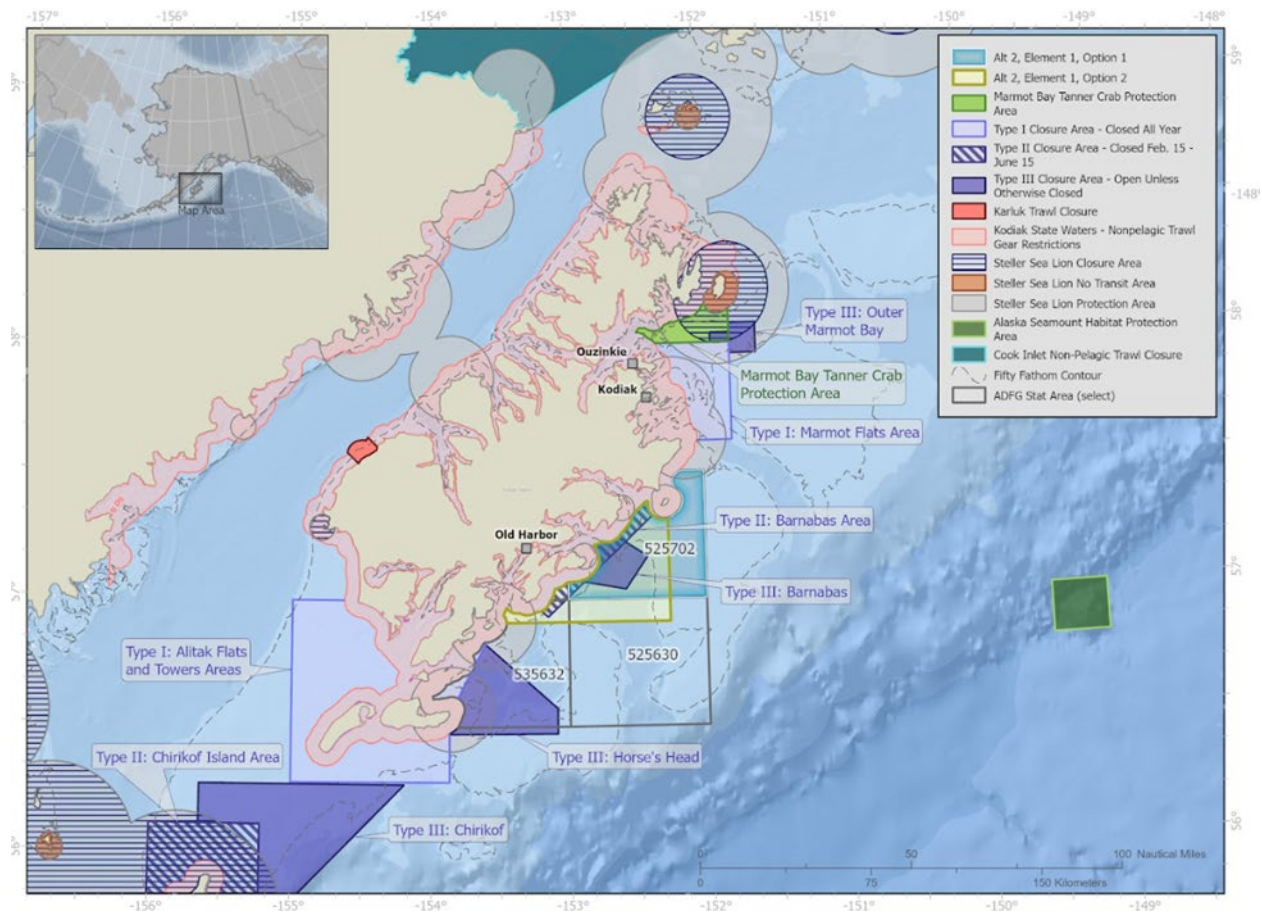


Figure 7-1 Summary map of other State and Federal closures relevant to this action along with the proposed closures in this action (Alt. Element 1, Options 1 and 2). Source: PSMFC. Note: some Steller Sea Lion area closures to specific target fisheries are not illustrated.

7.1.1 History of GOA Type I-III Closures

Type I-III closure areas were established and modified through a series of amendments to the GOA FMP and differ based on the level of protection provided and the conditions under which the closures apply. The primary distinction between these closure frameworks is the duration of the closure: Type I areas are closed to nonpelagic trawling year-round, Type II closures are closed to nonpelagic trawling between 2/15 and 6/15, and Type III closures are open unless otherwise closed. These closures were first implemented in 1986, and were reviewed, evaluated, and amended in 1987, 1989, and 1992 via Amendments 15, 18, and 26 to the Gulf of Alaska FMP²³.

The Council first implemented closure areas for Kodiak king crab protections via emergency action in 1986²⁴. The Council implemented time/area closures that **prohibited “hard-on-bottom” trawling between February 15 and June 15**, based on information contained within a 1986 joint ADF&G/NMFS study²⁵. The report recommended closing areas with high concentrations of female king crab, which were

²³ Analytical documents (EA/RIR/IRFAs) that evaluated the Type I-III closure areas are available under Amendments 15, 18, and 26, at <https://www.fisheries.noaa.gov/action/groundfish-gulf-alaska-management-area-fishery-management-plan-historical-amendments-11>

²⁴ Emergency interim rule available in Volume 51, No. 48 of the Federal Register (3/12/1986), at <https://www.govinfo.gov/content/pkg/FR-1986-03-12/pdf/FR-1986-03-12.pdf>

²⁵ “Conservation Concerns of the Kodiak King Crab Resource: A Discussion of Management Options—prepared for NPFMC” is available on the Council’s [January 1986 eAgenda](#) link, under D3(b), at

identified using distribution data from 1960 to 1968. A seasonal closure was recommended in order to focus protection measures during the “soft-shell” period, when contact with any fishing gear or handling would result in very high mortality. The February 15 to June 15 period was recommended based on molting and mating research from recent biological studies (including: Powell et al, 1973; McMullen, 1967 & 1968; Gray & Powell, 1966, Kingsbury & James, 1971; and ADF&G grasping pair data later reported in Powell et al, 2002—available in works cited within the joint study) and test fishing conducted in June 1968 prior to the Kodiak district commercial season opening. Finally, the report recommended prohibitions to “hard-on-bottom” trawling (as well as crab pot fishing) because bottom trawling had historically occurred in the areas of high king crab abundance during the soft-shell season. Trawling for Pacific cod and pollock were considered but were not included in the recommendation because they had not been conducted in areas of high king crab abundance at the time.

Following implementation of the 1986 emergency rule, the Council developed a longer-term management measures through Amendment 15, 18, and 26 to the Gulf of Alaska FMP. Amendments 15 and 18 both included sunset provisions effective 3 years after implementation, established in response to concerns that fixed closures implemented via FMP amendment can become difficult to reverse even if stock conditions improved. After each 3-year period, the Council reviewed stock status, closure effectiveness, and ultimately determined that protections should continue. The Council concluded that the continued depressed condition of crab stocks made the additional conservation measures appropriate. Via Amendments 18 and 26, the Council reaffirmed and extended the protections, concluding that the closure framework would increase the probability of successfully rebuilding red king crab stocks while maintaining fishing opportunities for the groundfish fleet. The majority of the provisions from the original 1986 emergency rule closure were retained throughout Amendment 15, 18, and 26. All gear prohibitions remained applicable to “hard-on-bottom” trawling, and seasonal protections remained focused on the February 15 to June 15 period thought to encompass the majority of the mating and soft-shell period. However protections were expanded through both Amendment 15, by switching to an annual closure framework in certain areas (Type I areas), and Amendment 18, which established additional closure areas with recruitment-based triggers (Type III areas).

Amendment 15 increased the protections in certain areas to an annual closure framework—these areas are designated in regulation as Type I areas. Type I areas were defined as king crab stock rebuilding areas, where crab concentrations were high and where maximum protection was necessary to promote rebuilding. Though fishing mortality of hard-shell crab was not known, the analysis noted that nonpelagic trawl fishing could kill or injure king crab in several ways. Therefore, implementing a year-round closure was intended to provide maximum protections to king crab in areas where they were most abundant. All other protection areas were designated as Type II areas, which were seasonally sensitive and retained the original February 15 to June 15 closure duration.

Amendment 18 established an additional closure area framework, designated as a Type III area. Type III areas were established to provide additional protections to juvenile crab if high recruitment was to occur in the future. Type III areas remain open to all fishing, unless a specific recruitment-based abundance threshold is identified by ADF&G survey data—defined as a “significant recruitment event”. Significant recruitment events were defined as the appearance of female king crab in substantially increased numbers, with thresholds based on abundance criteria (defined as fertilized females per pot, and as total estimated king crab abundance by district). At the time of implementation, it was noted that ADF&G survey data would likely identify recruitment events approximately two years before stock levels would support reopening a commercial fishery, allowing time for protective closures to be implemented before fishing activity resumed. If a significant recruitment event were to occur, and be identified, the trigger-based closure mechanism would increase protections in areas where juvenile crab may be concentrated. This

<https://meetings.npfmc.org/CommentReview/DownloadFile?p=7b681668-1b2c-4f50-ac8a-f39a8128b16c.pdf&fileName=D3%20Management%20of%20Gear%20Shares%20of%20Sablefish%20Allocations%20in%20GOA.pdf>

includes in certain rearing areas and migratory pathways not contained within the boundaries of existing Type I and II areas. After the identification of a recruitment event, the NMFS regional director would determine whether the area should be classified as a Type I or Type II closure based on the available biological information. Type III closures have never been triggered since they were implemented in 1986.

7.1.2 History of Marmot Bay Tanner Crab Protection Area

The Marmot Bay Tanner Crab Protection Area (Table 2-1 and Figure 2-2) is closed to all fishing with nonpelagic trawl gear. The closure area was established by the Council in October 2010, and implemented by NMFS in February 2014 with GOA Groundfish FMP Amendment 89 (79 FR 2794). This closure area was the first conservation measure in the GOA to establish direct protections for Tanner crab. The closure area aimed to reduce the incidental catch of Tanner crab in GOA groundfish fisheries and to reduce negative impacts of nonpelagic trawl gear on Tanner crab.

The Council initiated a formal analysis of closure areas in the GOA for Tanner crab in 2009, after reviewing a discussion paper on GOA Chinook Salmon and Tanner crab bycatch. The Council considered four areas for closure on the Western side of Kodiak Island, with options to apply the closures annually or seasonally, and to some or all gear types, with select exemptions. Following refinement of alternatives, the Council took final action in October 2010 to establish a closure in Marmot Bay to nonpelagic trawl gear. The Council based this recommendation on: (1) the high rate of Tanner crab mortality in the Marmot Bay Area relative to other areas; (2) the presence of mature male and female Tanner crab populations; (3) the occurrence of known Tanner crab habitat; (4) the high rate of Tanner crab bycatch by vessels using trawl gear relative to pot gear; and (5) the limited impact the closure would likely have on existing nonpelagic trawl participants relative to closures in other areas.

Within the motion for final action on the Marmot Bay Tanner Crab Protection Area, the Council initiated an analysis of a trailing amendment to evaluate trawl sweep modifications for nonpelagic trawls. These modifications require elevating devices that raise portions of the sweep off the bottom and are intended to reduce unobserved mortality of Tanner crab by decreasing direct gear contact with crab on the seafloor. The Council initiated this item as a trailing amendment because additional research was needed on modified sweeps in the GOA before final action. An analysis of this trailing amendment was completed for public review in April 2012, and the Council took final action on the trailing amendment at that meeting.

The final rule of Amendment 89 (79 FR 2794, January 16th, 2014) included both elements that addressed Tanner crab bycatch in the Central GOA. Within the final rule, it was noted that the Marmot Bay Protection Area is adjacent to existing king crab closure areas established under earlier amendments, including the Marmot Flats Type I closure and the Outer Marmot Bay Type III closure. Where these areas overlap, the more restrictive measures apply.

Table 7-1 below shows a full timeline of Council actions relating to the establishment of the Marmot Bay Tanner Crab Protection Area.

Table 7-1 Timeline of Council Actions relating to the Marmot Bay Tanner Crab Protection Area

Date, Agenda Item (if applicable)	Analytical Document Link & Summary	Council Action
October 2007		Council motion directing staff to update a 2005 discussion paper on salmon & crab bycatch in the GOA groundfish fisheries.
June 2008 D-3(b)	Discussion Paper : Salmon and Crab Bycatch Measures for GOA Groundfish Fisheries.	Council motion directing staff to develop illustrative strawman closure areas (for both trigger and hard caps) for Chinook & Tanner crab bycatch in the Western & Central GOA.

	Reviewed by AP in Dec. 2007, and by the SSC in April 2008.	
October 2009 D-2(b)	Discussion paper : GOA Chinook Salmon and Tanner crab bycatch Reviewed by AP in December 2008, and by the SSC in April 2008.	Council motion to adopt purpose and need and suite of alternatives for analysis. Considered four areas for closure on the Western side of Kodiak Island, with options to apply the closures annually or seasonally, and to some or all gear types, with select exemptions.
April 2010 D-3(a)	Initial Review Analysis : Area closures to protect GOA Tanner crab	Council motion to modify the suite of alternatives, and release for public review (final action). Gear types considered were modified to only include groundfish pot and trawl.
October 2010 C-5	Analysis for Final Action , Area Closures to protect Tanner crab	Council motion amending purpose and need and identifying preferred alternative final action to close Marmot Bay to trawl gear unless directed fishing for pollock with pelagic gear. The Council also moved to implement trawl sweep modifications for nonpelagic trawl vessels in the CGOA. Action was initiated as a trailing amendment because modified sweeps needed further research.
February 2011 D-1(b)	Discussion paper : GOA Trawl Sweep Modification	Council motion to move forward with testing trawl sweep modifications in the CGOA flatfish fisheries.
February 2012 C-4(a)	Initial Review : GOA Trawl Sweep Modifications	Council motion to schedule the document for final action.
April 2012 C-3(b)	Final Action , GOA Trawl Sweep Modifications	Council motion to adopt trawl sweep modifications in the CGOA flatfish fishery.
2014	EA/RIR/IRFA for Amendment 89	Final Rule , Amendment 89 to the GOA Groundfish FMP; establishing a protection area in Marmot Bay, and requiring trawl sweep modifications in the CGOA directed flatfish fisheries.

7.2 Existing Federal Crab Closure Objectives

Evaluating the existing closure areas established for crab protections around Kodiak Island provides an opportunity to assess their effectiveness relative to their original objectives, to identify modifications to improve their effectiveness, and to determine whether specific areas remain necessary. Federal time and area closures around Kodiak Island were originally implemented to reduce fishing gear interactions with crab and facilitate stock rebuilding by protecting concentrations of crab during sensitive life-history stages. Past considerations and objectives for existing closures share some common themes with this current action (see Section 1.1 and Section 2.1.1 for further details on existing closures):

- Direct protection of king crab *and* intention to protect Tanner crab through time/area bycatch control measures – according to analyses for Amendment 18 (and subsequently in Amendment 26), the Council requested that the Bycatch Committee include an evaluation of the “king and Tanner crab bycatch problem” to determine whether the current boundaries should be extended. They found that “... the current closed areas have also been determined to simultaneously afford a high degree of protection to depressed Tanner crab stocks.” The exception being Marmot Bay Tanner Crab Protection Area as the king crab stock had collapsed decades prior, and any protection afforded would be incidental.
- Consistent focus on areas of relatively high crab abundance and densities: same statistical areas on north and east side of Kodiak Island (e.g., Marmot Bay action considered 525702, 525630, Chiniak Gully, 525807; other older actions also considered Eastside in general)
- Intent to limit negative socioeconomic consequences to relevant groundfish fisheries and local communities
- Protection of vulnerable life stages

- Type I: soft-shell king and Tanner crab, any sex/maturity stage of crab to reduce bycatch mortality
- Type II: seasonal protection of soft-shell adult female king and Tanner crab during molting/mating
- Type III: juvenile RKC rearing or migratory areas adjacent to Type I/II
- Marmot Bay T CPA: soft-shell adult Tanner crab, any sex/maturity
- Incorporation of industry input and Council requested formation of an industry working group (supported by NMFS, ADF&G, others) to develop a long-term solution that would meet the needs of all interested fishing industry groups.
- Incorporation of trawl sweep nonpelagic trawl gear modification to further ameliorate trawl impacts to crab
- Recognition that once a fixed closure is in place via FMP amendment, it can be difficult to reverse, even if stock conditions improved.

After considering these objectives and results from the analyses in the early 1990's, the Council determined that the crab stocks warranted permanent protection. After Amendment 26 was adopted, there were no mechanisms incorporated into the regulatory language for further evaluation of area closure effectiveness.

During this current action, the Council's stated objectives are almost identical to past concerns and objectives. Accordingly, the Council may choose to model all or part of future closure area evaluations after prior analyses, such as the analyses conducted through GOA FMP Amendments 15, 18, and 26.²⁶

7.3 Considerations for Existing Closures

The time and area closures around Kodiak are complex, with different objectives, gear prohibitions, and overlapping boundaries (see Figure 2-2, Section 2.1.1, and Section 7.1) for more details on existing closure areas). Furthermore, the State and Federal regulatory boundaries in this region are complicated and can vary by fishery (Figure 1-1, Figure 1-2, and Figure 3-3). For example, the Federal management area boundary between 620 and 630 runs through the west side of Kodiak Island and the State Tanner crab management boundaries do not align with the ADF&G groundfish statistical areas.

Several closure areas surrounding Kodiak Island were established to protect resources other than crab but may ultimately provide incidental protection to Tanner and king crab from fishing activity, and to associated habitat. It is difficult to discern the effects of a single closure on a relatively small scale, especially when areas overlap. The interactions among closure areas and regulatory boundaries should be considered when adding, modifying, or removing restrictions to one area. Complicated boundaries can make evaluations challenging, especially in areas that are relatively small and do not match harvest and bycatch reporting boundaries. The added implications of broad gear restrictions should also be considered in conjunction with the regulatory complexities listed below. See Section 2.1.1 for a detailed description of existing closures around Kodiak Island.

The considerations below summarize some of these complexities:

Type III (Chirikof, Horse's Head, Barnabas, Outer Marmot Bay)

- Type III closures have never been triggered; therefore, no conservation benefits have been achieved

²⁶ Prior to the implementation of Amendment 26, the Type I-III closures included sunset provisions; therefore the closures were evaluated by the Council at regular intervals between 1986 and 1992 (as described in Section 7.1.1). The analytical documents (EA/RIR/IRFAs) that evaluated the Type I-III closure areas are available under Amendments 15, 18, and 26, at <https://www.fisheries.noaa.gov/action/groundfish-gulf-alaska-management-area-fishery-management-plan-historical-amendments-11>

- Threshold or ‘trigger’ for opening was focused on a king crab recruitment event, which utilized data on fertilized females per pot to estimate total abundance by district to establish a threshold based on abundance thresholds from the 1960s and 1970s.
 - ADF&G no longer conducts a pot survey,²⁷ therefore the defined mechanism for triggering a Type III closure is largely obsolete.
 - ‘Significant recruitment’ thresholds defined in federal regulations have never been updated. The Kodiak king crab stock has not shown signs of recovery, and declines have continued over time; it is unlikely that the threshold would be met.
- Type III areas overlap existing, and proposed closures:
 - The Barnabas closure area is completely encapsulated within both the Alternative 2, Element 1, Options 1 & 2 proposed closures.
 - The Horse’s Head closure area is partially overlapped by two SSL protection areas – Twoheaded Island and Cape Sitkinak, both of which have a 10 nm radius arc that prohibits directed pollock and Pacific cod trawl fishing year-round.
 - The Outer Marmot Bay closure area overlaps two SSL protection areas (the Marmot Island Steller Sea Lion Closure Area, and the Marmot Island Steller Sea Lion Protection Area), and the Marmot Bay Tanner Crab Protection Area.
 - The Chirikof closure area overlaps with the Chirikof Island Steller Sea Lion Closure Area.

Type II (Chirikof Island Area, Barnabas Area)

- Abundance estimates for king and Tanner crab in the Chirikof Island closure are difficult to quantify due to sparse survey data.
 - Estimates can be based only on NOAA RACE GAP surveys, which survey the GOA biennially in a random stratified design.
 - The ADF&G bottom trawl survey does not have an established station in the Chirikof Island area. The last survey close to the Chirikof closure was in 2010.
- The Type II closure period (February 15 to June 15) was chosen based on king crab data from the 1960s (see Section 7.1.1) and was thought to encompass almost all of the mating and soft-shell condition at the time.
 - The period has not been updated since the original implementation of seasonal closures in 1986.
 - Research in the 1990’s, 2000’s, and recent observations by ADF&G survey staff have confirmed that this window is important for king crab, particularly March through May. However this may not encompass the entirety of the soft-shell period; ADF&G surveys in the Barnabas gully have commonly encountered soft-shelled crab throughout the summer (conducted in June and July). Soft-shelled crab are encountered in this survey in the Shelikof strait into the fall.
- Type II closure areas overlap existing, and proposed closures:
 - A majority of the Chirikof Island closure is contained within a SSL closure, which already effectively closes the area to fishing.
 - The proposed custom closure (Alt. 2, Element 1, Option 2) completely encapsulates the Type II Barnabas area. If a closure was implemented for the custom area, for either an annual duration or a 2/15 to 6/15 duration (Element 1, Option 1 and Option 2a), the Type II Barnabas area would become obsolete and unnecessary.

²⁷ ADF&G used pot surveys as the primary red king crab stock assessment tool until 1988. ADF&G began conducting trawl surveys focused on red king crab in 1963, however the first comprehensive large-mesh trawl survey of the Kodiak Island didn’t occur until 1987. In 1988, large-mesh trawl surveys replaced pot surveys as the standard stock assessment tool. Additional information available at <https://www.adfg.alaska.gov/FedAidPDFs/FMR17-23.pdf>

- During the first half of the year, three SSL Protection Areas (Cape Barnabas, Gull Point, Cape Chiniak) expand from 3nm to 10 nm in size and may completely overlap the Type II Barnabas Area, and a majority of the Type III Barnabas area. Additionally, these three SSL closures overlap portions of both proposed closure area options (Alt. 2, Element 1, Option 1 & 2). These SSL closures are closed to pollock and Pacific cod trawling out to 10nm from Jan 20 – May 31 for pollock trawling and Jan 20 – June 10 for Pacific cod trawling.

Type I (Alitak Flats and Towers Area, Marmot Flats Area)

- Areas within Alitak Flats and Towers Area contain what is thought to be the last remaining productive portion of the red king crab population around Kodiak Island and has been a productive area for Tanner crab (Table 2-1 and Figure 2-2).
- The areas overlap several existing closure areas:
 - Depending on the time of year, three SSL Protection Areas overlap a majority of Marmot Flats Area, the Marmot Bay Tanner Crab Protection Area, and the Type III Outer Marmot Bay.
 - Cape Chiniak and Long Island are closed to directed pollock and Pacific cod fishing with trawl gear out to 10 nm.
 - Marmot Island is closed to pollock trawling out to 15 nm from Jan 20 – May 31, and out to 20 nm from Aug 25 through Nov 1. The closure extends to Pacific cod trawling out to 15 nm from Jan 20 – June 10, and out to 20 nm from Sept 1 – Nov 1. Marmot Island is also closed to fishing for Pacific cod with hook-and-line and with pot gear out to 10 nm year-round.

Marmot Bay Tanner Crab Protection Area

- According to 2025 survey results and historical patterns, this area, and the entire Northeast Section of the Kodiak District does not seem to be very productive for mature Tanner crab (see Section 5.3.1 and Section 7.4). Legal male abundance has been low in recent years, and no Tanner crab fishery has occurred during this period of analysis.
- The area overlaps several existing closure areas:
 - Two SSL closures overlap this closure area. See above for Marmot Island SSL Protection Area. The SSL closure area restricts all groundfish fishing year-round out to 3 nm, and this is also a no transit zone.
 - A portion of the Type III Outer Marmot Bay closure overlaps with this closure.
 - Where overlap exists, the more restrictive rules apply.

7.4 Crab ADF&G Survey Abundance, Observer Estimates, and PSC Estimates for Existing Closures

Some preliminary inferences about red king crab and Tanner crab can be made with available ADF&G survey abundance, observer estimates, and PSC estimates for existing closures. It should be noted again that this section, nor any of Alternative 3 constitutes a full analysis.

The following approach was used to approximate the presence of crab in existing crab protection areas around Kodiak Island (Type I, II, III, and Marmot Bay Tanner Crab Protection Area) to support the discussion for Alternative 3.

Estimates of prohibited species catch (PSC) differ from raw observer estimates in both purpose and construction. PSC estimates are typically derived through extrapolation methods that expand observed bycatch to represent total fleet-wide impacts, incorporating sampling design, observer coverage rates, and weighting procedures consistent with management applications. In contrast, observer estimates at the haul or trip level represent direct measurements or sample-based estimates from observed fishing activity and

are not, on their own, representative of total fishery-wide bycatch. Despite this limitation, observer data provide the most reliable basis for evaluating area-specific interactions, as they retain the highest spatial and temporal resolution available. While PSC estimates are appropriate for assessing overall fleet impacts, observer data are better suited for analyses that require finer-scale spatial attribution, such as evaluating bycatch patterns within specific closure areas.

The existing Kodiak closure areas, including Marmot Bay, Chirikof, Alitak Flats and Tower, Horse's Head, and Barnabas, were defined using ADF&G statistical area codes to provide a consistent and standardized spatial framework for analyzing observed king crab and Tanner crab. ADF&G statistical areas are widely used across fishery-dependent datasets, including eLandings, observer data, and catch accounting systems, and allow for consistent spatial assignment across data sources. For this analysis, closure areas were constructed by grouping contiguous statistical areas that correspond as closely as possible to the geographic features associated with each named closure.

The statistical area groupings used to approximate closure boundaries are as follows: Marmot Bay includes statistical areas 525807, 515802, 525732, and 515730; Barnabas includes statistical area 525702; Horse's Head includes statistical area 535632; Alitak Flats and Tower include statistical areas 545631 and 545602; and Chirikof includes statistical areas 555600 and 555532. These groupings are intended to approximate the spatial extent of the respective closures based on available statistical area definitions.

Although official closure boundaries are defined using precise latitude and longitude coordinates, statistical areas were used as a practical proxy for spatial assignment. This approach reflects the structure and limitations of available data, as fishery-dependent data are generally reported at the statistical area level rather than as continuous spatial positions. In addition, trawl fishing activity often spans multiple statistical areas within a single tow, and individual tows may cross in and out of closure boundaries. The use of statistical areas represents an approximation of the true closure boundaries, allowing for consistent integration and comparison across datasets while acknowledging a loss of fine-scale spatial precision.

This methodology assumes that statistical areas provide an adequate proxy for spatial analysis at the scale of interest, while recognizing that they do not perfectly align with latitude- and longitude-based closure definitions. The approach also assumes that any misclassification resulting from tows that span multiple areas or cross closure boundaries is not systematically biased. Despite these limitations, the use of statistical areas provides a transparent and reproducible method for assigning fishery data to Kodiak closure area.

Red king crab

For Kodiak area red king crab, the stock remains in a depressed state, the majority of which is confined to a bay within State waters and the Alitak Flats and Towers Area (Type I closure), encompassed by the ADF&G RKC Southwest District management unit (Table 7-2, Table 7-3, Table 7-4, and Figure 7-2). The proportion of juvenile red king crab remains very low in all areas of Kodiak. In the Alitak Flats and Towers Area, the average percentage of juvenile crab was also very low (2% males, 4% females, 2012-2025). From 2015-2024, the total number of red king crab in the ADF&G bottom trawl survey has greatly varied: in the Northeast District, the number of crab ranged from 0 in 2024 to 62,779 in 2021; Southeast District ranged from 0 in 2015 and 2020 to 10,937 in 2018; and the Southwest District ranged from 53,615 in 2023 to 566,376 in 2016 (Table 7-2). Abundance was the highest across all sex and maturity categories by an order of magnitude in the Southwest District across all years. The Southwest District most closely aligns with the Type I Alitak Flats and Towers Area where the majority of the detectable red king crab population survives (Table 7-3).

Tanner crab

According to observer data, from 2012-2025, the largest average proportion of the Tanner crab population encountered by nonpelagic trawl is in the Barnabas Area (17,539 crab), then Horse's Head (2,098 crab), then the Marmot Bay area (437 crab) (see Table 7-5). Groundfish pot average for Marmot Bay was

similar (401 crab) (Table 7-5). According to the ADF&G survey average for the time period, when compared to the Kodiak District average, 13% of Tanner crab were found in 525702, 21% in the custom closure option, and the lowest proportion was in the Marmot Bay Tanner Crab Protection Area (1%) (see Table 7-6).

Table 7-2 ADF&G estimates of red king crab abundance from large mesh bottom trawl surveys in the Kodiak Area, 2015-2024. Note that the State regulatory management boundaries for red king crab are termed 'Districts' and differ somewhat from Tanner crab Sections. Source: ADF&G FMR No. 25-16.

Year	Females			Prerecruit males				Recruit males	Postrecruit males	Legal males	Total males	Total crab
	Juvenile	Mature	Total	IV	III	II	I					
KODIAK AREA												
Northeast District												
2015	0	0	0	0	0	0	0	0	365	365	365	365
2016	0	7,154	7,154	0	0	0	0	0	365	365	365	7,519
2017	0	3,281	3,281	0	0	0	2,187	3,990	3,625	7,617	9,804	13,085
2018	196	4,452	4,648	0	775	0	709	709	4,522	5,232	6,716	11,364
2019	0	7,803	7,803	0	709	0	0	0	2,903	2,903	3,612	11,415
2020	2,027	1,549	3,576	0	2,027	0	486	1,549	4,542	6,091	8,604	12,180
2021	8,456	31,950	40,407	709	5,134	10,846	775	775	5,134	5,909	23,372	63,779
2022	217	8,160	8,378	0	887	413	668	392	0	392	2,360	10,738
2023	0	2,254	2,254	0	0	0	0	384	0	384	384	2,638
2024	0	0	0	0	0	0	0	0	0	0	0	0
Southeast District												
2015	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	1,234	0	902	0	0	0	2,136	2,136
2017	0	2,387	2,387	0	0	0	0	902	2,971	3,872	3,872	6,261
2018	1,367	2,734	4,101	0	2,734	0	0	2,734	1,367	4,101	6,836	10,937
2019	0	0	0	0	0	0	0	0	2,392	2,392	2,392	2,392
2020	0	0	0	0	0	0	0	0	0	0	0	0
2021	2,079	1,196	3,275	668	0	0	1,196	0	0	0	1,864	5,140
2022	0	743	743	0	0	743	0	0	3,564	3,564	4,306	5,049
2023	0	3,038	3,038	0	0	0	0	0	1,519	1,519	1,519	4,557
2024	0	0	0	0	0	0	0	0	1,175	1,175	1,175	1,175
Southwest District												
2015	8,940	162,793	171,733	3,190	6,863	7,242	22,189	111,896	219,653	331,552	371,037	542,770
2016	124,312	79,933	204,246	66,445	86,292	10,107	2,881	11,770	184,636	196,405	362,129	566,376
2017	1,241	41,734	42,975	1,074	5,046	42,730	23,241	9,404	116,562	125,967	198,056	241,031
2018	8,633	178,471	187,103	2,855	11,321	30,806	41,829	17,416	82,980	100,393	187,204	374,308
2019	2,336	106,965	109,302	0	0	1,929	15,719	51,032	105,081	156,112	173,760	283,063
2020	0	16,429	16,429	714	892	0	1,595	18,631	67,759	86,390	89,591	106,020
2021	56,693	32,445	89,138	33,418	11,362	5,631	5,754	2,313	37,708	40,021	96,186	185,324
2022	2,425	19,548	21,972	0	1,001	2,034	5,477	3,567	32,486	36,053	44,563	66,533
2023	6,885	8,547	15,432	0	1,377	5,595	4,439	9,685	17,085	26,769	38,182	53,615
2024	1,345	3,743	5,088	803	0	5,063	18,524	23,729	55,981	79,711	104,099	109,187

Table 7-3 Central Gulf of Alaska red king crab observed crab with identified closure areas* by gear, 2012-2025 (observer estimated number of crab). *Uses ADF&G statistical areas for approximation: 525807, 515802, 525732, 515730 as Marmot Bay; 525702 as Barnabas; 535632 as Horse's Head; 545631, 545602 as Alitak Flats and Towers Area; 555600, 555532 as Chirikof Area. **Red king crab observed in 555630, west of Alitak Flats and Towers Area. Source: NMFS AFSC Observer Program, data compiled by AKFIN in Comprehensive_NORPAC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	0	0	0	0	0	0	0	0	0	0	0	0	82	103	13.2
Other CG**	0	0	0	0	0	0	0	0	0	0	0	0	82	103	13.2
Pot	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0.4
Alitak Flats and Tower	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0.2
Other CG	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0.2

Table 7-4 Average red king crab abundance estimates from the ADF&G trawl surveys (2012-2025) in the proposed closure areas (Alt. 2, Element 1, Options 1 & 2), the Marmot Bay Tanner Crab Protection Area, Type I, and Type II federal closures around Kodiak Island by sex and maturity.
Source: ADF&G Commercial Shellfish Kodiak staff.

	All red king crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
Alternative 2, Element 1, Option 1	120	0.05%	120	0.11%	120	0.10%	0	0%	0	0%	0	0%
Alternative 2, Element 1, Option 2	120	0.05%	120	0.11%	120	0.10%	0	0%	0	0%	0	0%
-Option 2 includes all stations in Option 1												
<u>Marmot Bay Tanner Crab Protection Area</u>												
-Federal waters	0	0%	0	0%	0	0	0	0%	0	0%	0	0%
<u>Type I closures</u>												
Marmot Flats												
-Federal waters	0	0%	0	0%	0	0	0	0%	0	0%	0	0%
Alitak Flats/Towers												
-Federal waters	47,469	18%	28,509	27%	29,662	24%	985	2%	15,927	21%	895	4%
<u>Type II closure</u>												
Barnabas Area												
-Federal waters	120	0.05%	120	0.11%	120	0.10%	0	0%	0	0%	0	0%
Kodiak Area 2012–2025 Average	261,846		105,791		122,416		40,586		76,833		22,012	

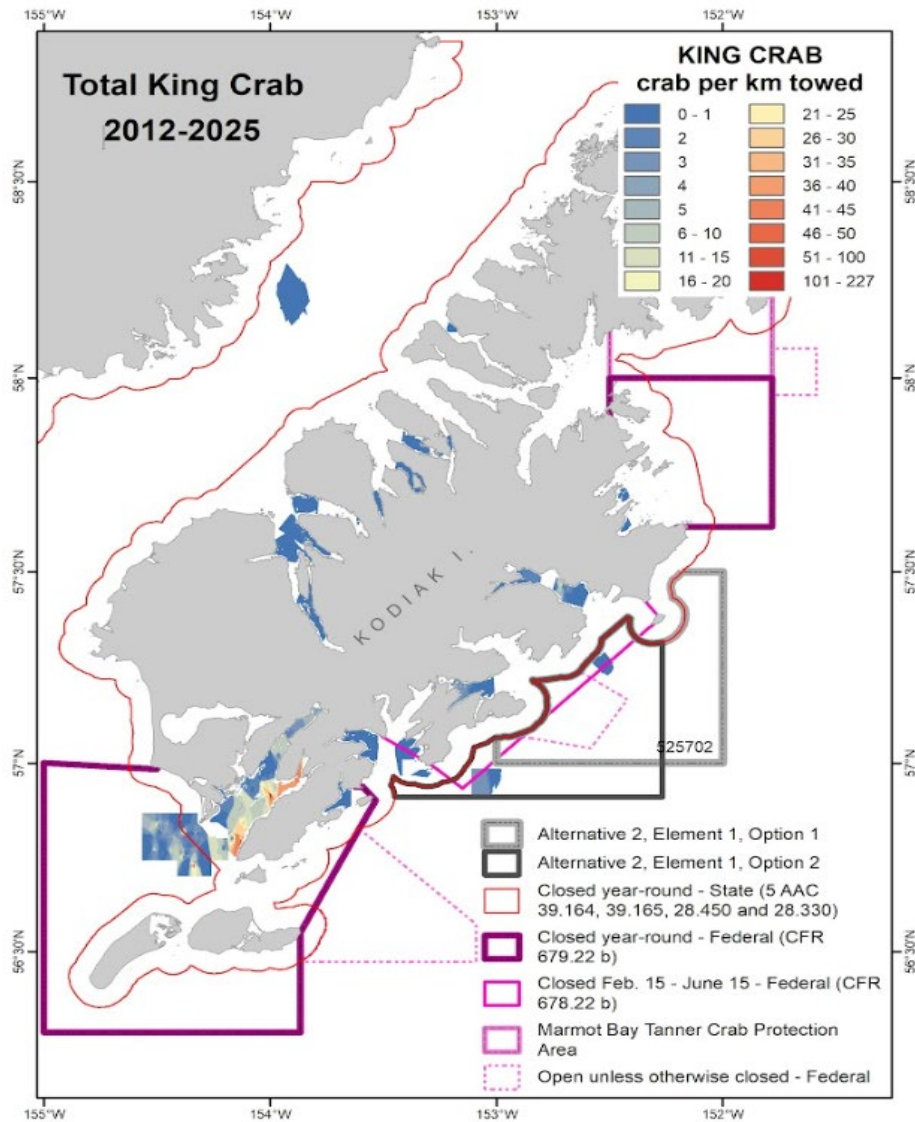


Figure 7-2 Red king crab density map in crab per km towed, averaged over the time period of this analysis (2012-2025). Source: ADF&G Commercial Shellfish, Kodiak. Proposed closure areas (Alt. 2, Element 1, Options 1 & 2) are shown, as well as other adjacent closure areas.

Table 7-5 Central Gulf of Alaska Tanner crab observed crab with identified closure areas* by gear, 2012-2025 (observer estimated number of crab). *Uses ADF&G statistical areas for approximation: 525807, 515802, 525732, 515730 as Marmot Bay; 525702 as Barnabus; 535632 as Horse's Head; 545631, 545602 as Alitak Flats and Towers Area; and 555600, 555532 as Chirikof Area. Source: NMFS AFSC Observer Program, data compiled by AKFIN in Comprehensive_NORPAC.

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Average
Non-pelagic Trawl	16,271	104,243	29,201	26,264	20,387	63,004	32,296	70,741	55,123	9,957	6,509	7,131	8,051	6,598	32,555.4
Alitak Flats and Tower	92	0	67	58	0	396	66	320	457	0	0	0	0	0	104.0
Barnabus	3,584	66,630	16,494	19,755	9,621	13,609	17,090	49,324	39,191	5,602	2,065	711	740	1,123	17,538.5
Chirikof	67	80	90	0	0	50	0	0	0	0	0	165	0	146	42.7
Horse's Head	92	250	27	11	2,550	5,714	5,343	1,082	9,071	1,236	0	1,780	1,744	468	2,097.7
Marmot Bay	166	852	573	0	54	830	391	2,250	499	0	0	68	0	437.2	
Other CG	12,270	36,431	11,950	6,440	8,162	42,405	9,406	17,765	5,905	3,119	4,444	4,475	5,499	4,861	12,366.6
Pot	9,582	7,379	1,105	4,645	2,776	88	324	649	3	197	29	377	137	60	1,953.6
Alitak Flats and Tower	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0.4
Barnabus	212	1,093	6	311	63	0	0	0	0	5	0	0	0	0	120.7
Horse Head	209	34	0	0	0	0	0	0	0	0	0	0	0	0	17.4
Marmot Bay	4,100	708	150	5	27	0	324	0	0	147	9	0	137	0	400.5
Other CG	5,058	5,544	949	4,329	2,683	88	0	649	3	45	20	377	0	60	1,414.6
Pelagic Trawl	181	0	0	0	0	0	108	4	0	0	0	0	371	445	79.2
Barnabus	181	0	0	0	0	0	0	4	0	0	0	0	371	0	39.7
Other CG	0	0	0	0	0	0	108	0	0	0	0	0	0	445	39.5
Total	26,034	111,622	30,306	30,909	23,163	63,092	32,728	71,394	55,126	10,154	6,538	7,508	8,559	7,103	34,588.3

Table 7-6 Average Tanner crab abundance estimates from the ADF&G trawl surveys (2012-2025) in proposed closure area options, and the federal waters of the Marmot Bay Tanner crab protection area, Type I closure areas, and Type II closure areas around Kodiak Island by sex and maturity. Alternative 2, Element 1, Option 2 includes all stations in Option 1.

	All Tanner crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
Closure	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
Alternative 2, Element 1, Option 1	14,033,367	13%	952,560	28%	3,568,556	28%	3,903,684	8%	4,420,528	28%	2,140,604	6%
Alternative 2, Element 1, Option 2	23,471,950	21%	1,260,316	37%	5,286,286	41%	7,624,342	16%	6,106,269	39%	4,455,060	13%
Existing federal closures												
Marmot Bay Tanner Crab Protection Area	987,978	1%	4,919	0.1%	39,708	0.3%	443,215	1%	77,649	1%	427,407	1%
Type I closures												
Marmot Flats	1,935,817	2%	13,608	0.4%	75,422	0.6%	823,031	2%	233,951	2%	803,415	2%
Alitak Flats/Towers	4,408,929	4%	123,150	4%	355,278	3%	1,993,552	4%	218,417	1%	1,841,683	5%

	All Tanner crab		Legal males		Mature males		Juvenile males		Mature females		Juvenile females	
Closure	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total	Number	% of total
Type II closure												
Barnabas Area	6,155,873	6%	399,988	12%	1,458,903	11%	1,943,521	4%	1,818,438	12%	935,011	3%
All other areas	72,846,518	66%	1,568,572	47%	5,528,049	43%	35,005,486	73%	7,065,769	46%	25,239,908	75%
Kodiak District 2012–2025 Average	109,807,064		3,370,552		12,743,645		47,833,146		15,520,493		33,702,485	

7.5 Related Groundfish Regulations

Due to the design differences in how the trawl gear operates (as described in Section 2.2.3) pelagic trawl fishing is allowed in some areas closed to nonpelagic trawl gear—including within existing Federal crab protection areas around Kodiak Island. The Type I-III closure areas and the Marmot Bay Tanner Crab Protection areas all allow pelagic trawl fishing, but are closed to nonpelagic trawl gear. This section provides detail on the regulatory requirements that pelagic trawl vessels must adhere to when using pelagic trawl gear in the Federal closure areas to protect GOA crab, where nonpelagic trawling is not allowed. These regulations were established to regulate how pelagic gear operates for the protection of GOA crab within conservation areas. The Council may wish to take these regulations into consideration within its evaluation, in conjunction with information on the rationale and objectives of the time area closures under evaluation.

Regulations stipulating the operational requirements for pelagic trawl gear fishing within the federal GOA crab protection areas include the pelagic trawl gear performance standard (50 CFR 679.7(a)(14)), and the limitation on pelagic trawl gear footrope bottom contact in the GOA (50 CFR 679.24(b)(3)), described further below. Additionally, the Council implemented a physical requirement for nonpelagic trawl gear alongside the implementation of the Marmot Bay Tanner Crab Protection Area in Amendment 18: the modified sweep requirement for nonpelagic trawl gear, at (50 CFR 679.7(b)(9)). A description of this requirement is also included below, since it was implemented to further lessen impacts of NPT on crab.

Prohibitions on having Pelagic & Nonpelagic Trawl Gear Onboard

Per 50 CFR 679.22(b)(1), vessels cannot have a trawl other than a pelagic trawl onboard when inside Type I areas, and Type II areas during seasonal time closure windows. This was developed as an enforcement mechanism, and may have disincentivized CGOA trawl vessels from operating in the areas with pelagic trawl gear, since a high amount of gear crossover exists between nonpelagic and pelagic gear users (as shown in Table 7-7).

This regulation is largely no longer applicable to the CGOA trawl fleet, because an exemption exists in this regulation for vessels in the trawl EM program. If vessels are participating in the trawl EM program, they may have a nonpelagic trawl onboard their vessel while trawling in the Type I or II area closures, so long as they do not deploy a trawl other than a pelagic trawl. The trawl EM program makes it easier for enforcement to monitor fishing activity occurring inside these protection areas, and provides enforcement staff with the ability to verify that nonpelagic trawl fishing is not occurring in the areas, even if a vessel has that gear type onboard. As of 2025, all but 2 CGOA trawl vessels participated in the trawl EM program (Table 7-7).

Table 7-7 Trawl CVs active in CGOA, by participation in the Trawl EM program & gear type used

Year	Trawl CVs in Trawl EM Program			Trawl CVs Not in Trawl EM Program		
	Total	NPT and PTR	PTR only	Total	NPT and PTR	PTR only
2020	25	9	16	30	20	10
2021	23	10	13	23	13	10
2022	27	19	8	15	12	3
2023	25	15	10	15	8	7
2024	32	25	7	7	6	-
2025	34	23	11	2	2	-

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

Nonpelagic Trawl Modified Sweep Requirements

Vessels directed fishing for flatfish in the CGOA are required to use nonpelagic trawl gear with modified sweeps. Requirements stipulate the use of elevating disks on nonpelagic trawl sweeps, which raise portions of the gear off the ocean bottom and increase clearance between the sweep and the substrate. The Council implemented this requirement to reduce unobserved Tanner crab injury and mortality in the CGOA by decreasing direct nonpelagic trawl gear contact with crab on the seafloor. Requirements for the use of modified sweeps were established through Amendment 89 to the GOA FMP (79 FR 2794, January 16th, 2014), in conjunction with the establishment of the Marmot Bay Tanner Crab Protection Area closure. The modified sweep requirements and the Marmot Bay Tanner Crab Protection Area closure were implemented within the same final rule package because both elements were established to address Tanner crab bycatch in the CGOA.

Regulatory requirements for modified sweeps were developed based on results from an EFP that tested modified trawl sweeps in the GOA region.²⁸ These regulations, at (50 CFR 679.24(f)), specify a minimum required clearance for the sweeps, and a minimum and maximum distance between elevating devices. The standards also describe the measuring locations to determine compliance with the clearance requirement and cross section limitations for the line between elevating devices. Further, modified sweeps are only required for use in directed CGOA flatfish fisheries because historically, it appeared that these fisheries were the primary contributor of Tanner crab PSC in the GOA. During Council deliberations preceding Amendment 89, it was noted that other nonpelagic fisheries in the Central GOA and Western GOA accounted for only a modest amount of Tanner crab PSC at the time.

While only required in regulation for use in directed flatfish fisheries, public testimony provided in prior iterations of this analysis (see Section 1.2 for detail on the history of this action) noted that GOA vessels often use them for all nonpelagic hauls, including when targeting rockfish, cod, and sablefish. Although they can, and are, used in other fisheries targeted using nonpelagic trawl gear, regulations prohibit the use of elevating devices such as discs, bobbins, or rollers on pelagic trawl gear. As described in Section 2.2.3, pelagic trawl gear used in federal groundfish fisheries in the BSAI and GOA must adhere to physical and structural requirements specified in regulation.²⁹ Sweeps are not generally used on pelagic trawl gear, and attaching elevating devices on pelagic gear is not allowed in regulation because these devices would make pelagic gear suitable for fishing in contact with the seabed.

²⁸ Results of the modified sweep tests are summarized within the EA/RIR/IRFA for Amendment 89, available at <https://repository.library.noaa.gov/view/noaa/6309>

²⁹ The Council took final action to update the definition of pelagic trawl gear in June 2025. The Council's action was a response to outdated regulations, which did not reflect modern pelagic trawl gear configurations developed in response to conservation and management objectives. The Council's preferred alternative would allow the continued use and innovation of salmon bycatch excluder devices, allow instrumentation necessary to monitor net performance, and remove unnecessary outdated text. More information on this topic can be found under agenda item C3c, at <https://meetings.npfmc.org/Meeting/Details/3087>.

Pelagic Trawl Gear Performance Standard

The GOA pelagic trawl performance standard places a limit on the number of crab (of a certain size) allowed on board a vessel at any time, when the vessel is directed fishing for pollock with pelagic trawl gear. This performance standard was established in 1993, with the objective of reducing bycatch of crab and halibut, and to minimize impacts of pelagic trawl gear on the seafloor.

The GOA performance standard, at 50 CFR 679.7(a)(14), applies to directed pollock fishery participants using pelagic trawl gear, but has several exceptions. First, the performance standard only applies to vessels targeting GOA pollock if directed fishing for pollock with nonpelagic trawl gear is closed. This includes directed pollock fishing activity that vessels conduct in the Type I-III closure areas, and Marmot Bay Tanner Crab Protection Area, which are closed to nonpelagic trawl gear. The second exception is that the performance standard does not apply to vessels that participate in the trawl EM program. In recent years trawl EM participation has increased rapidly in the CGOA; as of 2025, only 2 of the 36 trawl CVs active in the CGOA did not participate in the program. Therefore, though the performance standard would otherwise apply to vessels fishing for pollock within the federal GOA crab closure areas, the performance standard no longer applies to the majority of the CGOA trawl CV fleet.

The Council is in the process of receiving and reviewing updates on ongoing gear innovation research efforts, and will consider an evaluation of a performance standard, if appropriate. A detailed description of the history of Council actions pertaining to the performance standard is included within the June 2025 Pelagic Trawl Gear Innovation discussion paper.³⁰

Pelagic Gear Footrope Bottom Contact Limitation

Pelagic trawl gear used within areas closed to nonpelagic trawling (which include the Type I-III closure areas, and Marmot Bay Tanner Crab Protection Area) must not allow the footrope to come in contact with the seabed for more than 10 percent of the period of any tow. These limitations, at 50 CFR 679.24(b)(3), function as a performance standard on how pelagic trawl gear may be operated, and were developed with the goal of reducing impacts of pelagic trawl gear on the seabed in areas closed to nonpelagic trawl fishing. However due to technological limitations and a lack of regulatory requirements for bottom contact sensors, there is no way for enforcement personnel to determine whether vessels are meeting this standard. Without improved capabilities to detect and quantify seabed contact through the development and application of existing or emerging technologies, it is currently impracticable to establish that threshold gear restrictions (such as that referenced) have been exceeded.

7.6 Next Steps

After reviewing the considerations and information within Section 7 of this document, the Council will choose whether to take further action on this issue. If the Council wishes to take further action, there are several different pathways that it could consider.

The Council could identify a suite of alternatives for analysis, or request additional information from staff before initiating an analysis of specific closure areas or specific aspects of existing closure frameworks. If the Council opts to request additional information from staff rather than identifying a suite of alternatives, a qualitative impact analysis would not be included in the next iteration. The Council could request that staff provide additional information for Alternative 3 alongside the next iteration of the EA/RIR for Alternative 2—as this document is currently structured. The Council may instead bifurcate Alternative 3 into a separate action in the form of a discussion paper.

If the Council identifies a suite of alternatives after reviewing the information within Section 7 of this document, a quantitative impact analysis would be conducted for initial review. The Council may wish to include specific closure areas, or specific elements within the Type I-III and Marmot Bay Tanner Crab

³⁰ Available under Agenda Item C3b, at <https://meetings.npfmc.org/Meeting/Details/3087>

Protection Area closure frameworks and regulations, for modification or removal. The Council could retain the current motion structure, and include its suite of alternatives for Alternative 3 alongside Alternative 2. If so, Alternative 3 would be analyzed alongside Alternative 2 in the next iteration of this analysis. Instead, the Council may wish to bifurcate this action from Alternative 2, and request that staff prepare a separate EA/RIR document specific to the suite of alternatives identified under Alternative 3. The Council could accomplish this by establishing a separate Purpose and Need statement.

Should the Council wish to identify a suite of alternatives to consider modifying or removing one or more existing closures, it should specify which aspects of should be examined. For example, as described in Section 7.3, the Council could consider modifications to closure objectives, area boundaries, duration or seasonality of closures, prohibited gear types, among others. The Council could also specify an evaluation framework to review effectiveness of the closures, including establishing criteria and timelines for evaluation.

8 Magnuson-Stevens Act and FMP Considerations

8.1 Magnuson-Stevens Act National Standards

Below are the 10 National Standards as contained in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). In recommending a preferred alternative at final action, the Council must consider how to balance the national standards.

A brief discussion of this action with respect to each National Standard will be prepared for final action.

National Standard 1 — Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

National Standard 2 — Conservation and management measures shall be based upon the best scientific information available.

National Standard 3 — To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

National Standard 4 — Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be: (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation, and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

National Standard 5 — Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.

National Standard 6 — Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

National Standard 7 — Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

National Standard 8 — Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of National Standard 2, in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

National Standard 9 — Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

National Standard 10 — Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

8.2 Section 303(a)(9) Fisheries Impact Statement

Section 303(a)(9) of the Magnuson-Stevens Act requires that a fishery impact statement be prepared for each FMP or FMP amendment. A fishery impact statement is required to assess, specify, and analyze the likely effects, if any, including the cumulative conservation, economic, and social impacts, of the conservation and management measures on, and possible mitigation measures for (a) participants in the

fisheries and fishing communities affected by the plan amendment; (b) participants in the fisheries conducted in adjacent areas under the authority of another Council; and (c) the safety of human life at sea, including whether and to what extent such measures may affect the safety of participants in the fishery.

The EA/RIR prepared for this plan amendment constitutes the fishery impact statement. The likely effects of the proposed action are analyzed and described throughout the EA/RIR. The effects on participants in the fisheries and fishing communities are analyzed in the Chapter 4). The effects of the proposed action under National Standard 10, in Section 8.1. Based on the information reported in this section, there is no need to update the Fishery Impact Statement included in the FMP.

The proposed action affects the groundfish fisheries in the EEZ off Alaska, which are under the jurisdiction of the North Pacific Fishery Management Council. Impacts on participants in fisheries conducted in adjacent areas under the jurisdiction of other Councils are not anticipated as a result of this action.

8.3 Council's Ecosystem Vision Statement

In February 2014, the Council adopted, as Council policy, the following:

Ecosystem Approach for the North Pacific Fishery Management Council

Value Statement

The Gulf of Alaska, Bering Sea, and Aleutian Islands are some of the most biologically productive and unique marine ecosystems in the world, supporting globally significant populations of marine mammals, seabirds, fish, and shellfish. This region produces over half the nation's seafood and supports robust fishing communities, recreational fisheries, and a subsistence way of life. The Arctic ecosystem is a dynamic environment that is experiencing an unprecedented rate of loss of sea ice and other effects of climate change, resulting in elevated levels of risk and uncertainty. The North Pacific Fishery Management Council has an important stewardship responsibility for these resources, their productivity, and their sustainability for future generations.

Vision Statement

The Council envisions sustainable fisheries that provide benefits for harvesters, processors, recreational and subsistence users, and fishing communities, which (1) are maintained by healthy, productive, biodiverse, resilient marine ecosystems that support a range of services; (2) support robust populations of marine species at all trophic levels, including marine mammals and seabirds; and (3) are managed using a precautionary, transparent, and inclusive process that allows for analyses of tradeoffs, accounts for changing conditions, and mitigates threats.

Implementation Strategy

The Council intends that fishery management explicitly take into account environmental variability and uncertainty, changes and trends in climate and oceanographic conditions, fluctuations in productivity for managed species and associated ecosystem components, such as habitats and non-managed species, and relationships between marine species. Implementation will be responsive to changes in the ecosystem and our understanding of those dynamics, incorporate the best available science (including local and traditional knowledge), and engage scientists, managers, and the public.

The vision statement shall be given effect through all of the Council's work, including long-term planning initiatives, fishery management actions, and science planning to support ecosystem-based fishery management.

Upon selection of a preferred alternative, this section will include the Council's rationale for how any action recommended to the Secretary of Commerce is consistent with this ecosystem approach to policy, and highlight evidence presented for that rationale to the extent that it is available. In considering this action, the Council is being consistent with its ecosystem approach policy.

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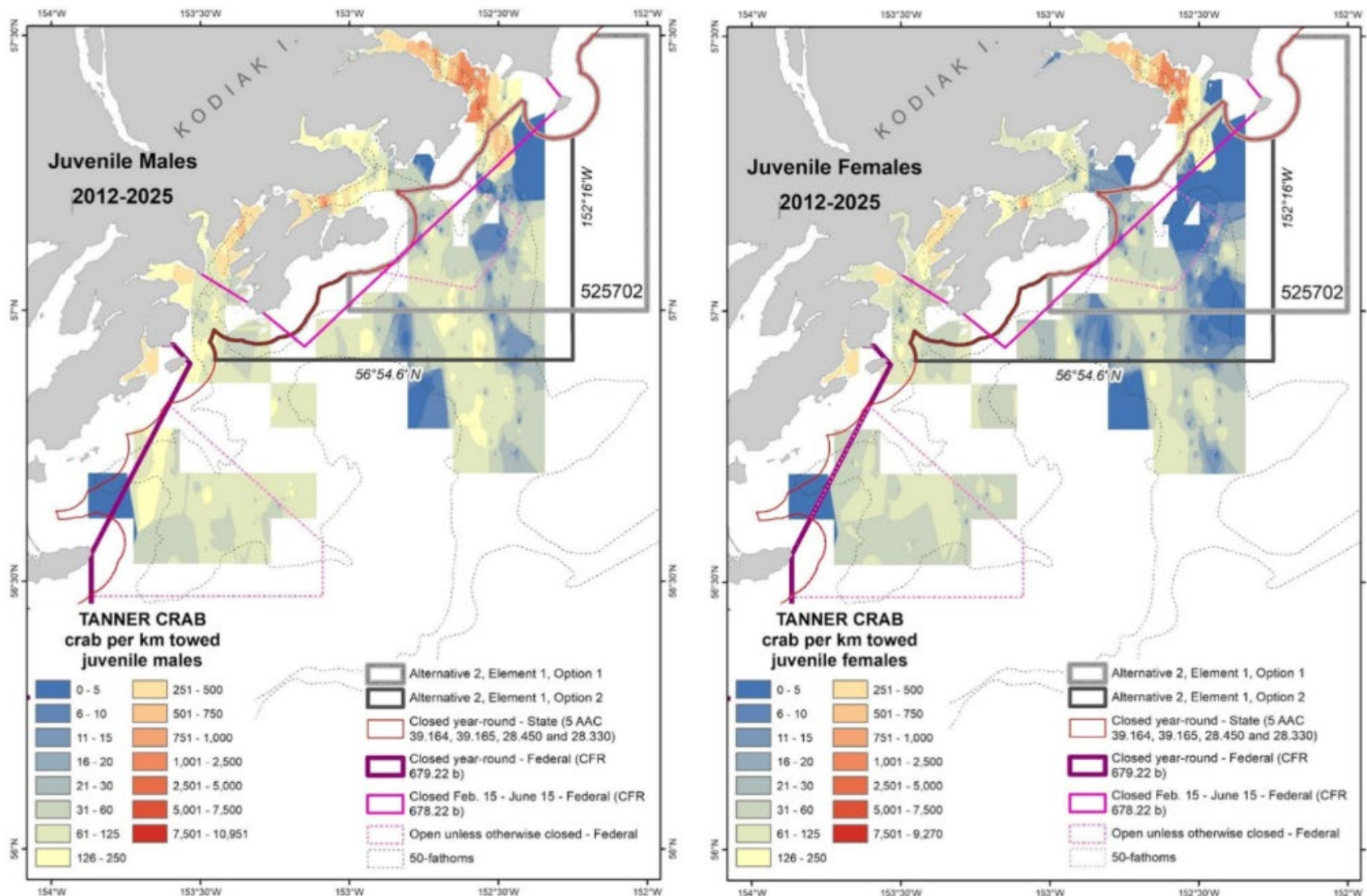
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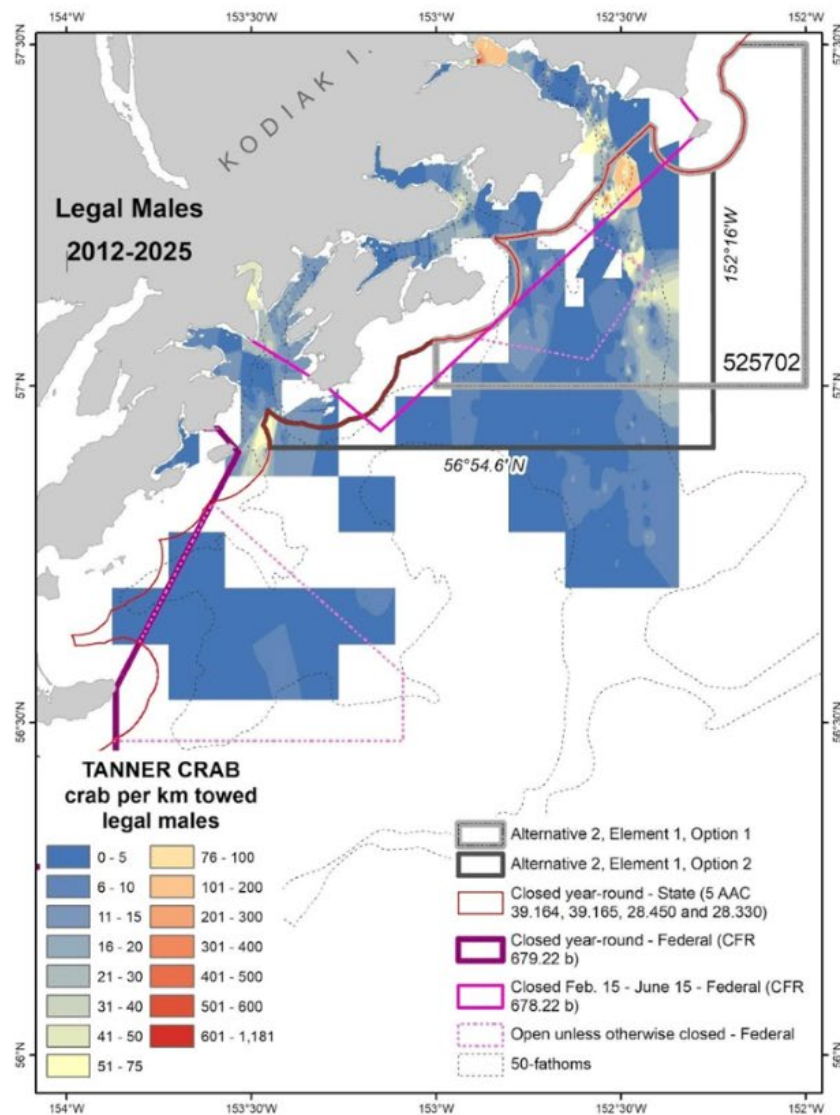
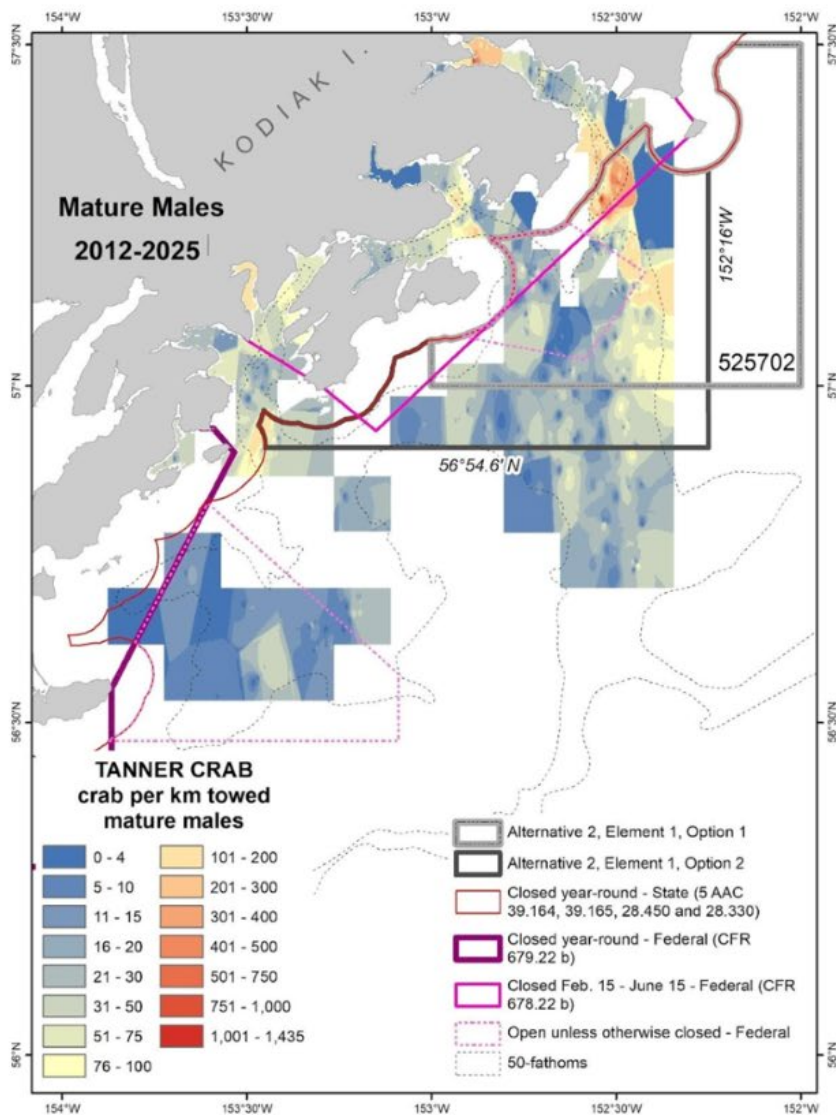
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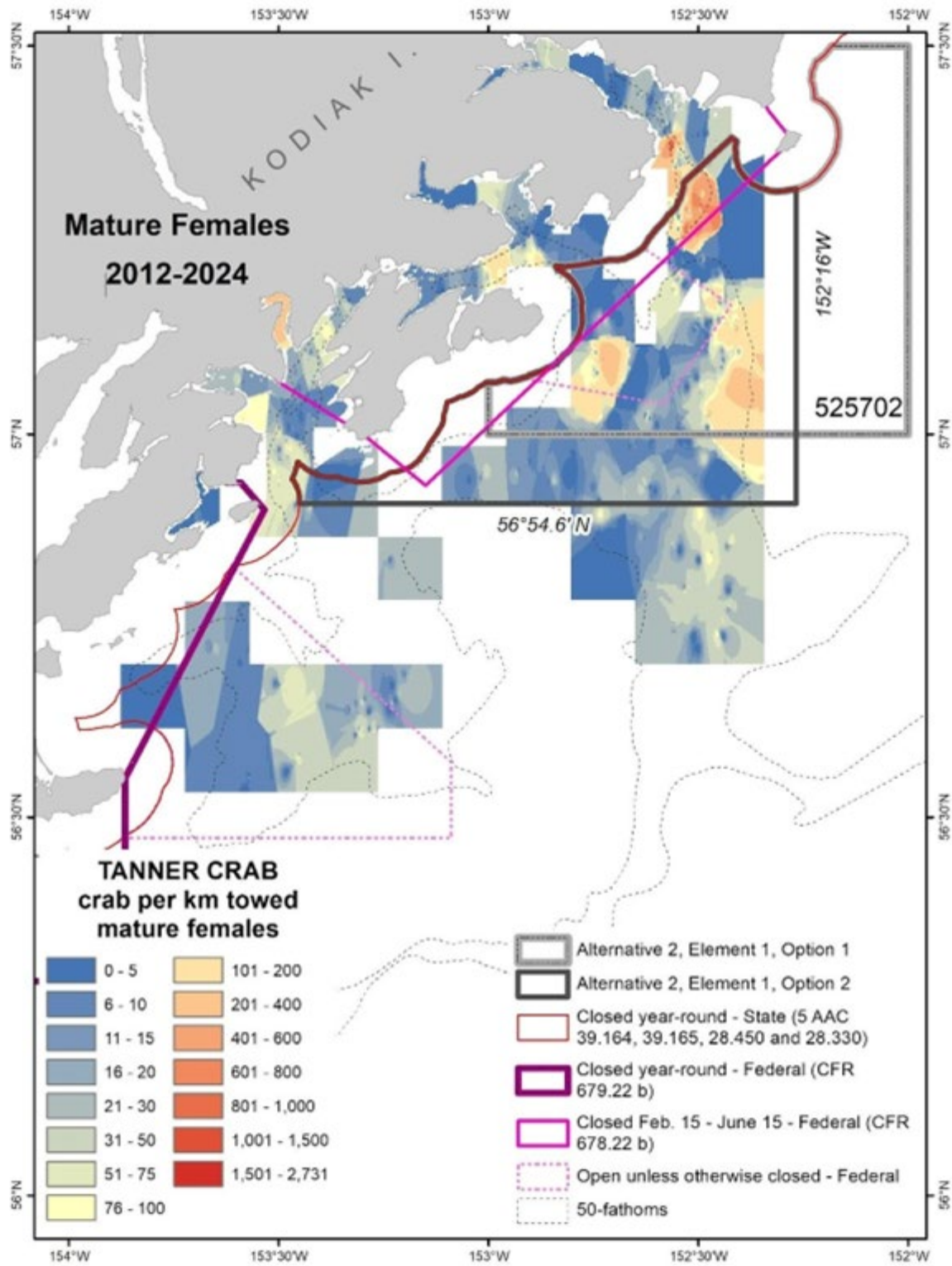
Appendix 1: ADF&G Survey Tanner Crab Abundance Maps

ADF&G survey abundance maps by sex and maturity for Tanner crab (juvenile male, juvenile female, mature male, legal male, and mature female), 2012-2025. Maps of average Tanner crab per km towed across the entire period of analysis are presented first by sex and maturity. Then panel figures by year for each of the five sex and maturity stage combinations are presented.

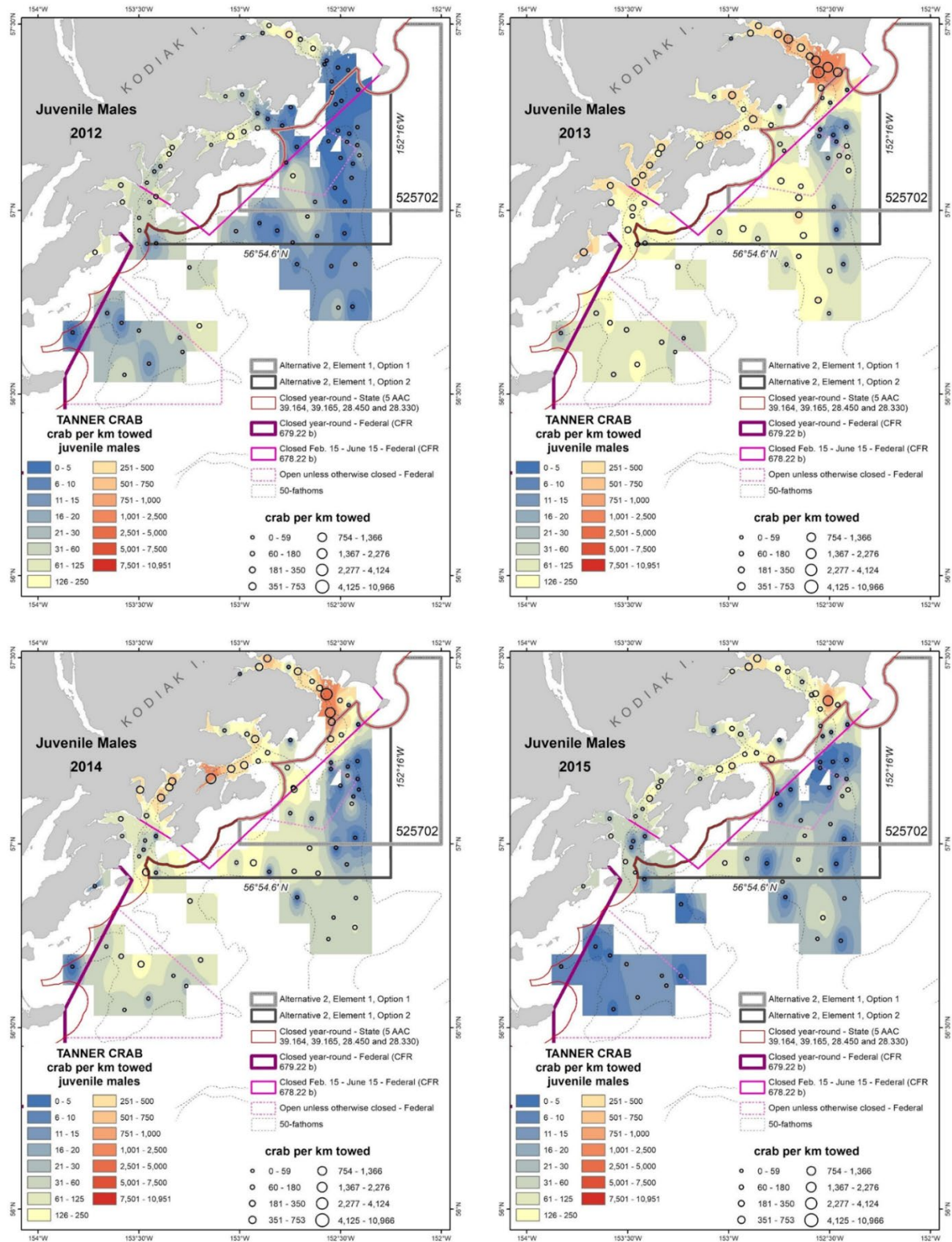
Summary Maps: ADF&G Survey Tanner Crab Abundance—Average Tanner crab per Kilometer Towed, by Sex/Maturity, 2012-2025

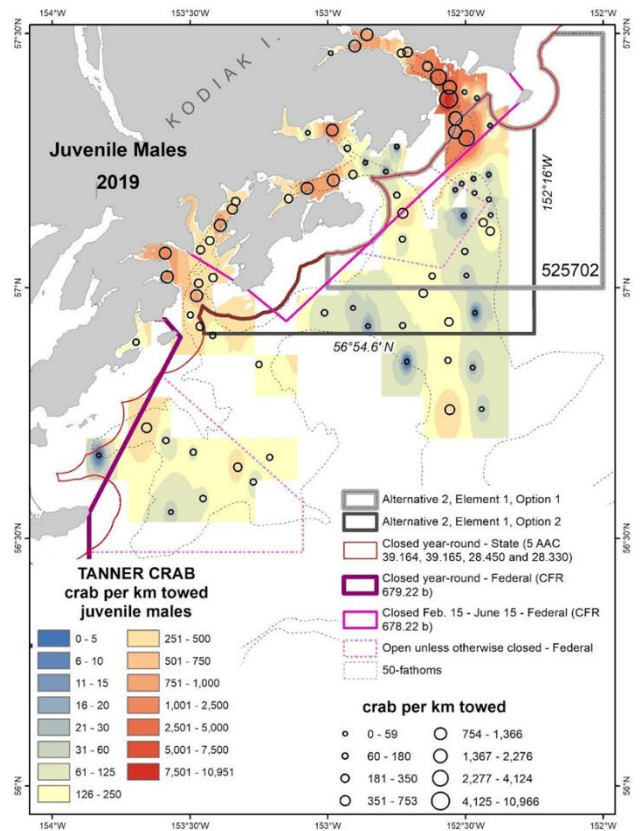
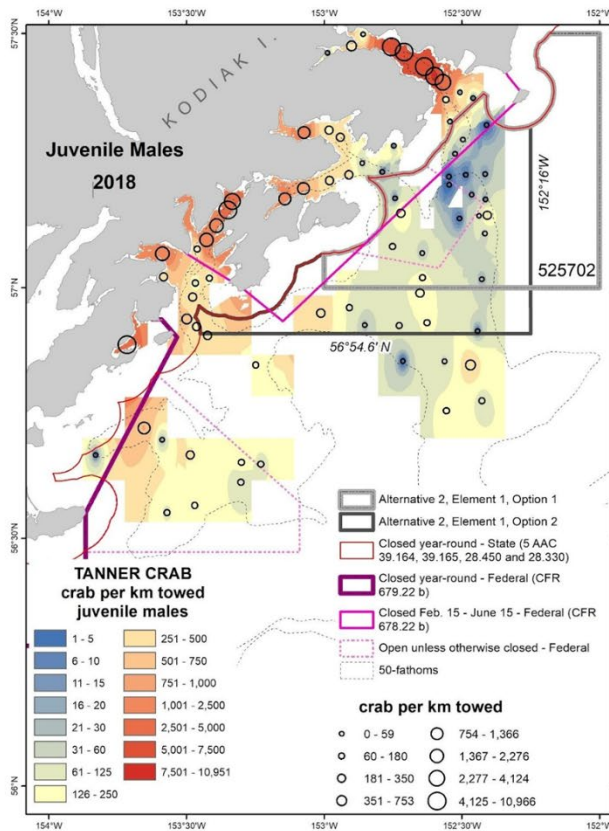
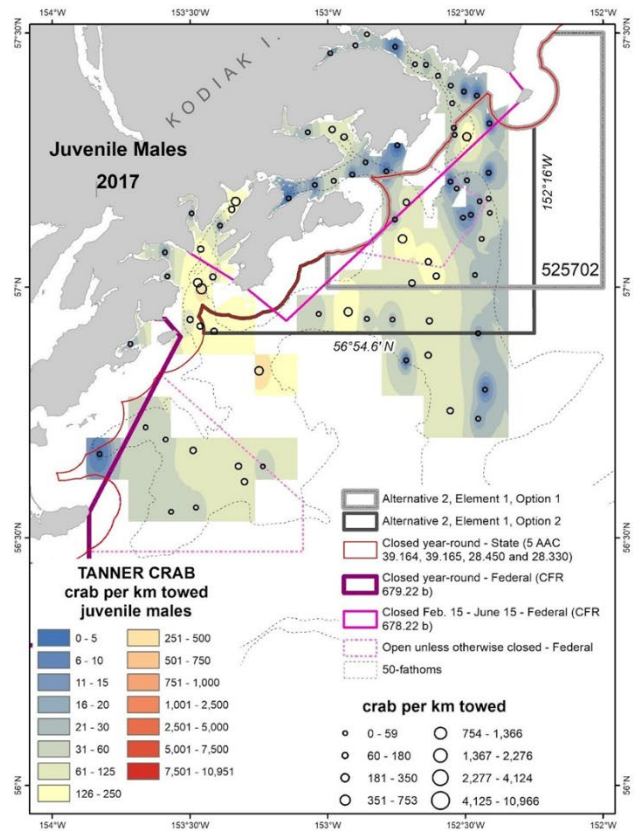
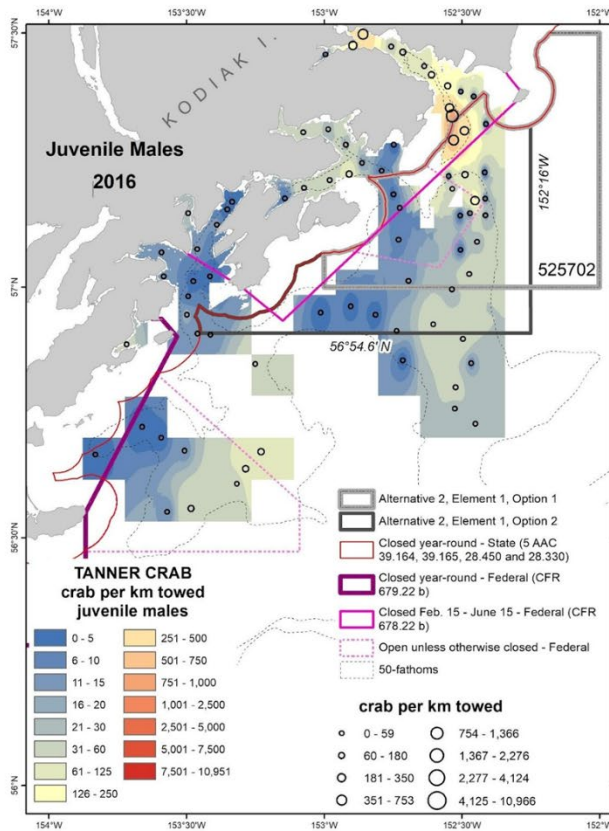


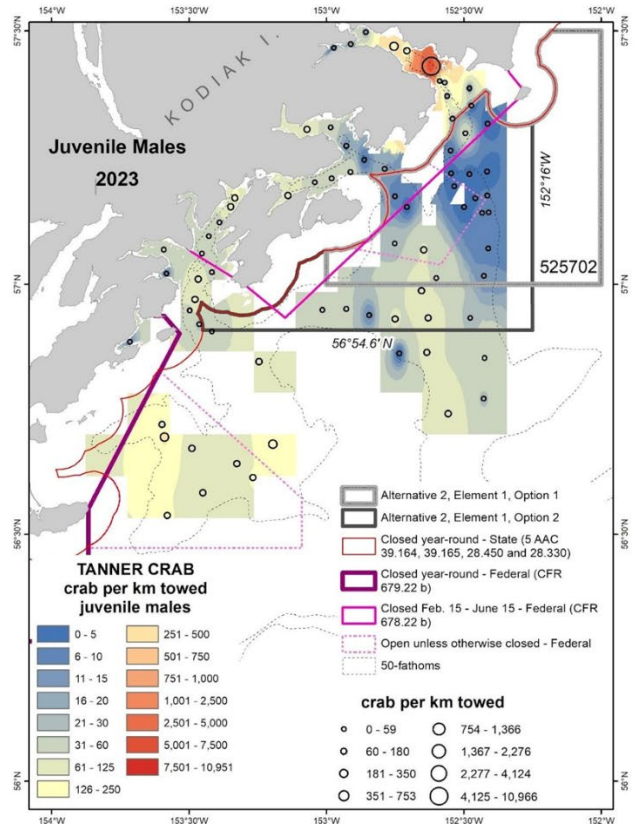
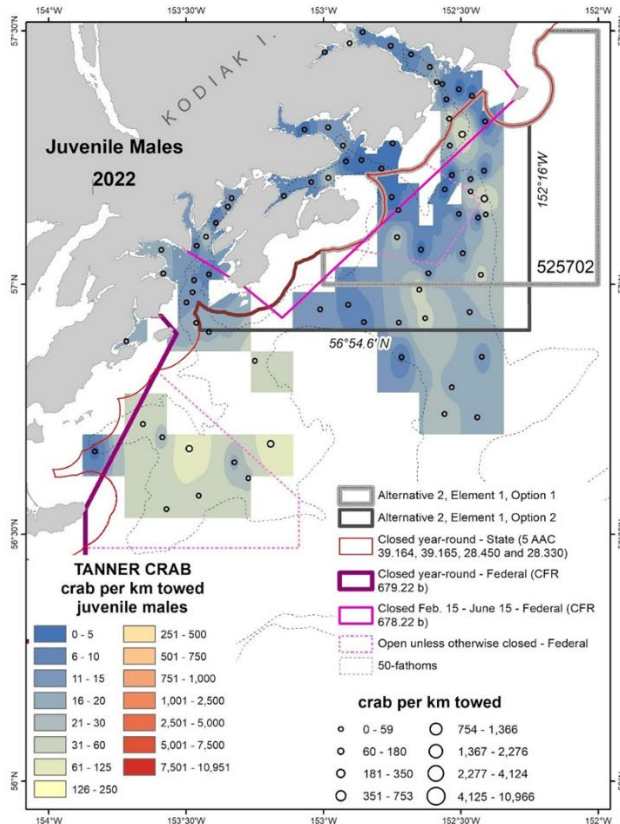
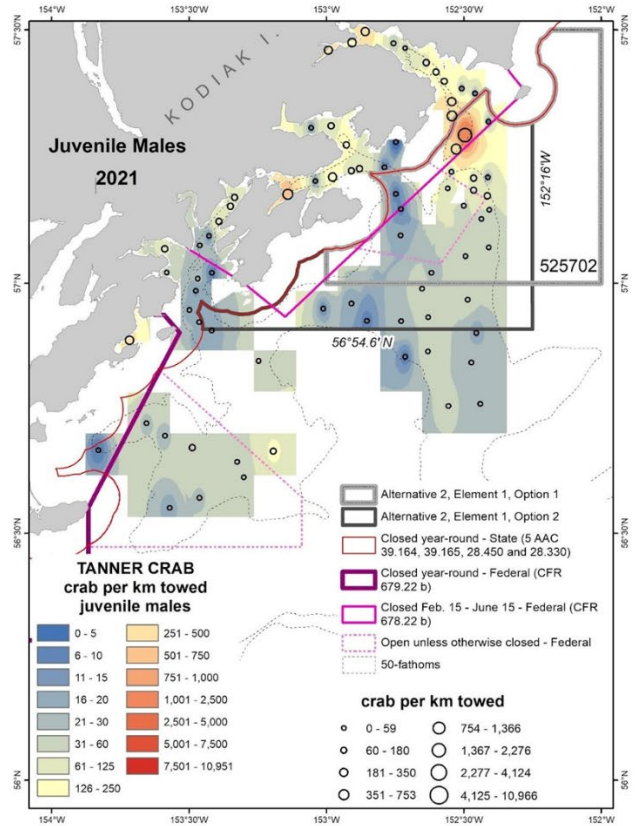
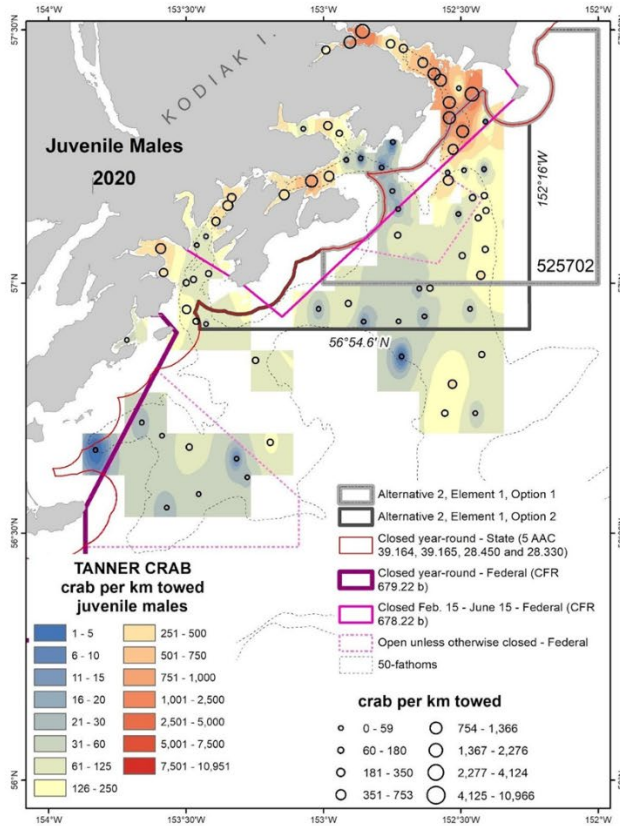


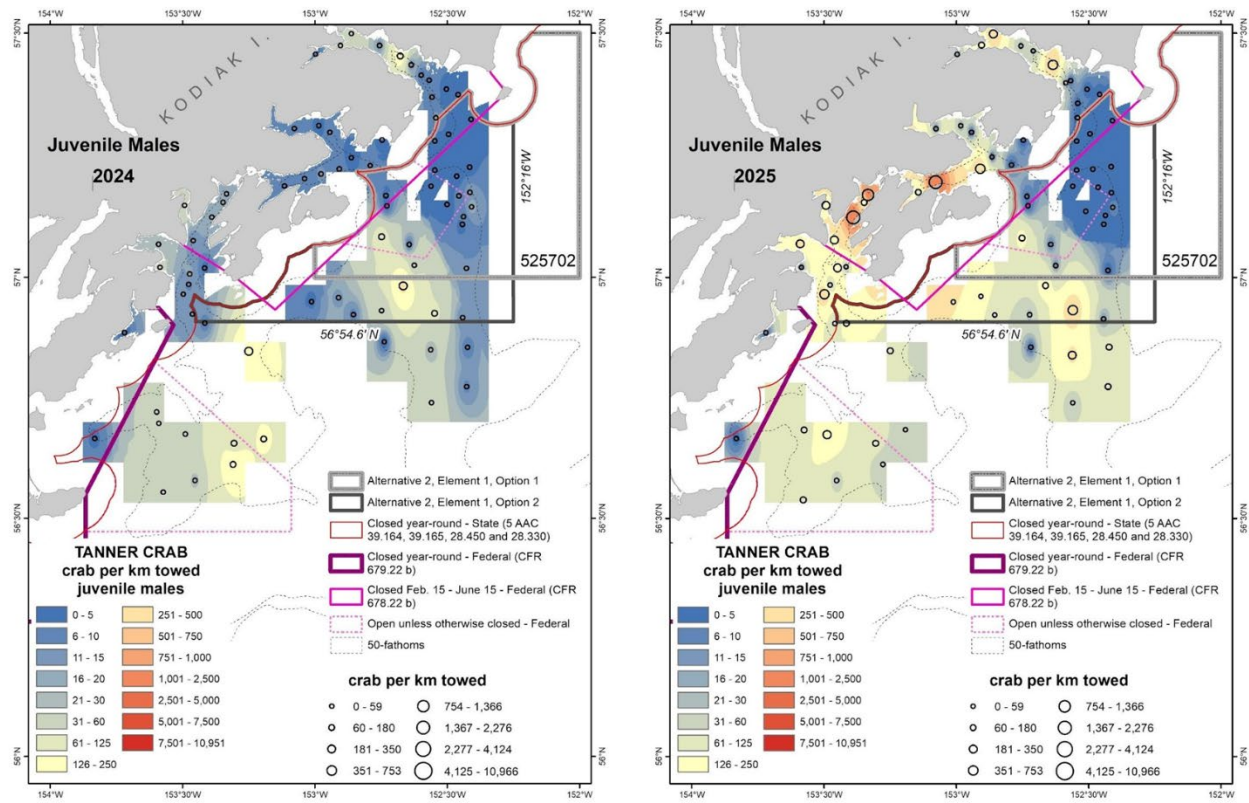


Annual Panel Figures: ADF&G Survey Juvenile Male Tanner Crab Abundance—Average Juvenile Male Tanner crab per Kilometer Towed, by Year

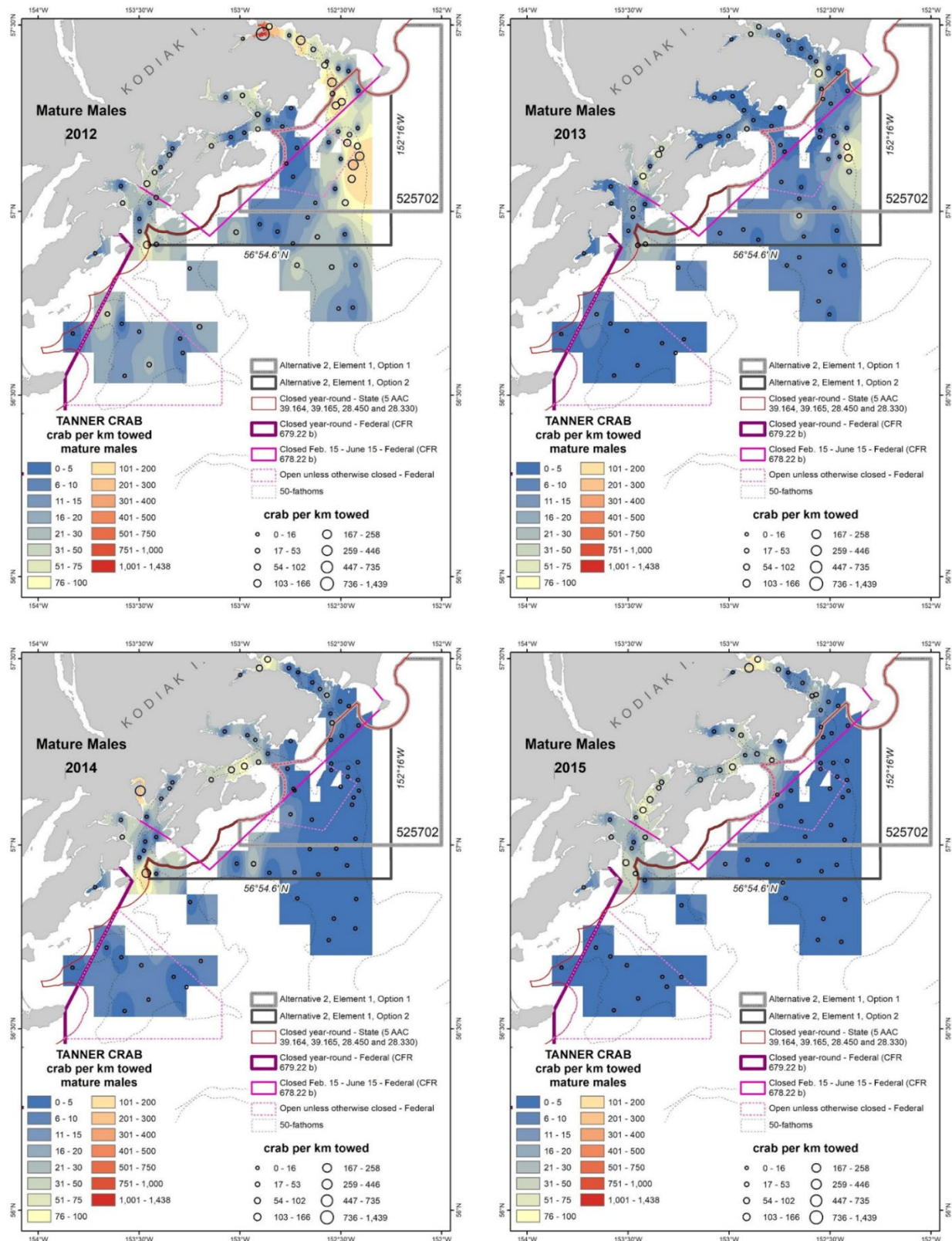


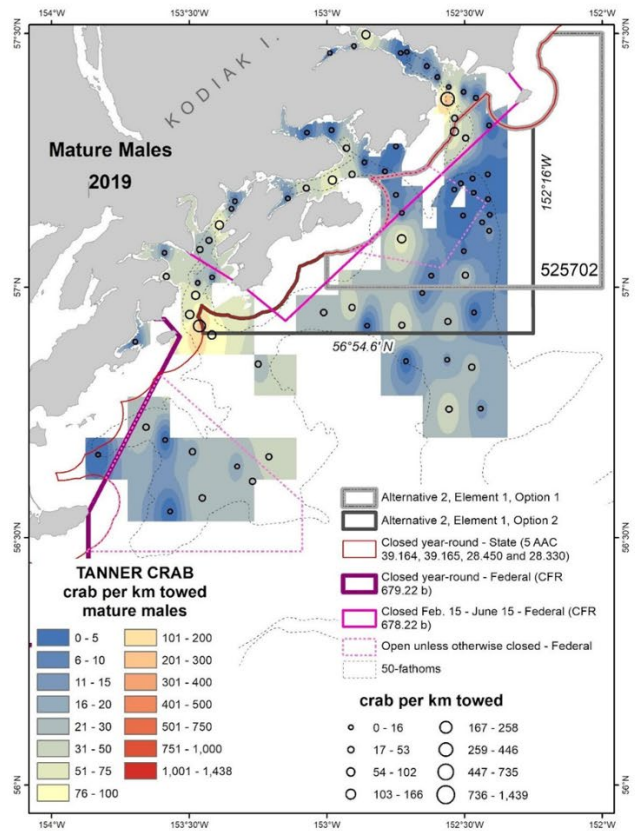
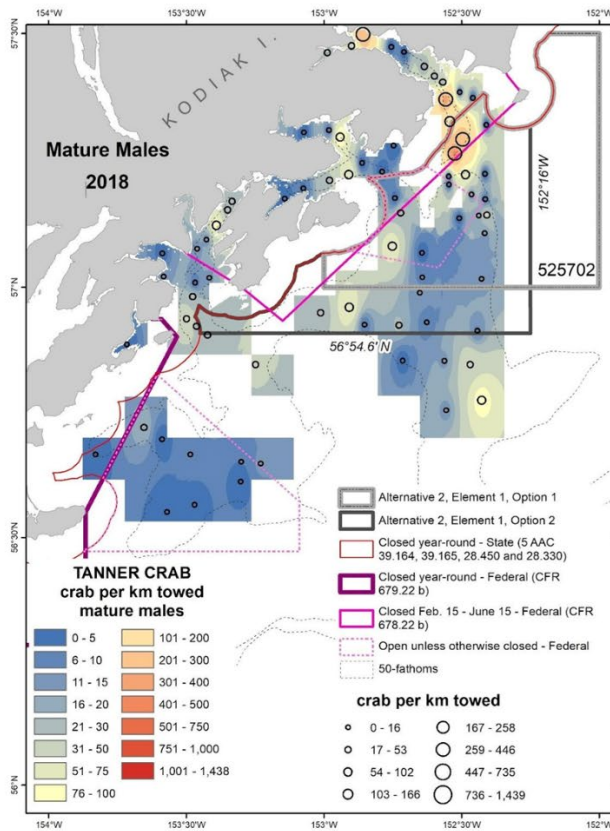
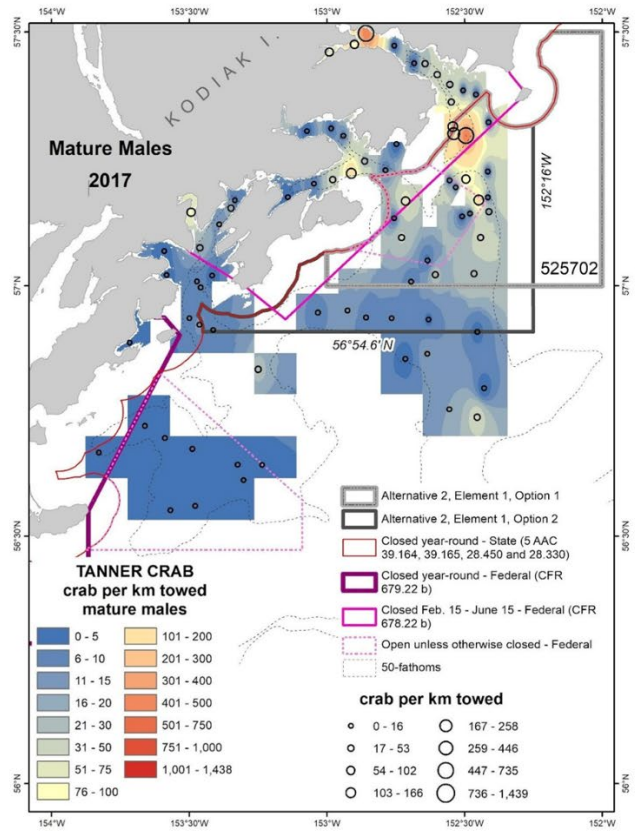
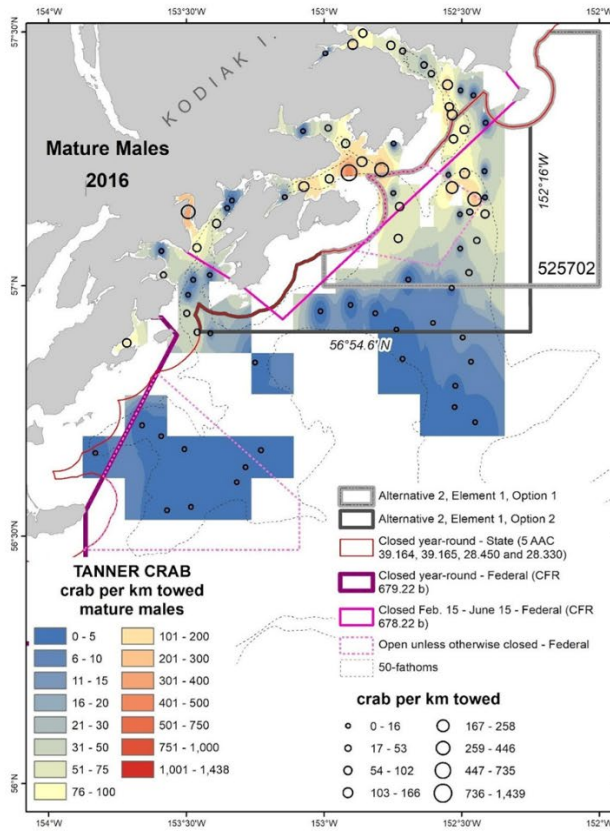


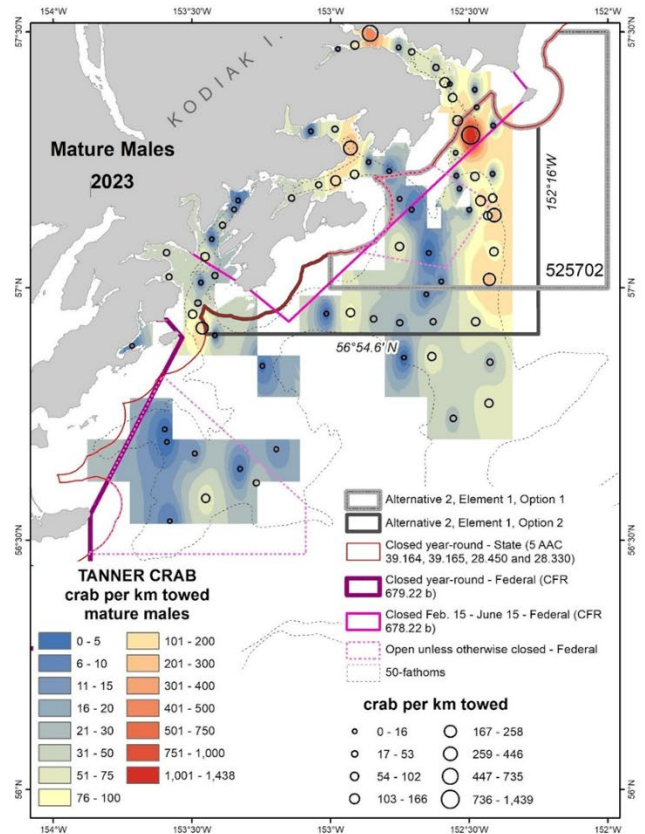
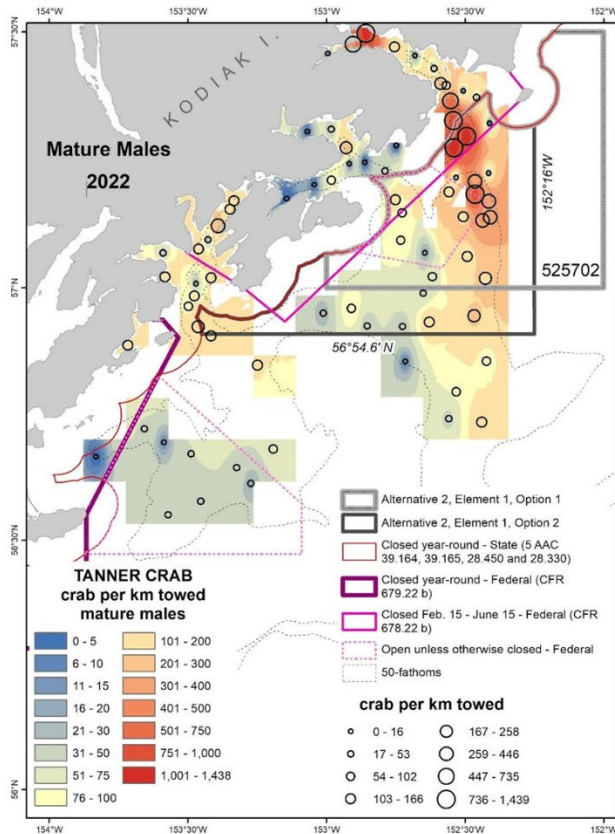
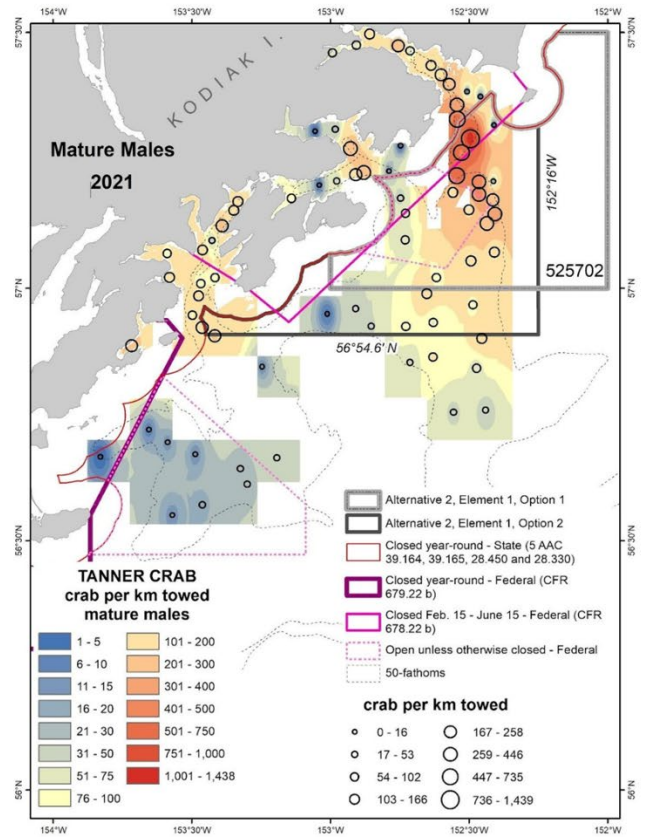
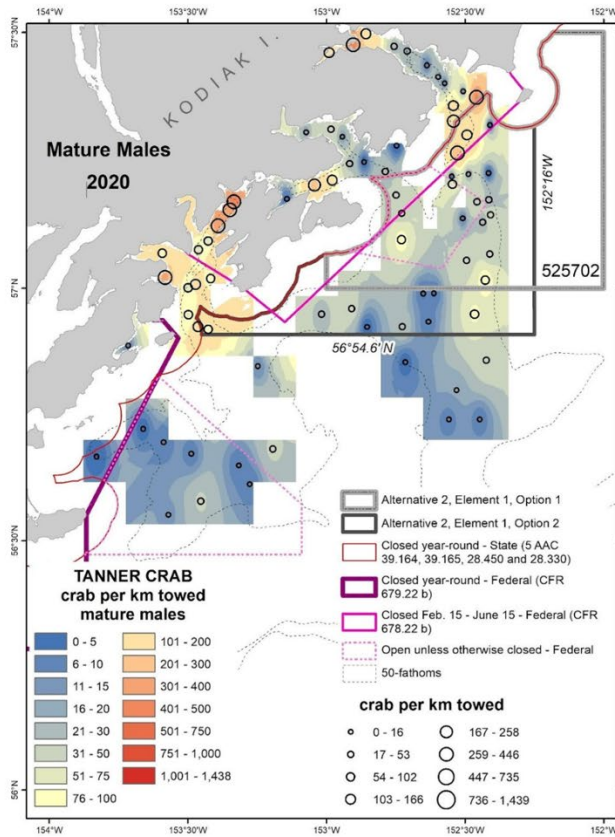


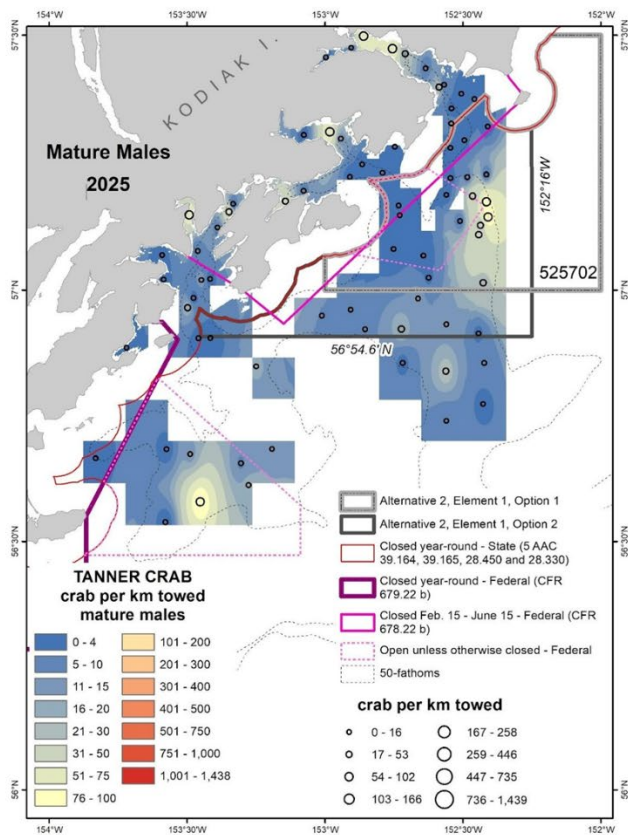
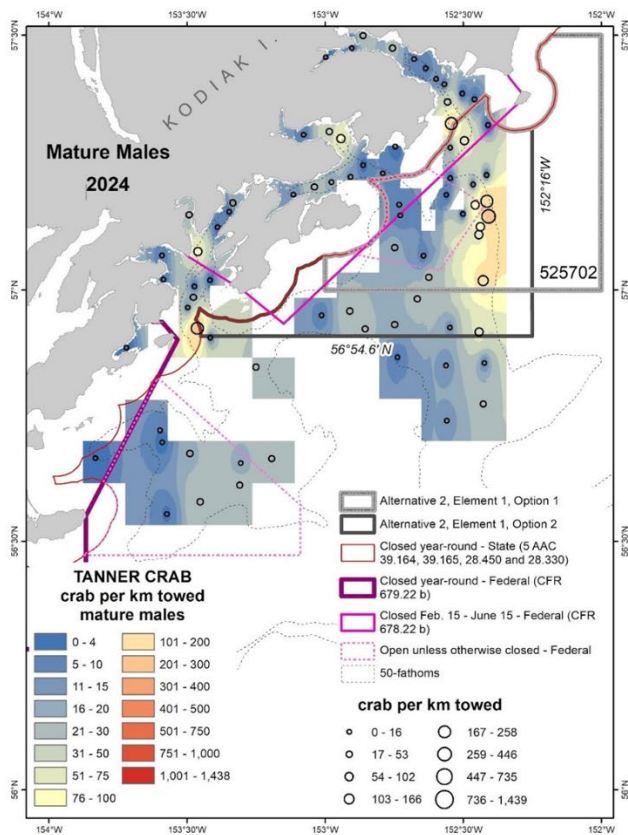


Annual Panel Figures: ADF&G Survey Mature Male Tanner Crab Abundance—Average Mature Male Tanner crab per Kilometer Towed, by Year

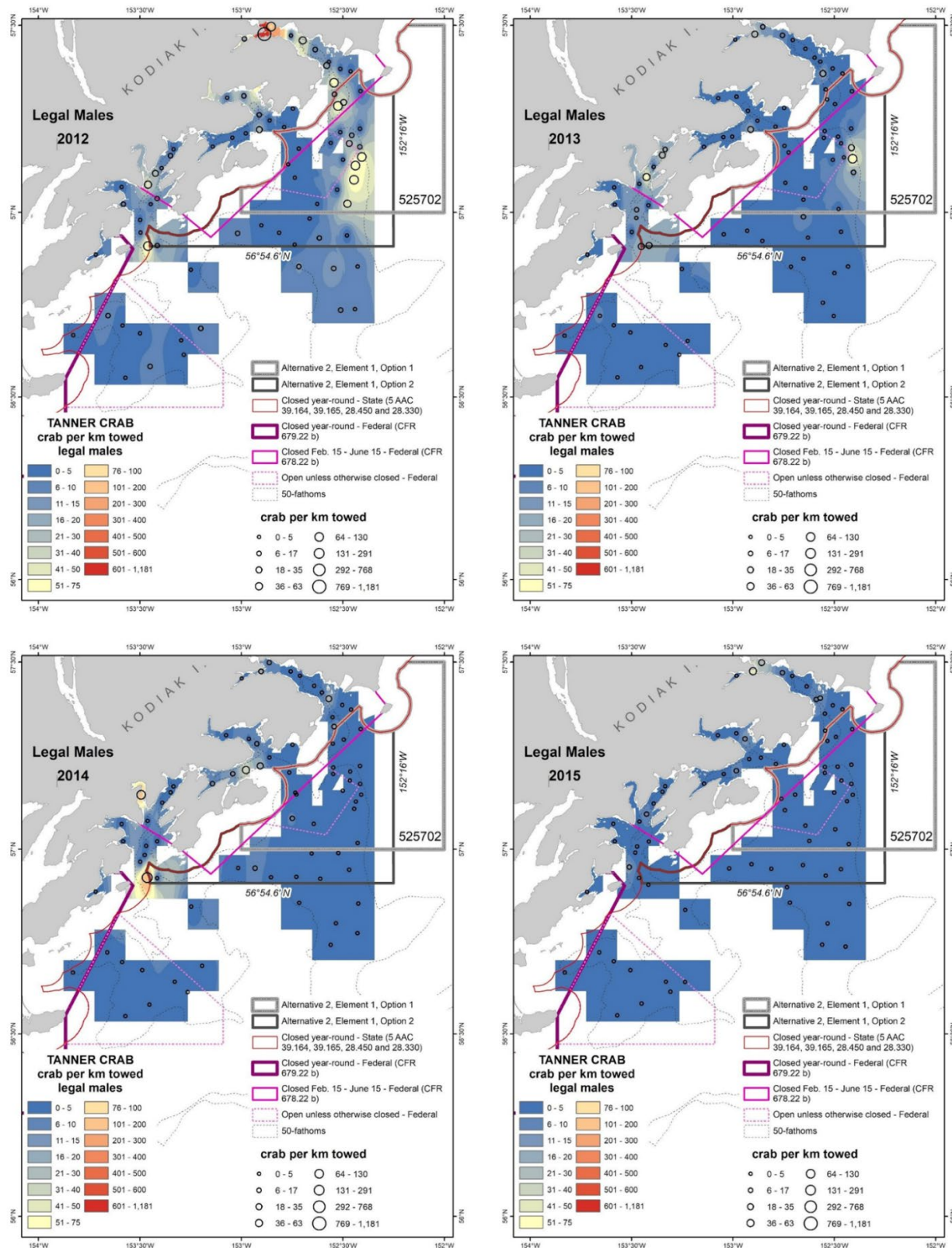


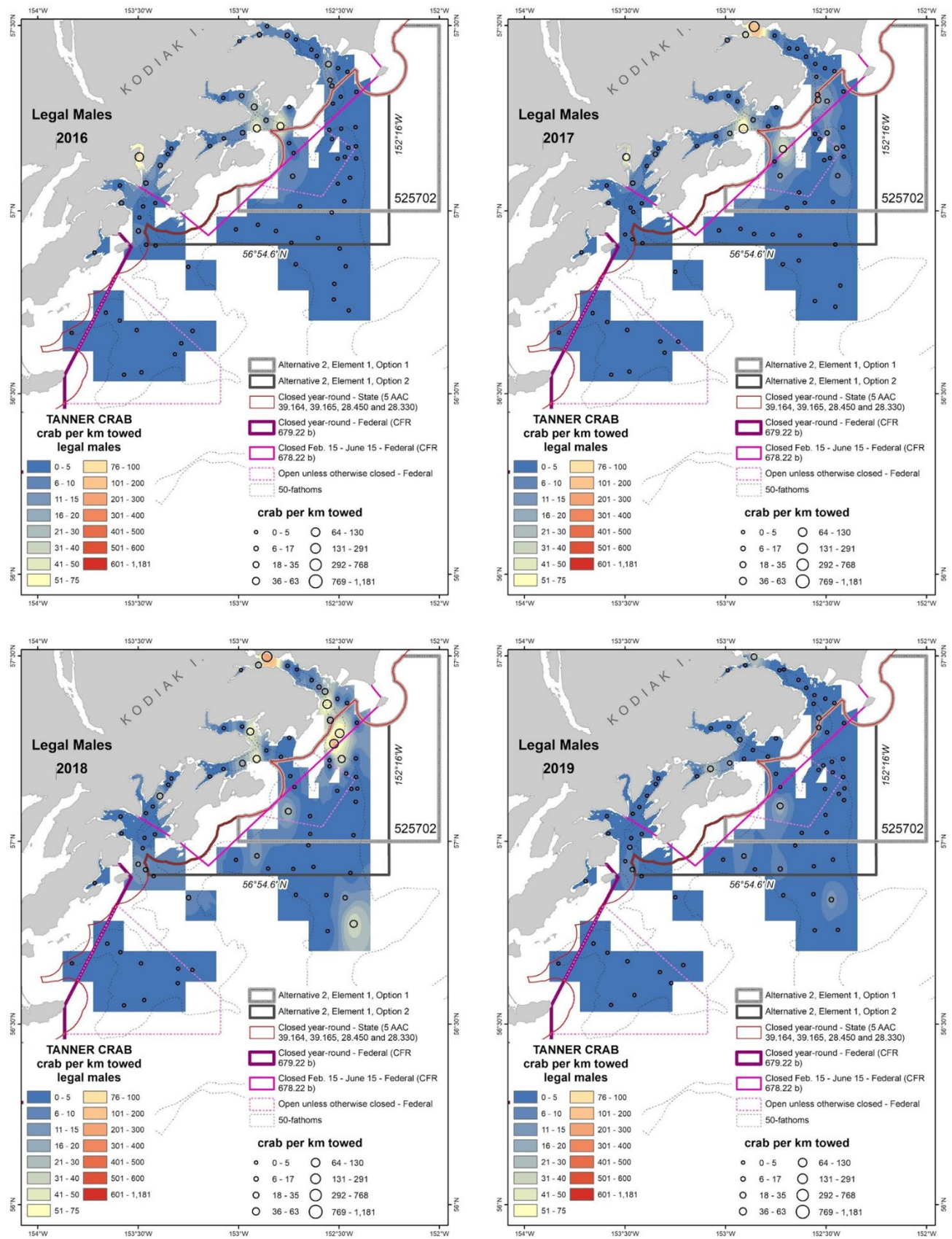


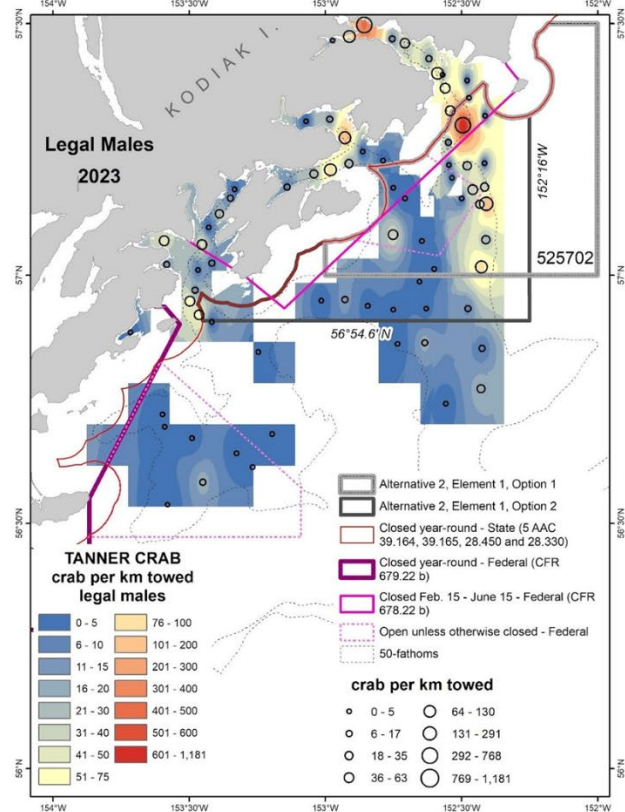
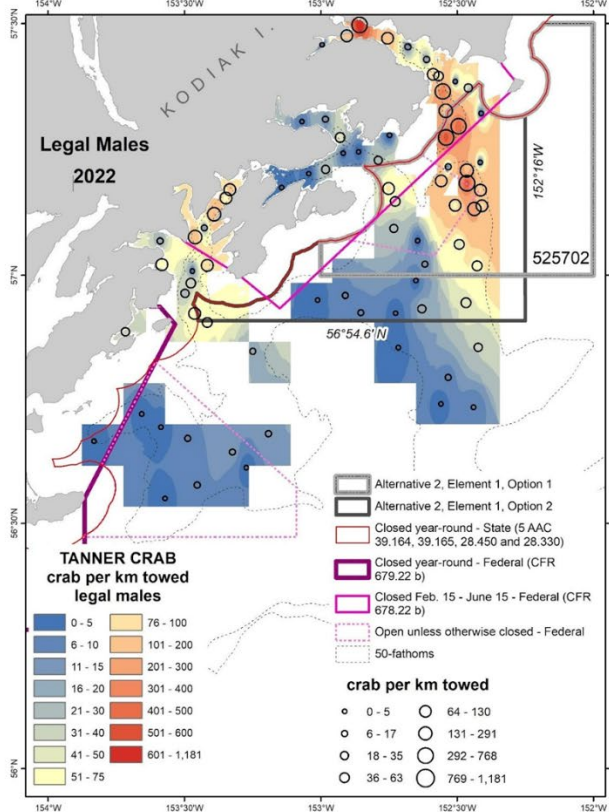
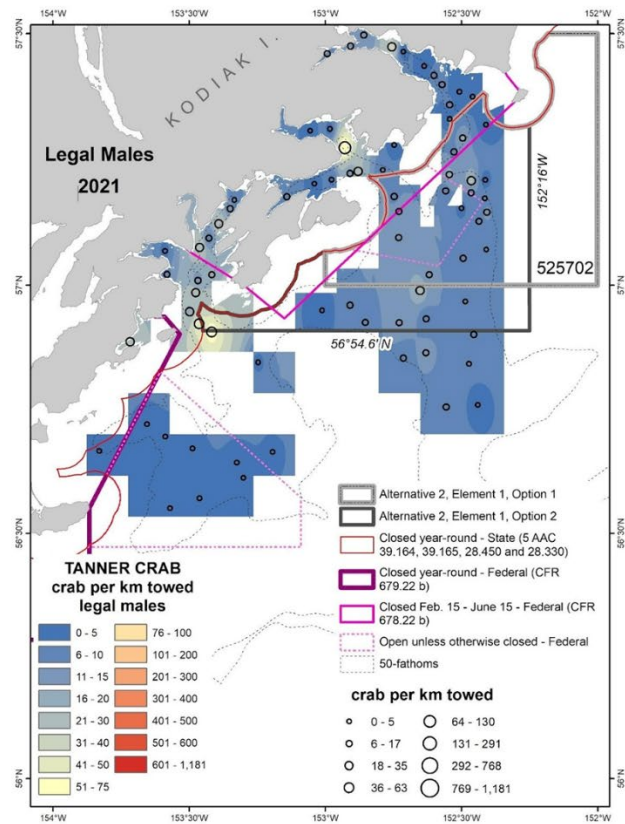
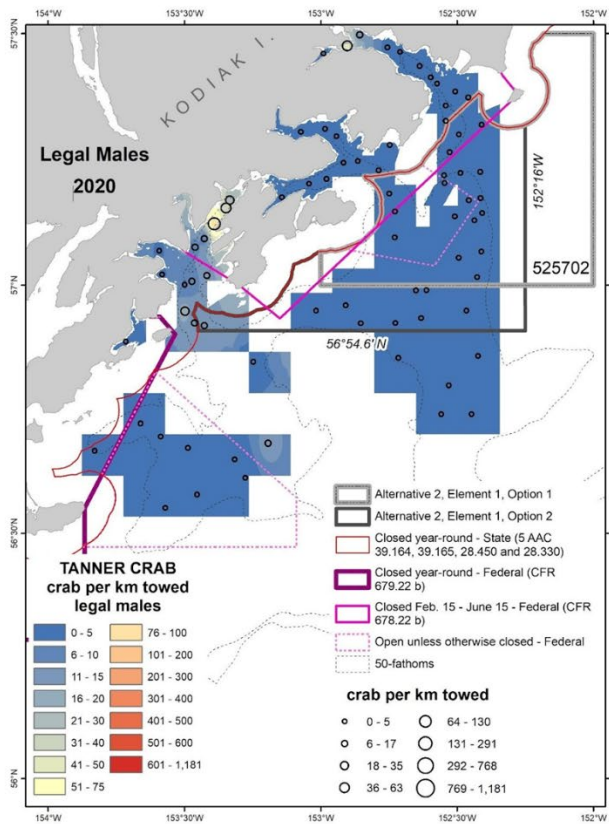


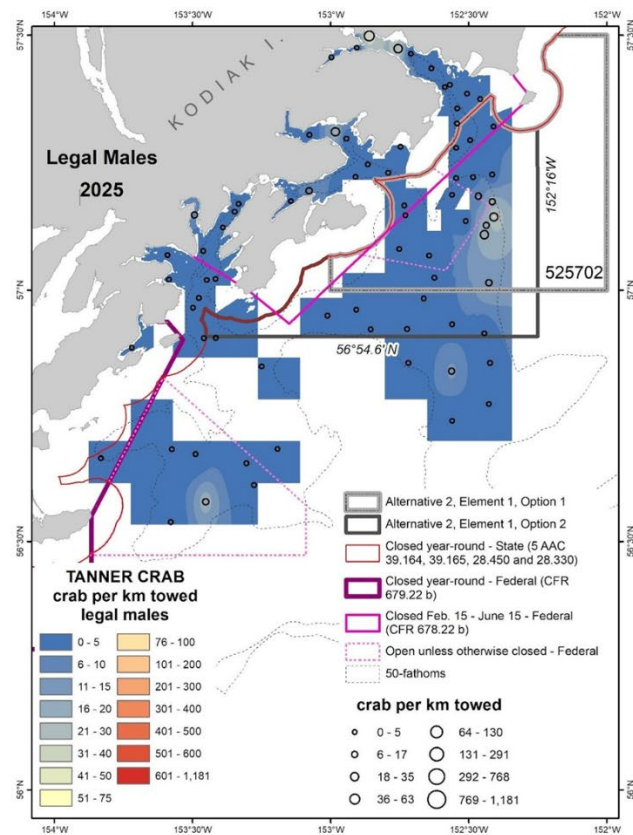
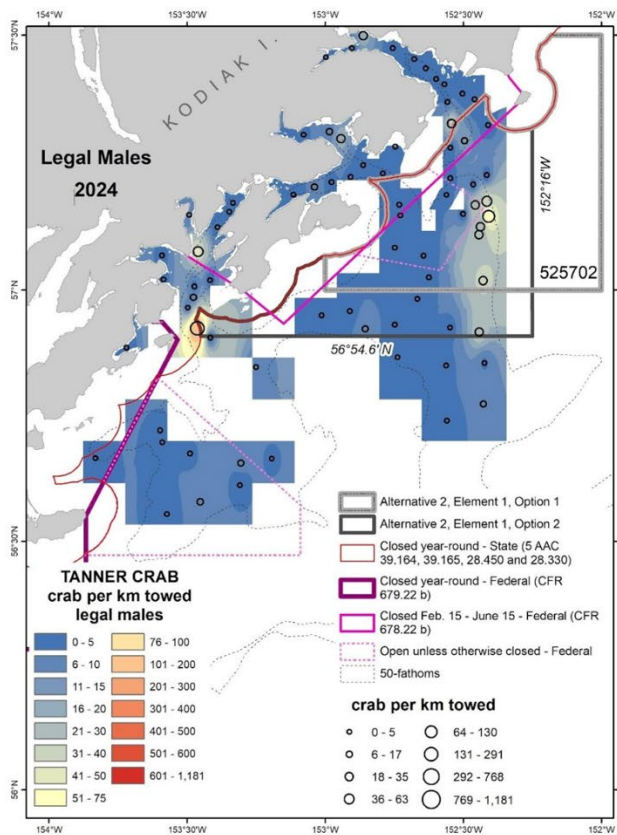


Annual Panel Figures: ADF&G Survey Legal Male Tanner Crab Abundance—Average Legal Male Tanner crab per Kilometer Towed, by Year

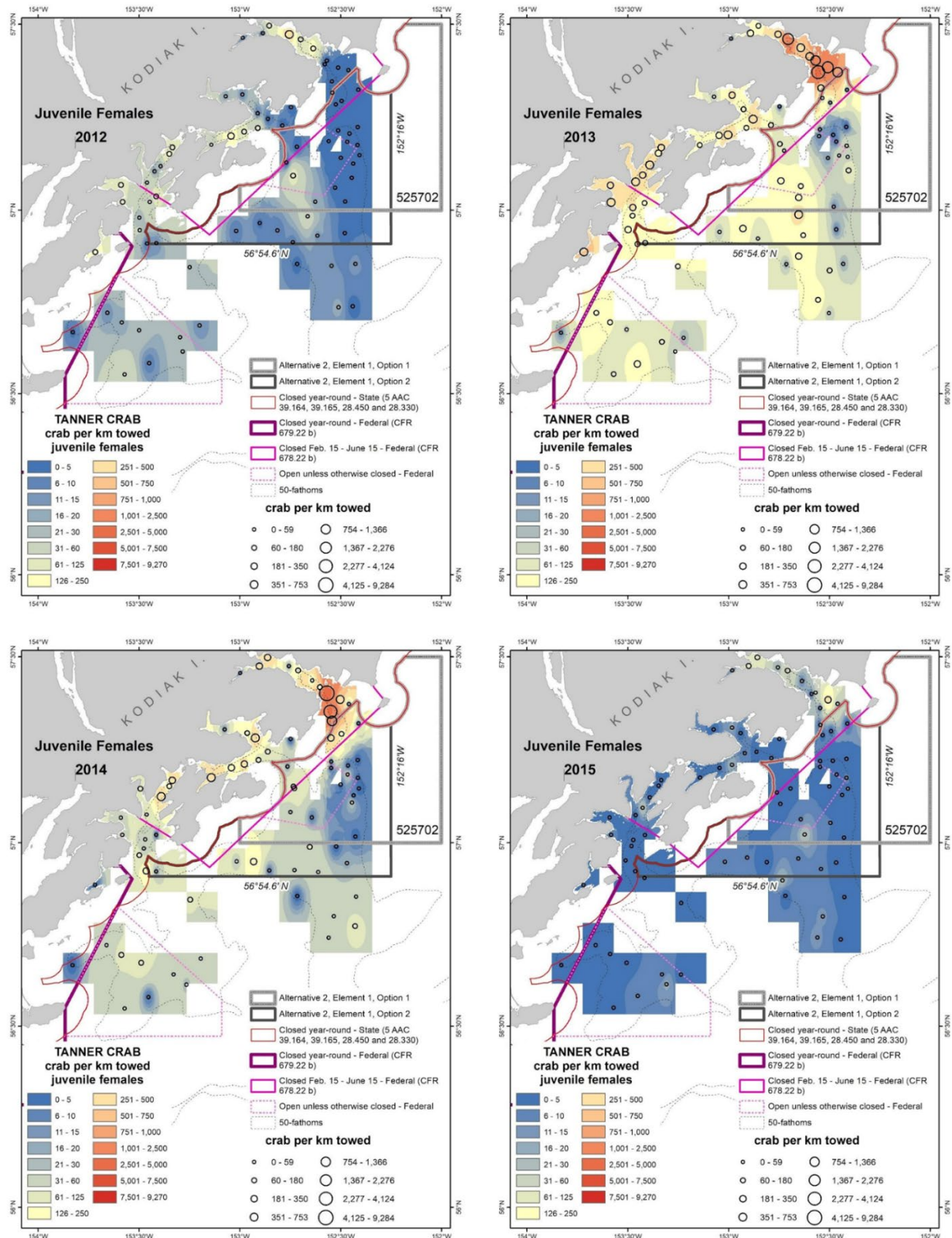


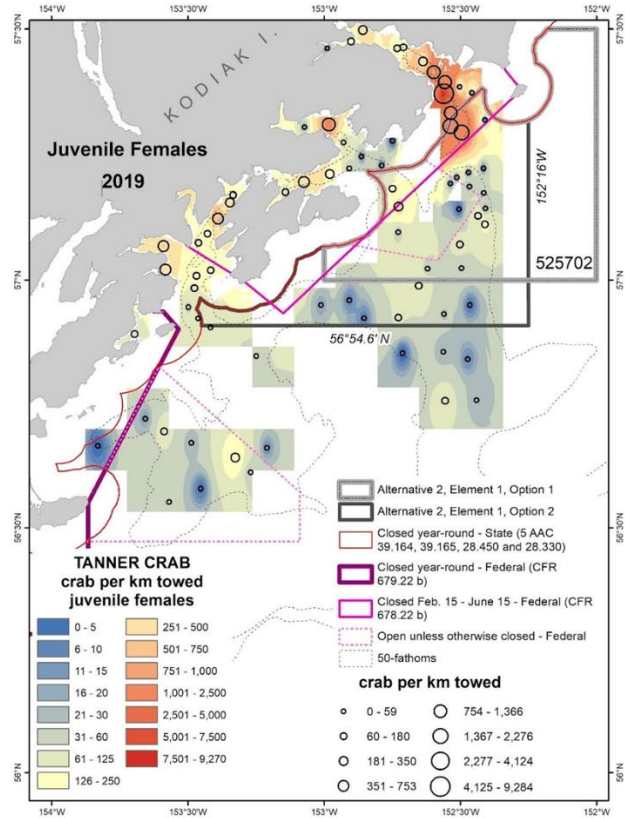
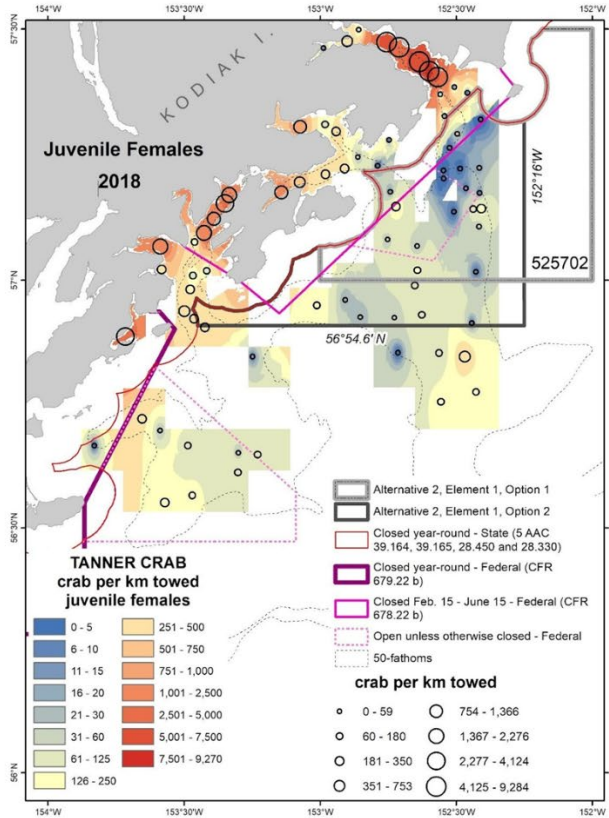
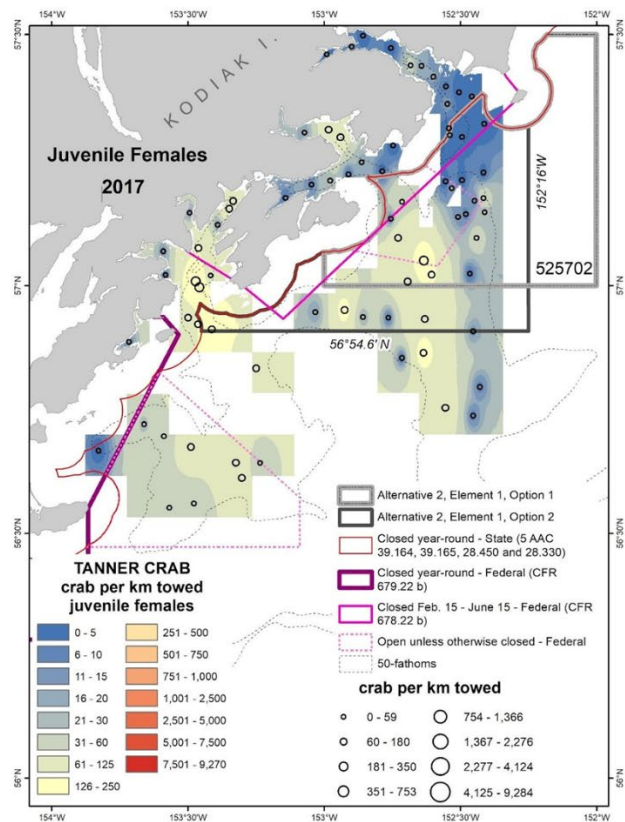
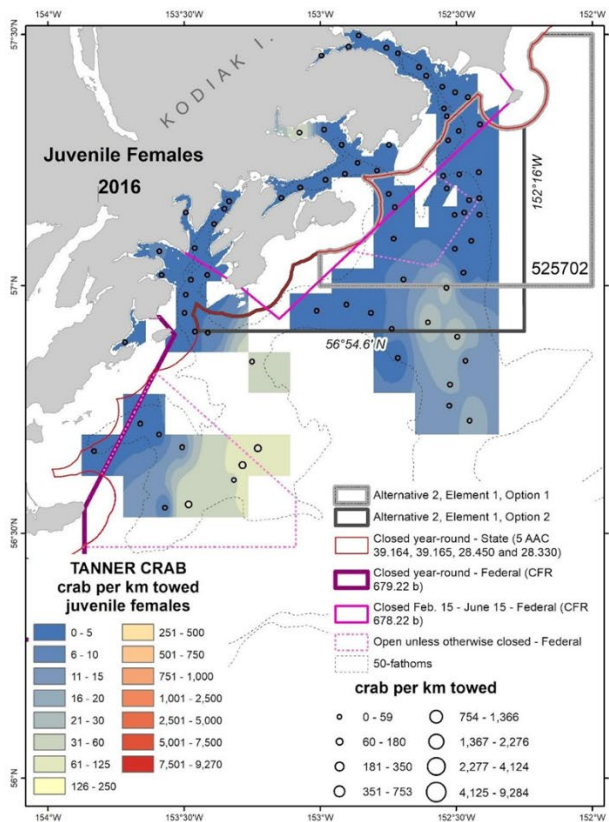


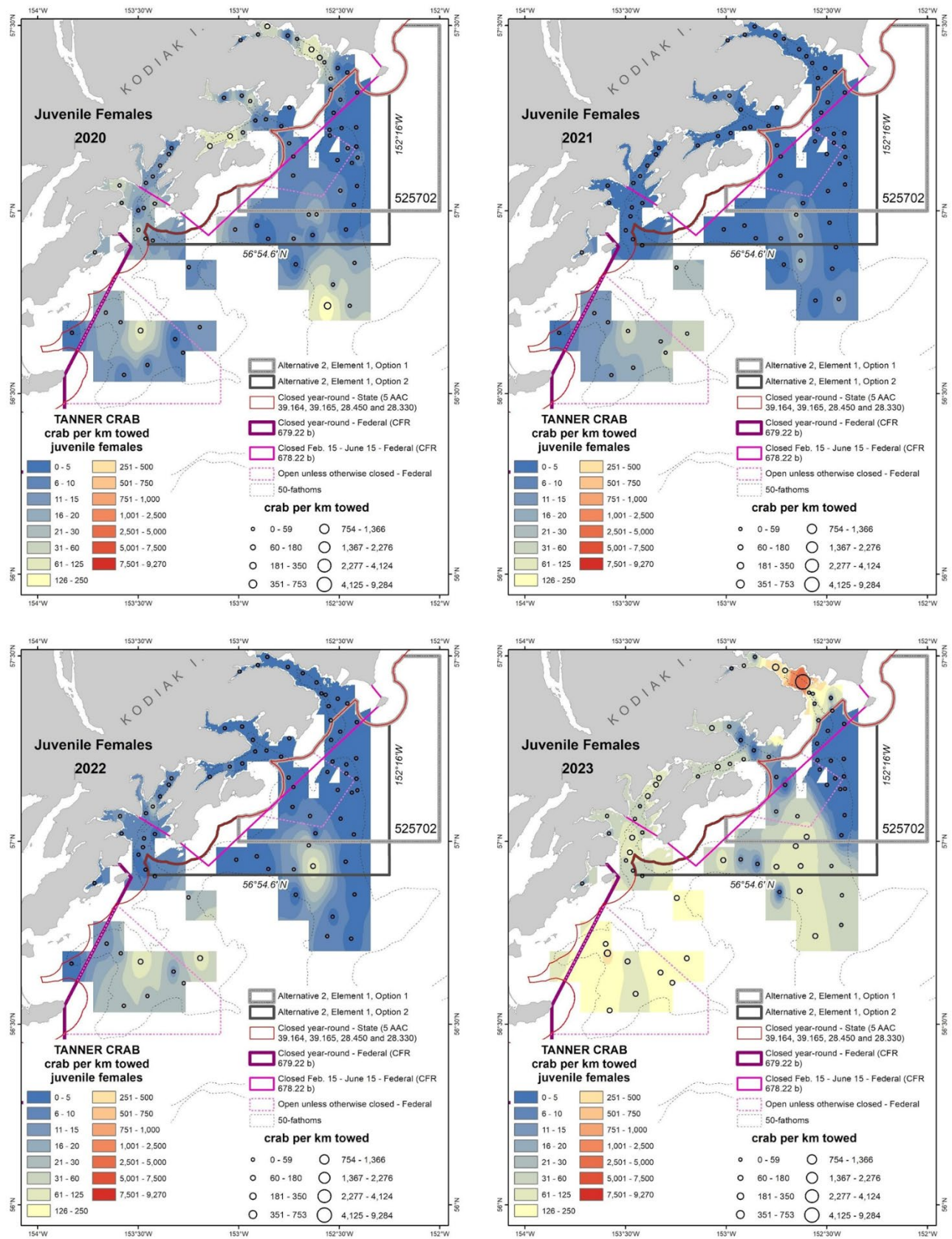


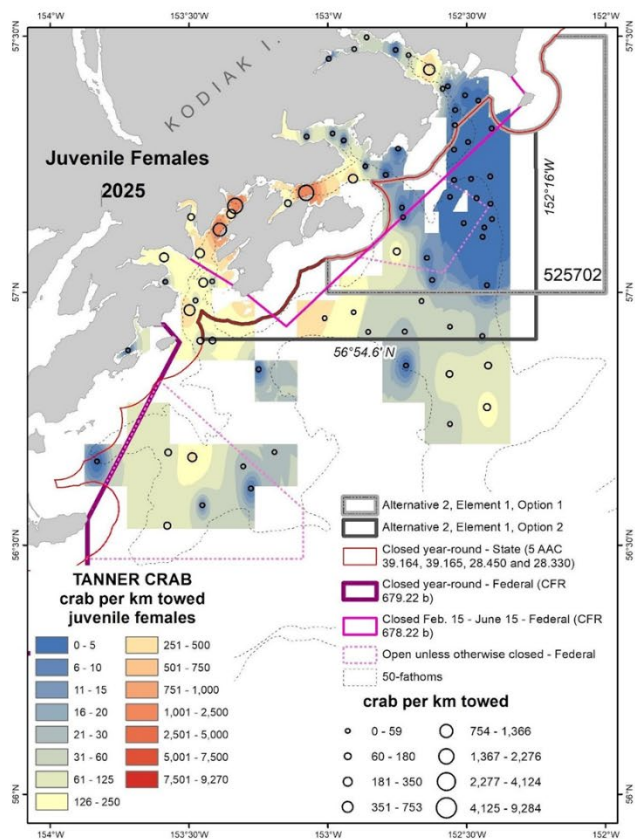
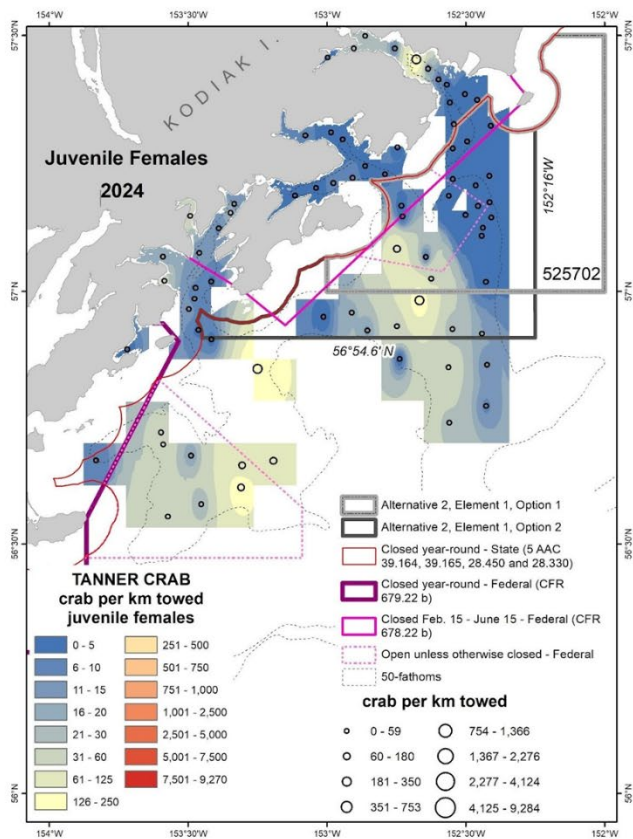


Annual Panel Figures: ADF&G Survey Juvenile Female Tanner Crab Abundance— Average Juvenile Female Tanner crab per Kilometer Towed, by Year

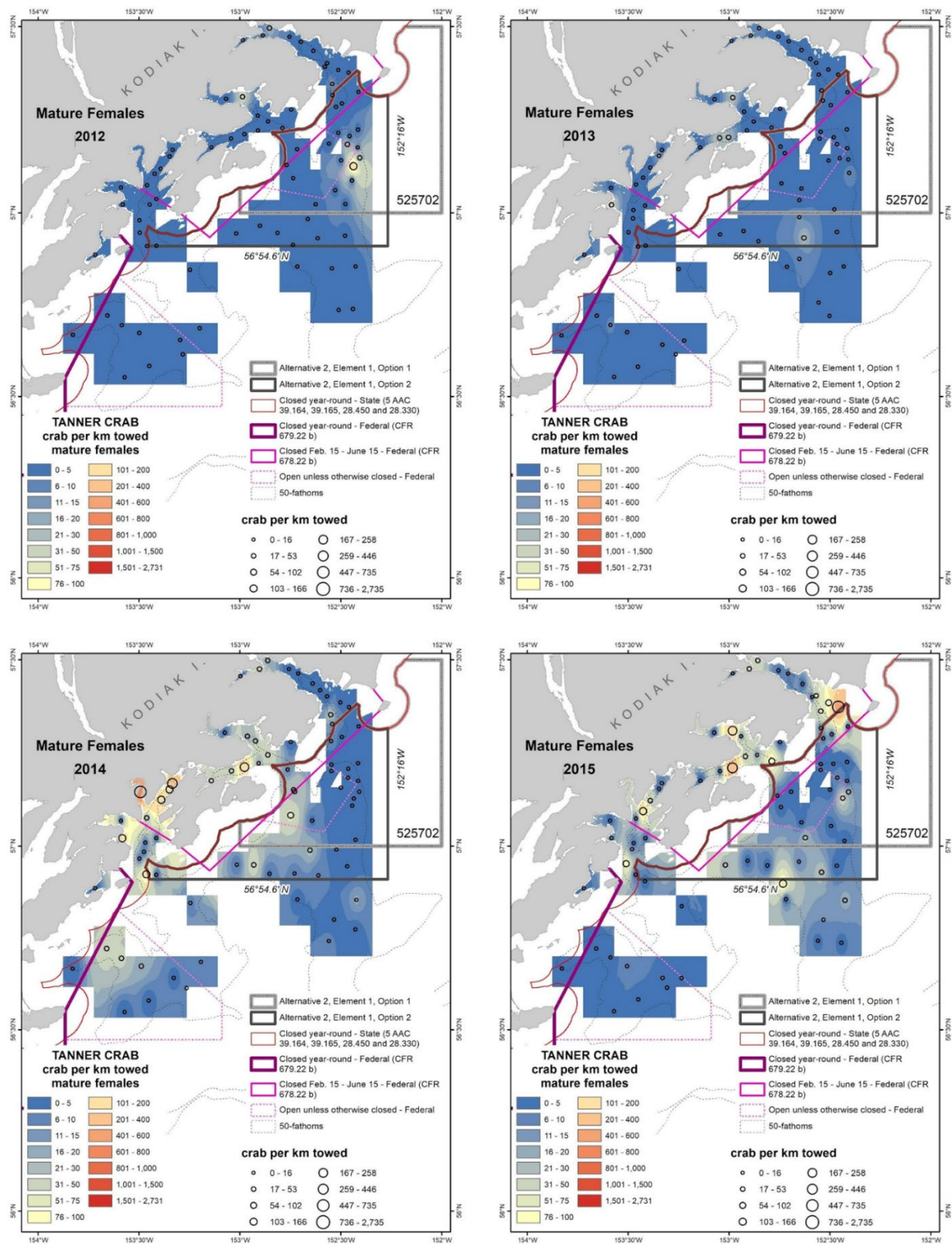


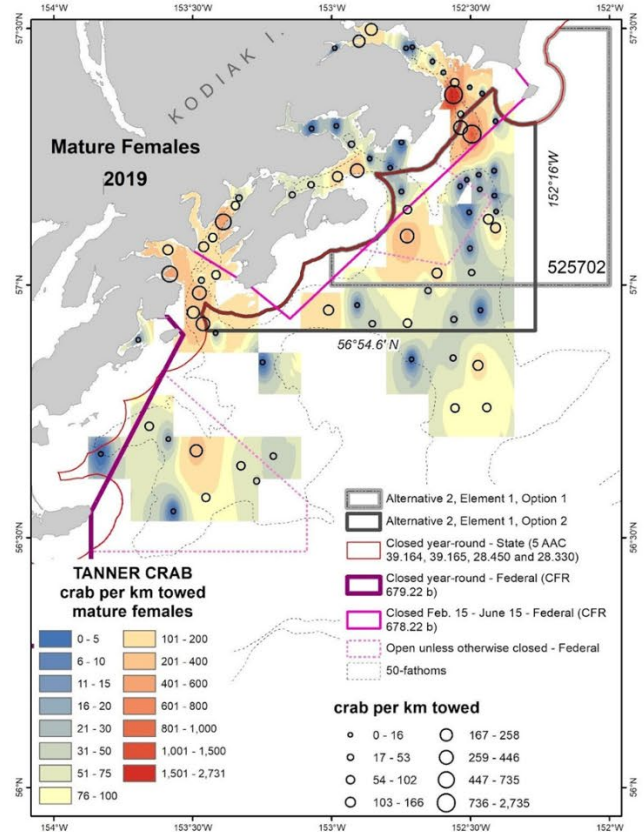
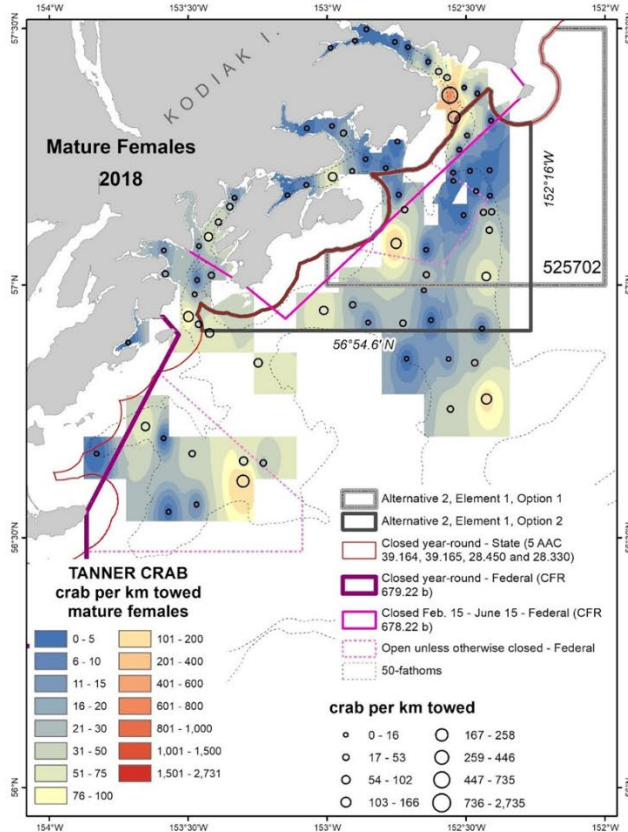
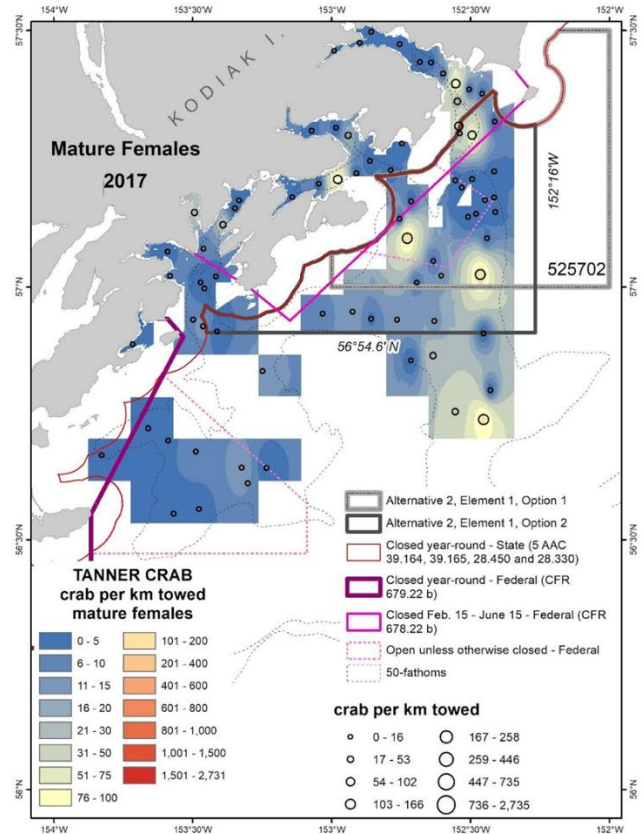
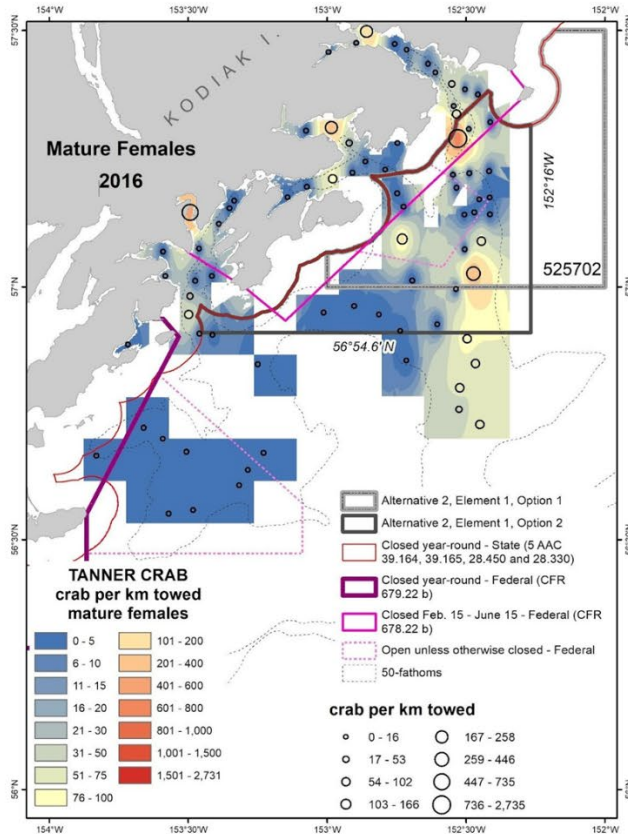


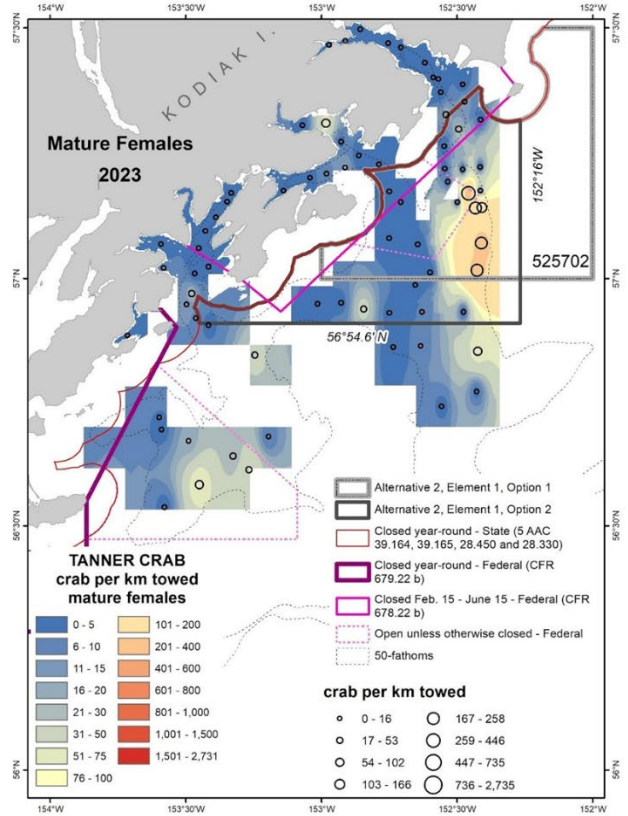
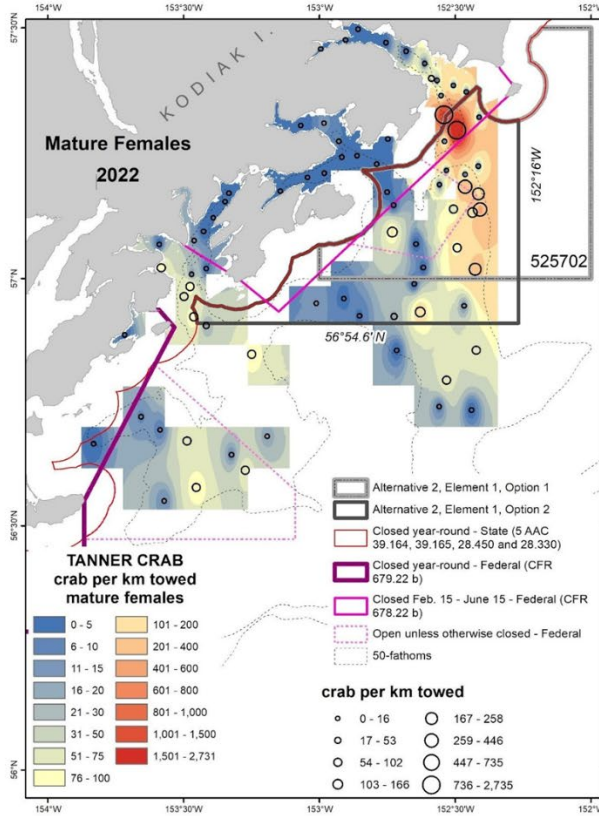
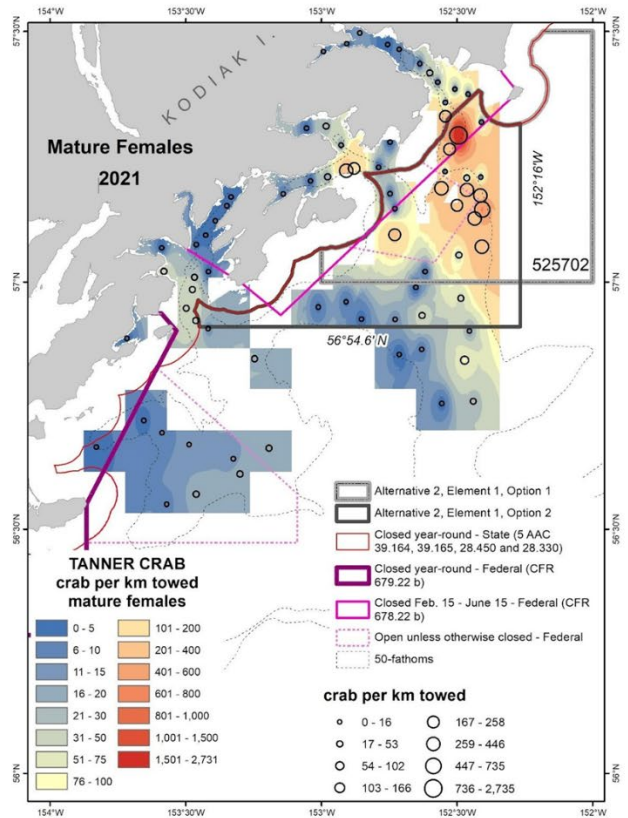
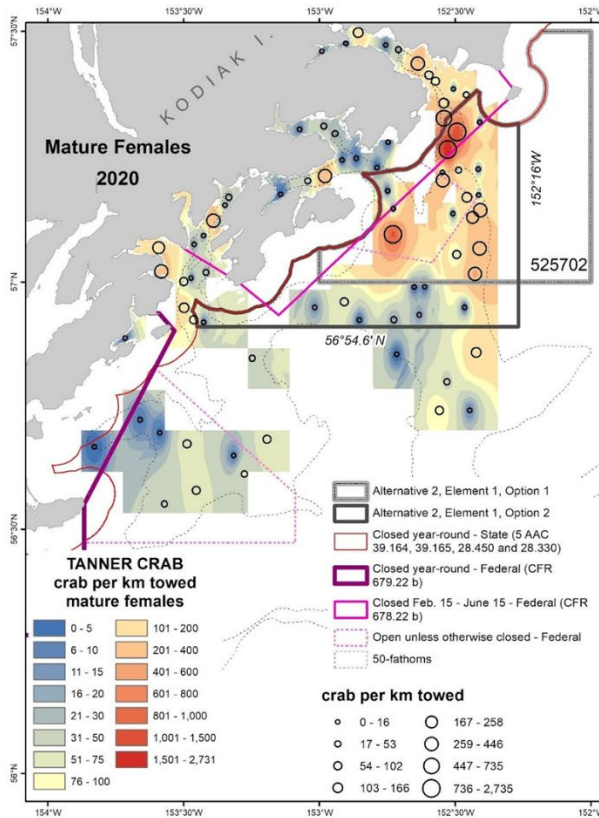


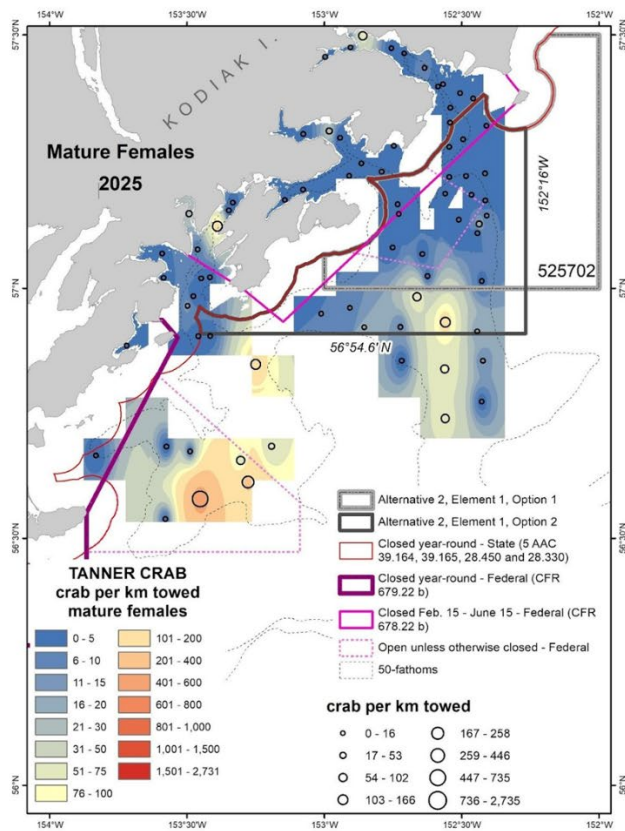
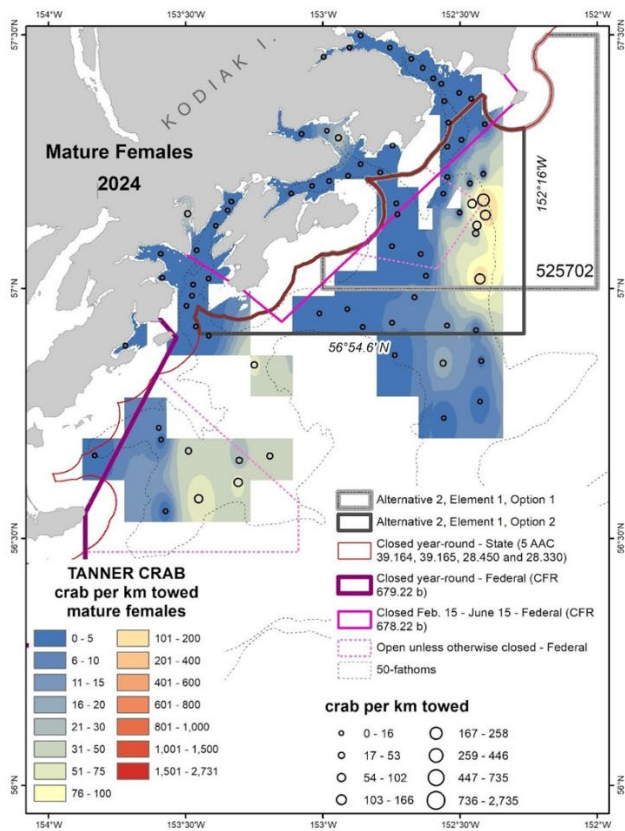


Annual Panel Figures: ADF&G Survey Mature Female Tanner Crab Abundance—Average Mature Female Tanner crab per Kilometer Towed, by Year



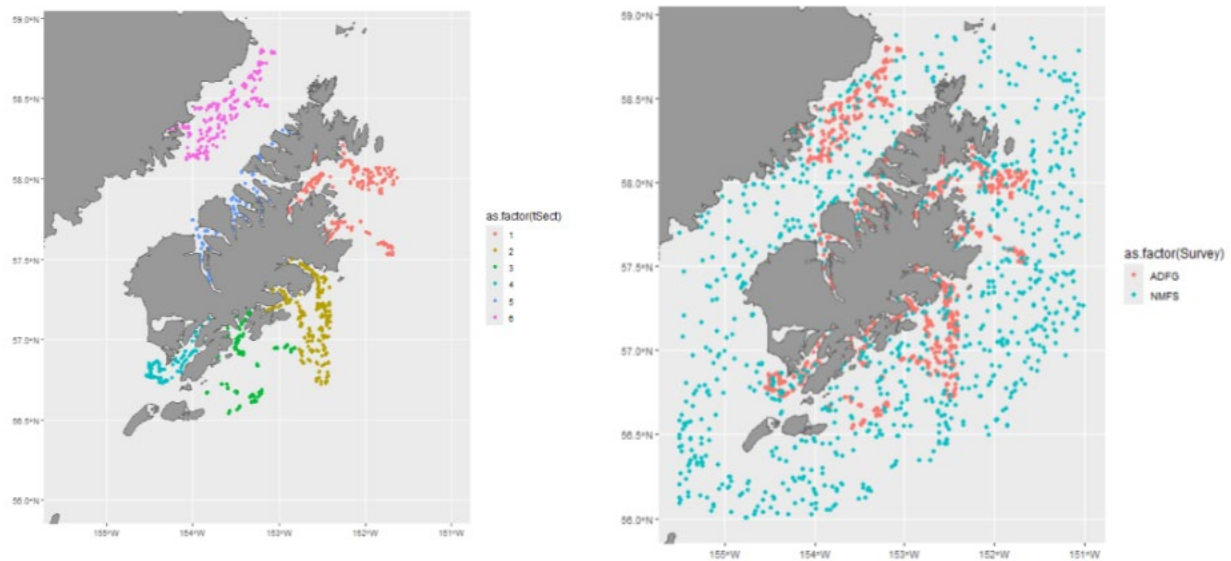






Appendix 2: SDM Model methods and STM maps

Figure A2-1. Maps representing the survey locations for (A) the ADF&G survey only which are used in the Mature Female and Male SDMs, and (B) the combined ADF&G and NMFS survey which is used for the combined all Tanner SDM.



Barrier mesh/cutoff table: testing cutoffs

For the ADF&G survey mesh, the 0.3 km cutoff barrier mesh was selected for the ADF&G-only survey model based on an optimization of predictive performance and spatial stability within the high-density nearshore sampling areas (Table A4-1). While the 0.1 km and 0.2 km models produced comparable AIC values, the 0.3 km barrier model achieved the highest cross-validation log-likelihood and the lowest cross-validation RMSE, indicating that it is the most robust configuration for predicting abundance in unsampled locations. By implementing the barrier constraint, the model effectively prevents the high-intensity catch data clustered in specific gullies from being erroneously correlated across landmasses, a critical requirement given the complex coastal geography of the ADF&G survey range. The 0.3 km cutoff was favored over finer resolutions as it provides an ideal balance between computational efficiency and spatial resolution; with an estimated spatial range of approximately 21 km, a 0.3 km mesh remains more than an order of magnitude smaller than the range, ensuring the model fully captures the underlying spatial process without over-parameterizing the random effects.

For the combined survey mesh, the 3km-cutoff barrier mesh was selected based on an integrated assessment of statistical fit, predictive validity, and the specific geographic and sampling constraints of the study area (Table A4-1). Although the non-barrier model at a 3km cutoff achieved a marginally lower Akaike Information Criterion (AIC), the barrier model demonstrated substantially superior predictive performance, as evidenced by a significantly higher cross-validation log-likelihood. This discrepancy suggests that while a non-barrier model may fit the total data more easily, the inclusion of a physical barrier more accurately captures the underlying spatial process and provides a more robust framework for predicting abundance in unsampled locations. Furthermore, while coarser meshes such as the 10 km cutoff produced lower Root Mean Square Error (RMSE) values, these were rejected because it is predicted that they effectively act as a low-pass filter that smoothed over the fine-scale spatial structure captured by the high-density ADF&G survey in nearshore gullies. By maintaining a 3km cutoff, the model preserves the high-resolution gradients necessary to characterize localized hotspots without erroneously diluting high-density catch data into adjacent low-density areas. Finally, the barrier mesh was

prioritized to ensure biological realism in the fragmented coastal environment of the Kodiak Archipelago. Standard stochastic partial differential equation models assume that spatial correlation is a function of simple Euclidean distance, which would erroneously imply high connectivity between isolated fjords separated by landmasses. The barrier mesh corrects this by forcing spatial correlation to navigate around islands and peninsulas, thereby preventing "spatial leakage" and ensuring the random effects are constrained to the aquatic environment where the species actually resides.

Table A2-1 Statistical fit and cross-validation metrics for the ADF&G and combined survey spatial mesh configurations. Model performance is reported by mesh cutoff resolution and type (barrier vs. non-barrier) using spatial range, Akaike Information Criterion (AIC), cross-validation (CV) sum log-likelihood, and cross-validation Root Mean Square Error (RMSE)

Model type	cutoff	Mesh type	Spatial range	Model AIC	CV Sum log likelihood	CV RMSE
ADF&G	0.1 km	Non-barrier mesh	16.99	17606.5	-9129.6	84.87
ADF&G	0.1 km	Barrier mesh	17.23	17604.5	-9082.2	83.87
ADF&G	0.2 km	Non-barrier mesh	17.53	17605.8	-9126.8	84.71
ADF&G	0.2 km	Barrier mesh	17.37	17603.4	-9077.1	83.74
ADF&G	0.3 km	Non-barrier mesh	17.81	17604.6	-91117.7	85.02
ADF&G	0.3 km	Barrier mesh	20.96	17604.2	-9071.7	83.70
ADF&G + NMFS	3km	Non-barrier mesh	53.44	35448.6	-18732.6	612.08
ADF&G + NMFS	3km	Barrier mesh	64.08	35452.2	-18310.09	609.25
ADF&G + NMFS	5km	Non-barrier mesh	52.00	35501.1	-19014.1	611.59
ADF&G + NMFS	5km	Barrier mesh	63.67	355506.5	-18240.52	614.06
ADF&G + NMFS	10km	Non-barrier mesh	71.76	35629.8	-19287.36	586.37
ADF&G + NMFS	10km	Barrier mesh	8452	35647.14	-19048.32	592.30

Best fit model (Mature Female) Table

Model 4 was identified as the optimal candidate based on its predictive performance across multiple cross-validation metrics. It achieved the lowest RMSE and the highest rank-order correlation (Spearman's

rho) among the top-performing models, indicating the most reliable generalization to out-of-sample data. Furthermore, Model 4 maintains the lowest AIC, reflecting the most efficient trade-off between model likelihood and parameter count. While more complex iterations, such as Model 1, included additional environmental variables like bottom temperature and aspect northness, these additions resulted in higher AIC values and increased error rates. Consequently, Model 4 provides the most robust and parsimonious framework for characterizing the relationship between the response variable and the selected bathymetric and sedimentological predictors.

Table A2-2 Model formulas and cross-validation selection metrics for candidate predictive models for the ADF&G female Tanner crab SDM. Performance is evaluated using model AIC, cross-validation (CV) sum log-likelihood, CV RMSE, and CV Spearman's correlation to identify the most robust and parsimonious predictive framework.

Model #	Formula	Model AIC	CV Sum log likelihood	CV RMSE	CV Spearman
1	Bottom depth + Aspect eastness + Aspect northness + Bottom temperature + Sediment grain size + Maximum tidal current + Bathymetric position index + Year	15931.2	-9030.8	101.69	0.537
2	Bottom depth + Aspect eastness + Aspect northness + Sediment grain size + Maximum tidal current + Bathymetric position index + Year	15929.8	-9019.8	101.27	0.537
3	Bottom depth + Aspect eastness + Aspect northness + Sediment grain size + Bathymetric position index + Year	15933.4	-9020.1	101.74	0.537
4	Bottom depth + Aspect eastness + Sediment grain size + Maximum tidal current + Bathymetric position index + Year	15930.2	-9011.3	100.36	0.538
5	Bottom depth + Aspect eastness + Bottom temperature + Sediment grain size + Maximum tidal current + Bathymetric position index + Year	15931.6	-9021.5	100.78	0.538

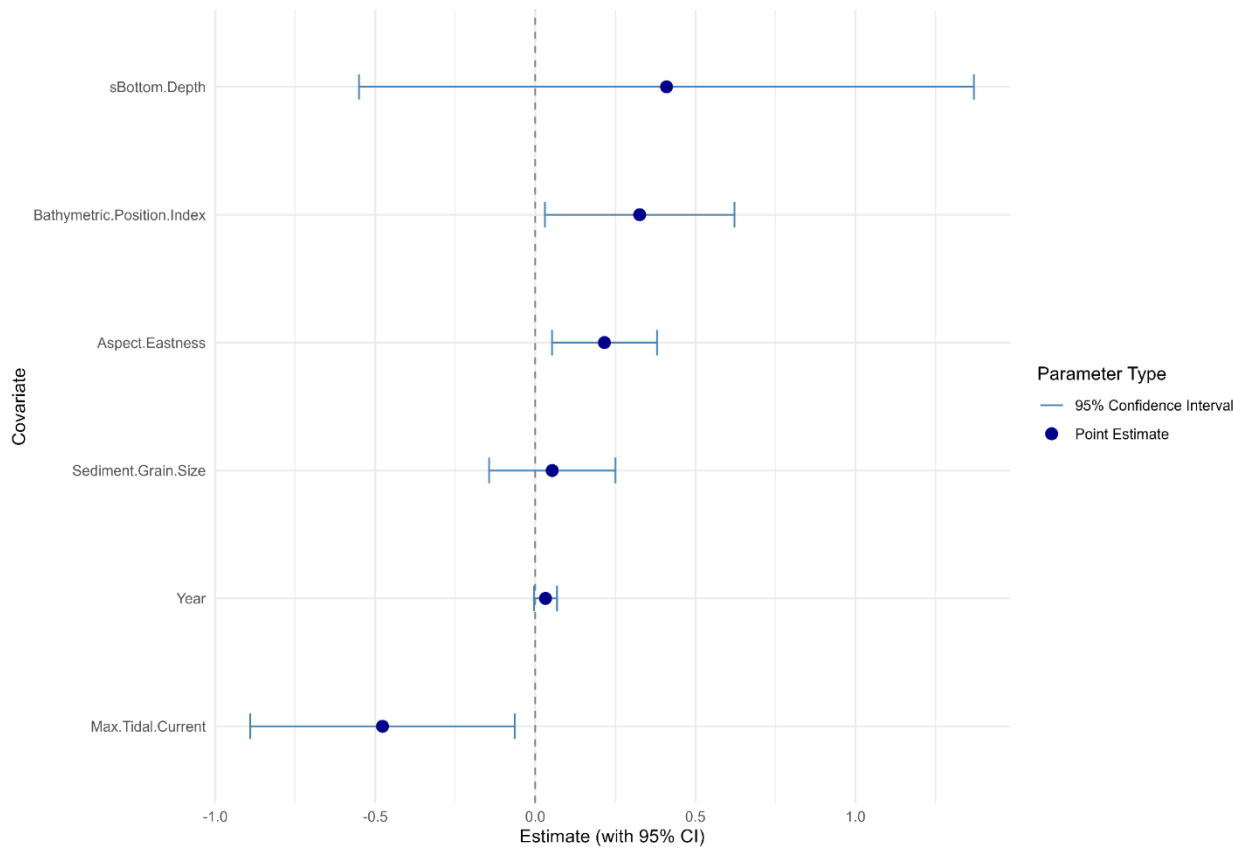


Figure A2-2. Standardized fixed effect coefficients plot for the female Tanner crab model. Points represent the mean estimates of the standardized coefficients on a log scale, while the error bars indicate the 95% confidence intervals (CI). Covariates are ordered by the magnitude of their effect size. The vertical dashed line at 0.0 represents the null hypothesis (no effect); intervals that do not cross this line are considered statistically significant predictors of presence. The large spread of bottom depth is due to it having a smooth term. This was added to constrain extrapolation in predictions. All other covariates are linear.

Best fit model (Mature Male) Table

For the mature male model, model 5 was selected as the most parsimonious representation of the data. Although model 3 yielded the lowest Akaike Information Criterion, the difference between it and model 5 fell within the range where models are considered to have similar empirical support. Preference was given to model 5 because it achieved the lowest cross-validated Root Mean Square Error across all candidate models, indicating superior predictive stability. By excluding non-significant predictors such as Sediment Grain Size and Aspect, the risk of over-parameterization is reduced, while maintaining a high rank-order correlation. Consequently, model 5 provides the most efficient balance between complexity and predictive performance.

Table A2-3 Model formulas and cross-validation selection metrics for candidate predictive models for the ADF&G male Tanner crab SDM. Performance is evaluated using model AIC, cross-validation (CV) sum log-likelihood, CV RMSE, and CV Spearman's correlation to identify the most robust and parsimonious predictive framework.

Model #	Formula	Model AIC	CV Sum log likelihood	CV RMSE	CV Spearman
1	Bottom depth + Slope + Mean curvature + Sediment grain size + Year	16608.5	-9084	81.32	0.633
2	Bottom depth + Slope + Mean curvature + Sediment grain size + Bathymetric position index + Year	16608.6	-9071	81.38	0.633
3	Bottom depth + Slope + Mean curvature + Sediment grain size + Aspect northness + Year	16604.7	-9083	81.43	0.633
4	Bottom depth + Slope + Mean curvature + Sediment grain size + Aspect eastness + Year	16607	-9088	81.7	0.634
5	Bottom depth + Slope + Mean curvature + Year	16607.8	-9082	80.97	0.633

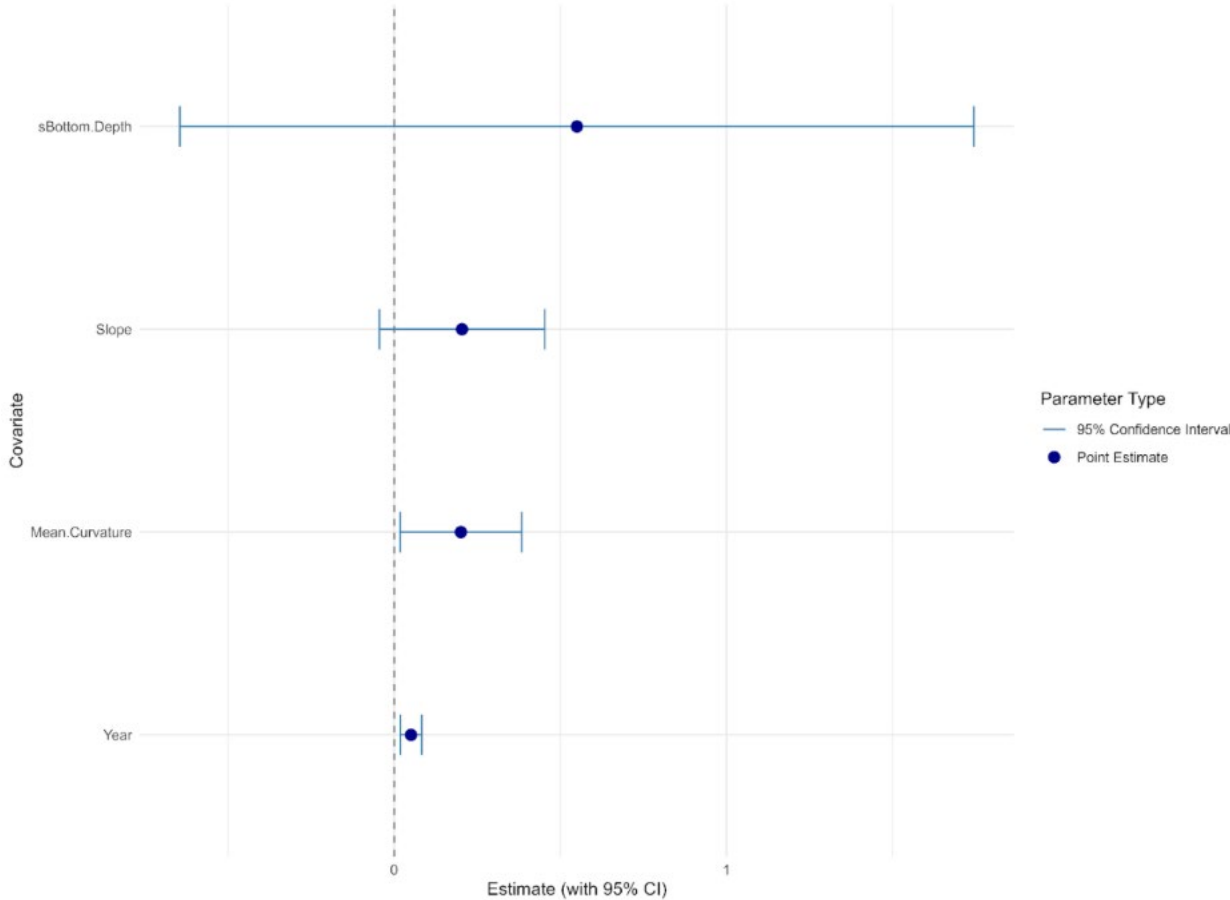


Figure A2-3 Standardized fixed effect coefficients plot for the male Tanner crab model. Points represent the mean estimates of the standardized coefficients on a log scale, while the error bars indicate the 95% confidence intervals (CI). Covariates are ordered by the magnitude of their effect size. The vertical dashed line at 0.0 represents the null hypothesis (no effect); intervals that do not cross this line are considered statistically significant predictors of presence. Large spread of bottom depth is due to it having a smooth term. This was added to constrain extrapolation in predictions. All other covariates are linear.

Best fit model (All Tanner Crab) Table

Model 4 was identified as the most robust candidate for the combined survey analysis. This model achieved the lowest overall Akaike Information Criterion, demonstrating the most efficient information retention among the candidate set. While Model 1 exhibited a lower cross-validated Root Mean Square Error, it had a significantly higher AIC, indicating that the omission of the Bathymetric.Position.Index resulted in a substantial loss of explanatory power. Model 4 further distinguished itself by yielding the highest rank-order correlation, confirming its superior ability to capture the underlying trends of the combined dataset.

Table A2-4 Model formulas and cross-validation selection metrics for candidate predictive models for the combined survey, all Tanner crab SDM. Performance is evaluated using model AIC, cross-validation (CV) sum log-likelihood, CV RMSE, and CV Spearman's correlation to identify the most robust and parsimonious predictive framework.

Model #	Formula	Model AIC	CV Sum log likelihood	CV RMSE	CV Spearman
1	Survey + Bottom depth + Slope + Aspect eastness + Aspect northness + Sediment grain size + Year	34024.4	-18700.2	1785.0	0.873
2	Survey + Bottom depth + Slope + Aspect eastness + Aspect northness + Bottom temperature + Sediment grain size + Year	34024.5	-18733.2	1832.9	0.873
3	Survey + Bottom depth + Slope + Aspect eastness + Aspect northness + Bottom temperature + Bathymetric position index + Sediment grain size + Year	33994.9	-18912.5	1894.1	0.874
4	Survey + Bottom depth + Slope + Aspect eastness + Aspect northness + Bathymetric position index + Sediment grain size + Year	33993.0	-18902.2	1890.9	0.875
5	Survey + Bottom depth + Slope + Aspect eastness + Aspect northness + Sediment grain size + Rockiness Year	34008.6	-18700.7	1803.2	0.873

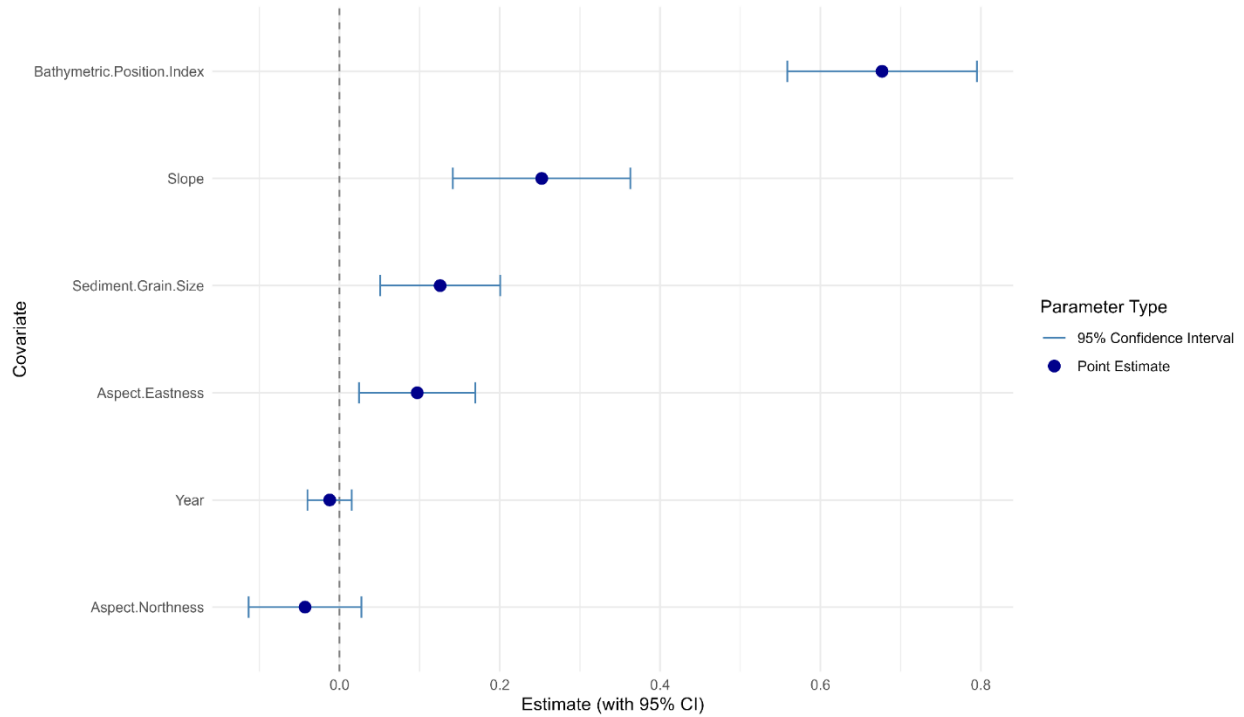


Figure A2-4 Standardized fixed effect coefficients plot for the all Tanner crab model. Points represent the mean estimates of the standardized coefficients on a log scale, while the error bars indicate the 95% confidence intervals (CI). Covariates are ordered by the magnitude of their effect size. The vertical dashed line at 0.0 represents the null hypothesis (no effect); intervals that do not cross this line are considered statistically significant predictors of presence. All covariates shown are modeled as linear effects.

Figure A5-5. Mature Female SDMs by Year (STMs)

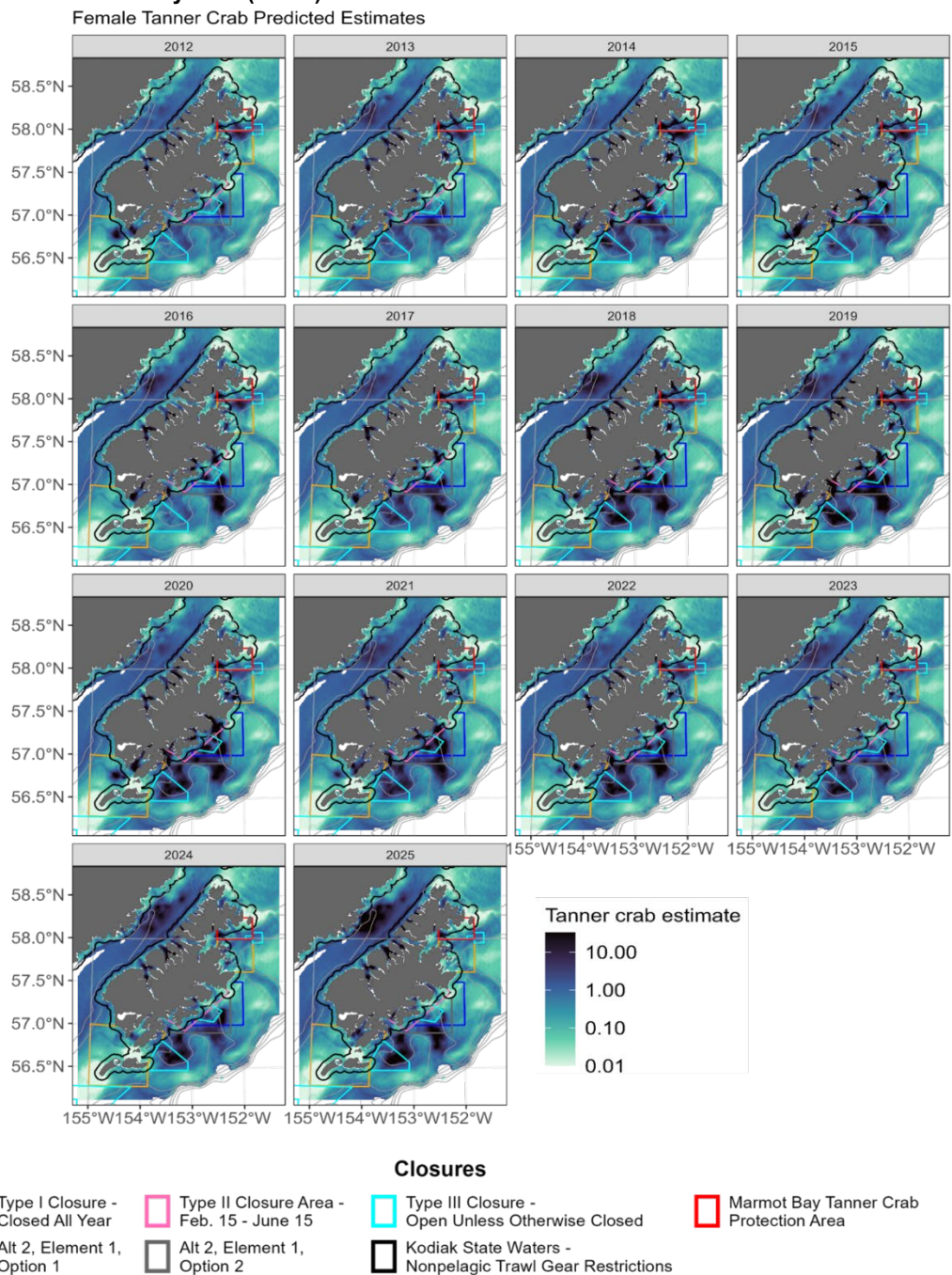


Figure A2-6. Mature Male SDMs by Year (STMs)

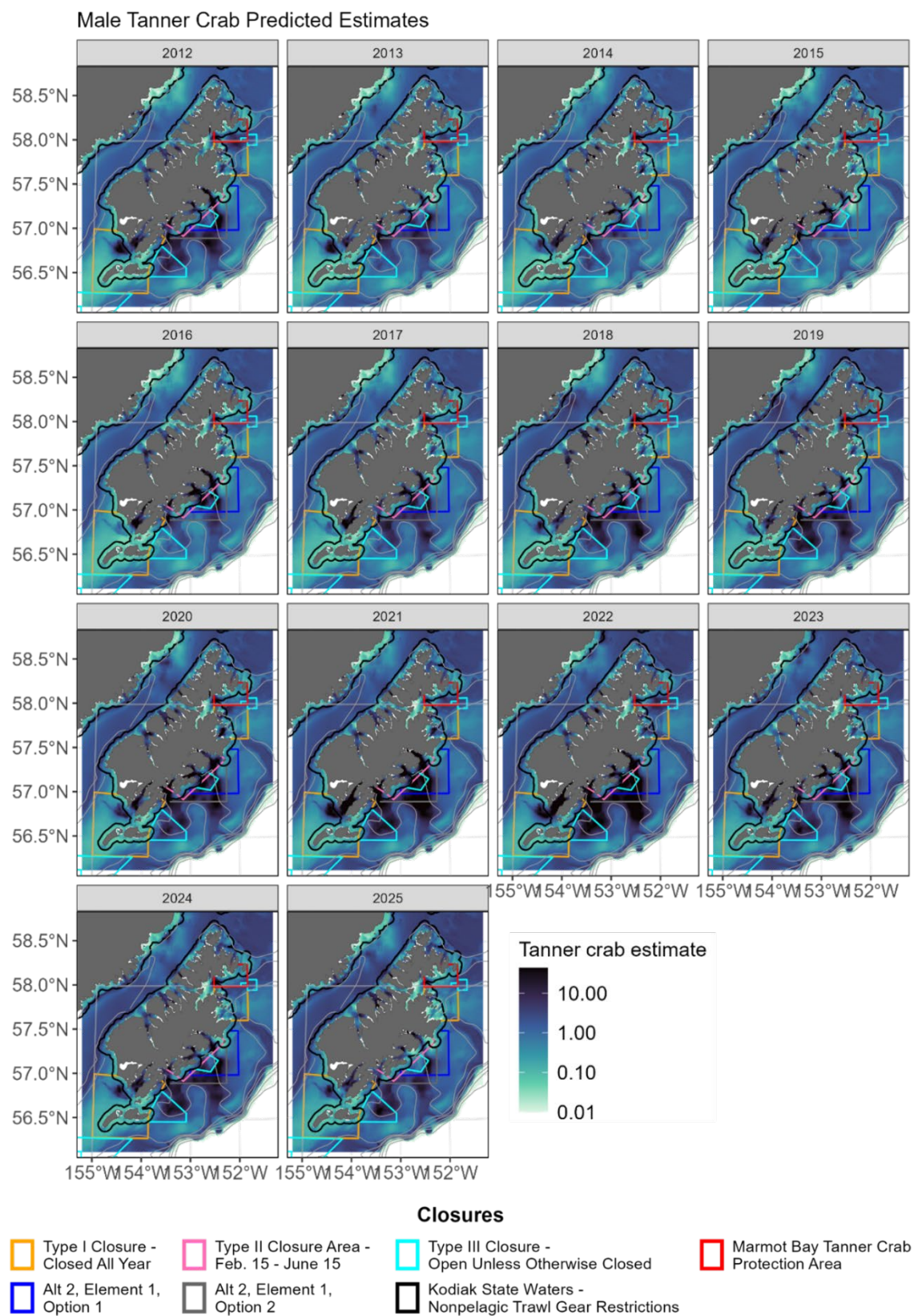


Figure A2-7. Combined Survey SDM Maps by Year (STMs)

