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# **CRAB RATIONALIZATION 5-YEAR PROGRAM REVIEW SOCIAL IMPACT ASSESSMENT: EXECUTIVE SUMMARY**

## **INTRODUCTION**

A two-pronged approach to analyzing the community and regional components of changes associated with the implementation of Bering Sea and Aleutian Islands (BSAI) crab rationalization was utilized. First, tables based on existing quantitative fishery information were developed to identify patterns of participation in the various components of the fishery on an annual average basis from pre- and post-rationalization from 1998 through 2009. There are, however, substantial limitations on the data that can be utilized for these purposes, based on confidentiality restrictions. Quantitative information was also developed to examine the redistribution of quota shares that has occurred following implementation of the rationalization program, contrasting initial allocation patterns with those seen at the time of the 2010/2011 seasonal allocation process. While quota redistribution indicators cannot inform pre- versus post-implementation analysis, they do provide insight into changes that have occurred over the first 5 years of the program.

The second approach involved selecting a subset of BSAI crab communities for characterization to describe the range, direction, and order of magnitude of social- and community-level impacts associated with the relevant crab fisheries. This approach then qualitatively explores the social and community impacts that have resulted from the rationalization-associated changes to the locally present sectors in combination with other community-specific attributes and socioeconomic characteristics. Chosen for this community-level analysis were those Alaskan communities characterized in the pre-implementation BSAI crab rationalization social impact assessment: Unalaska/Dutch Harbor, Akutan, King Cove, Kodiak, Sand Point, Adak, St. Paul, and St. George. Updated, detailed profiles with a focus on crab dependence and BSAI crab rationalization impacts are provided in this document for four of these communities: Unalaska/Dutch Harbor, St. Paul, King Cove, and Kodiak.

## **PRE- AND POST-RATIONALIZATION CHANGES: QUANTITATIVE MEASURES OF VESSEL AND PROCESSOR ACTIVITY**

Vessel activity by community was examined pre- and post-rationalization based on location of vessel ownership. Processing activity by community was characterized based on the physical location of processing facilities.

### **Vessel Activity**

Fleet consolidation accompanying rationalization was substantial. In both the Bristol Bay red king crab and Bering Sea snow crab fisheries, the annual average post-rationalization fleet was roughly one-third of the size of the pre-rationalization fleet. While virtually all participating Alaska communities lost vessels, the remaining vessel ownership has tended to aggregate in fewer and larger communities. Data from 1998 through 2009 show vessels owned by residents or entities in 19 different Alaska communities participated in at least one of the now-rationalized fisheries for at least one season. By the 2009/2010 season, communities with more than one vessel listed as locally owned fishing in any of the rationalized crab fisheries were limited to

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Anchorage, Kodiak, and Homer; Seldovia and Wasilla each had a single vessel participate in the rationalized fisheries. No vessels with ownership listed in any other Alaska communities participated in any of the rationalized crab fisheries that year.

Confidentiality restrictions preclude an analysis of gains or losses in average annual harvest value by community of vessel ownership for all Alaska communities except Kodiak. While annual volume and value percentages of the overall fisheries tended to increase for Alaska-owned vessels post-rationalization compared to pre-rationalization conditions, this was not the case for Kodiak, although the relative change has been small for both Alaska in general and Kodiak in particular.

### **Processing Activity**

Community-by-community changes in volumes and values of landings and associated processing levels cannot be disclosed due to confidentiality restrictions for all Alaska communities except Unalaska/Dutch Harbor. Even in this case, data disclosure is further limited by a share type analysis elsewhere in the main body of the document. It can be stated, however, that Unalaska/Dutch Harbor is apparently successfully competing for B and C share deliveries beyond its proportion of A share deliveries.

Processors of crab species included in the rationalization program are relatively concentrated in a few communities, but community data for processing are known to be less than complete due to a lack of processing location data for a number of floating catcher processors and inshore stationary floating processors. A total of 11 communities are shown in the data as having participated in processing of at least a minimal volume of one or more rationalized crab species for one or more seasons during the period 1998 through 2010. Only Unalaska/Dutch Harbor, Akutan, King Cove, and Kodiak, however, show an annual average of one or more than one processor pre- and post-rationalization for both Bristol Bay red king crab and Bering Sea snow crab. St. Paul shows an annual average of more than one processor pre- and post-rationalization for Bering Sea snow crab, but not for Bristol Bay red king crab. These same five communities show a continuous history of annual processing of rationalized species 1998 through 2010 (and all have processed additional rationalized species); Adak processed rationalized crab species annually from 2000 through 2009 (but not in 2010 following closure of the local plant, the reopening of which is planned for 2011), and narrowed its focus among rationalized species exclusively to Western Aleutian golden king crab following rationalization. Processor counts for at least some years for some communities are higher than the number of physical entities in the communities due to custom processing arrangements. Prior to rationalization, at least some relevant processing occurred in Cordova, Ninilchik, and Wasilla in South-Central Alaska and Sand Point in the Aleutians; no processing has occurred in any of these communities since the implementation of rationalization.

### **POST-RATIONALIZATION QUOTA SHARE REDISTRIBUTION**

Quota share redistribution data from initial allocation through the most recent annual individual fishing quota assignment process (2010/2011) is not subject to the same confidentiality restrictions as other quantitative information. The following subsections describe patterns of change for catcher vessel owner quota, catcher vessel crew quota, catcher processor owner quota, catcher processor crew quota, and processor quota shares. This summary focuses on the Bristol

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Bay red king crab and Bering Sea snow crab fisheries as the two economically dominant fisheries within the rationalization program.

### **Catcher Vessel Owner Shares**

Alaska communities as a group, between initial allocation and 2010/2011, went from 39 to 54 unique catcher vessel owner quota holders in the Bristol Bay red king crab fishery; they also went from owning 16.1 percent to 25.5 percent of the total catcher vessel owner quota units in the Bristol Bay red king crab fishery. Patterns of redistribution, however, varied by region and community. Relatively few (nine) Alaska communities had residents receive initial allocations for Bristol Bay red king crab catcher vessel owner shares. These include Anchorage, Dillingham, Homer, and Seldovia in the South-Central region; Petersburg and Yakutat in the Southeast region; Unalaska/Dutch Harbor and King Cove in the Aleutians region; and Kodiak in its own region. By the time of the 2010/2011 allocation process, all of these communities either maintained or increased their number of unique quota holders, with the exception of Petersburg. Additionally, while not receiving any initial allocation, residents of Soldotna and Wasilla in the South-Central region and St. Paul in the Aleutian region held at least some catcher vessel owner quota by the time of the 2010/2011 quota allocation process. Residents of Petersburg, Yakutat, and King Cove held fewer quota units by the time of the 2010/2011 allocation process compared to quota units held at initial allocation; all other Alaska communities listed gained quota units over this time period.

Alaska communities as a group, between initial allocation and 2010/2011, went from 38 to 57 unique catcher vessel owner quota holders in the Bering Sea snow crab fishery; they also went from owning 16.4 percent to 27.6 percent of the total catcher vessel owner quota units in the Bering Sea snow crab fishery. The same patterns of change for catcher vessel owner quota occur for Alaska communities for the Bering Sea snow crab fishery as were seen for the Bristol Bay red king crab fishery, with a few exceptions. For the Bering Sea snow crab fishery, the number of unique quota holders in Petersburg has increased and both Petersburg and Yakutat have retained the same amount of quota units held from initial allocation through 2010/2011. Ultimately, no Alaska community has seen a decrease in unique holders of catcher vessel owner quota and King Cove is the only Alaska community that has seen a decrease in locally held catcher vessel owner quota units from the time of initial allocation to 2010/2011 for the Bering Sea snow crab fishery. (Only one other Alaska community, Sand Point, did not receive catcher vessel owner quota in Bristol Bay red king crab and Bering Sea snow crab but did receive catcher vessel owner quota in another rationalized species; when this community is included, a total of 10 Alaska communities received initial allocations of catcher vessel owner quota in at least one rationalized fishery.)

The number of Washington unique holders of catcher vessel owner quota increased for the Bristol Bay red king crab fishery (from 158 to 165) between initial allocation and 2010/2011; however, amount of quota share units held declined (from 69.3 percent to 62.6 percent) over this same period. In the case of Oregon, both the number of unique holders of catcher vessel owner shares and the amount of quota share units held declined in the Bristol Bay red king crab fishery between initial allocation and 2010/2011. In the case of states other than Alaska, Washington, or Oregon, both the number of unique holders of catcher vessel owner shares and the amount of quota share units held increased in the Bristol Bay red king crab fishery between initial allocation and 2010/2011.

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For Washington, the number of unique quota holders in Bering Sea snow crab fishery remained constant (149), while the amount of quota share units held decreased (from 67.7 percent to 60.9 percent of the total quota units in the fishery). For all other states besides Alaska and Washington, the same patterns described for the Bristol Bay red king crab fishery also apply to the Bering Sea snow crab fishery.

### **Catcher Vessel Crew Shares**

For Alaska communities as a group, between initial allocation and 2010/2011, the number of unique catcher vessel crew quota holders in the Bristol Bay red king crab declined from 45 to 34. Alaska communities as a group also went from owning 20.8 percent to 22.6 percent of the catcher vessel crew quota units in the Bristol Bay red king crab fishery. As was the case with catcher vessel owner shares, however, patterns of redistribution varied by region and community. Relatively few (11) Alaska communities had residents receive initial allocations for Bristol Bay red king crab catcher vessel crew shares. These include Anchorage, Homer, Kenai, Soldotna, Valdez, and Wasilla in the South-Central region; Petersburg in the Southeast region; Unalaska/Dutch Harbor, King Cove, and Sand Point in the Aleutians region; and Kodiak in its own region. Only two of these communities, Homer and Petersburg, saw an increase in the number of unique catcher vessel crew quota holders in the Bristol Bay red king crab fishery over the course of the first 5 years of the crab rationalization program; Anchorage, Kenai, Valdez, King Cove, and Kodiak saw declines in unique quota holders over this same period. Additionally, while not receiving any initial allocation, residents of Cordova in the South-Central region held at least some catcher vessel crew quota by the time of the 2010/2011 quota allocation process. Declines in the number of catcher vessel crew quota units over the time period between initial allocation and 2010/2011 were seen in Anchorage, King Cove, Kenai, and Valdez. Wasilla, Unalaska/Dutch Harbor, and Sand Point retained the same number of quota units over this time period, while there were gains in catcher vessel crew quota units by Homer, Soldotna, Petersburg, Kodiak, and Cordova residents over this same time period.

Alaska communities as a group, between initial allocation and 2010/2011, decreased from 37 to 28 unique catcher vessel crew quota holders in the Bering Sea snow crab fishery; Alaska communities as a group also went from owning 22.0 percent to 21.5 percent of the catcher vessel crew quota units in the Bering Sea snow crab fishery over this same time period. Like the other categories of quota, patterns of redistribution varied by region and community, and relatively few (8) Alaska communities had residents receive initial allocations for Bering Sea snow crab catcher vessel crew shares. These include Anchorage, Homer, Kenai, and Seldovia in the South-Central region; Petersburg in the Southeast region; Unalaska/Dutch Harbor and King Cove in the Aleutians region; and Kodiak in its own region. By the time of the 2010/2011 allocation process, half of these communities either maintained (Homer, Soldotna, and Unalaska/Dutch Harbor) or increased (Petersburg) their number of unique quota holders. Anchorage, Kenai, King Cove, and Kodiak saw declines in the number of unique catcher vessel crew quota holders. Additionally, while not receiving any initial allocation, residents of Cordova in the South-Central region held at least some catcher vessel crew quota by the time of the 2010/2011 quota allocation process. Within the Bering Sea snow crab fishery, declines in the number of catcher vessel crew quota units over the time period between initial allocation and 2010/2011 were seen in Soldotna, King Cove, Kodiak, and Kenai. Unalaska/Dutch Harbor retained the same number of quota units over this time period, while there were gains in catcher vessel crew quota units by Anchorage, Cordova, Homer, and Petersburg residents over this same time period. (Only one other Alaska

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community, Sitka, did not receive catcher vessel crew quota in Bristol Bay red king crab and Bering Sea snow crab but did receive catcher vessel crew quota in another rationalized species; when this community is included, a total of 12 Alaska communities received initial allocations of catcher vessel crew quota in at least one rationalized fishery.)

The number of Washington unique holders of catcher vessel crew quota decreased for the Bristol Bay red king crab fishery (from 105 to 80) between initial allocation and 2010/2011, with the percentage of crew share quota units held also decreasing (from 63.2 percent to 61.7 percent) over this same period. In the case of Oregon, the number of unique holders of catcher vessel crew shares decreased (from 14 to 11) in the Bristol Bay red king crab fishery between initial allocation and 2010/2011; the amount of quota units held also decreased (from 7.8 percent to 7.6 percent) over this same time. In the case of states other than Alaska, Washington, or Oregon, the number of unique holders of catcher vessel crew shares in the Bristol Bay red king crab fishery decreased by one (from 13 to 12) between initial allocation and 2010/2011; the amount of quota units declined (from 8.2 percent to 8.1 percent) at this same time.

The number of Washington unique holders of catcher vessel crew quota decreased (from 89 to 71) for the Bering Sea snow crab fishery between initial allocation and 2010/2011; the amount of quota units held in the fishery also decreased (from 63.1 to 62.4 percent of all quota units) over this same period. In the case of Oregon, the number of unique holders of catcher vessel crew shares decreased in the Bering Sea snow crab fishery (from 13 to 10) between initial allocation and 2010/2011; the amount of quota units held, however, increased (from 7.3 percent to 8.0 percent of all quota units) over this same time. In the case of states other than Alaska, Washington, or Oregon, the number of unique holders of catcher vessel crew shares increased in the Bering Sea snow crab fishery between initial allocation and 2010/2011; the amount of quota units held also increased over this same time period.

### **Catcher Processor Owner Shares**

Within Alaska, initial allocation of catcher processor owner shares was limited to one unique quota holder with an Anchorage address in each of the Bristol Bay red king crab and Bering Sea snow crab fisheries. All other catcher processor owner shares in these two fisheries were held by residents of Washington. By the time of the 2010/2011 annual quota allocation process, however, this picture had changed substantially. While quota continues to be concentrated in exclusively Alaska and Washington, Alaska residents had markedly increased their holdings. While the number of Anchorage resident unique quota holders only increased by one (from one to two) in each of the fisheries, the amount of quota share units held increased from 4.4 percent to 11.4 percent in the Bristol Bay red king crab fishery and from 3.9 percent to 18.2 percent in the Bering Sea snow crab fishery. Additionally, one unique quota holder in St. Paul was added to each of these fisheries, holding 10.6 and 9.7 percent, respectively, of the Bristol Bay red king crab and Bering Sea snow crab fisheries. Overall, Alaska increased catcher processor owner quota units from 4.4 percent to 22.1 percent in the Bristol Bay red king crab fishery and from 3.9 percent to 27.9 percent in the Bering Sea snow crab fishery over the first 5 years of the BSAI crab rationalization program (with accompanying declines in Washington holdings).

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## **Catcher Processor Crew Shares**

Within Alaska, initial allocation of catcher processor crew shares in either the Bristol Bay red king crab fishery or the Bering Sea snow crab fishery was limited to two unique quota holders with Kodiak addresses in the Bristol Bay red king crab fishery, who together held 0.3 percent of the total catcher processor crew quota units in the fishery. As of the 2010/2011 quota allocation process, these figures were unchanged. Other initial allocation catcher processor crew share recipients in the Bristol Bay red king crab fishery included four unique quota holders in Washington (together holding 50.0 percent of the total catcher processor crew quota units) and two unique quota holders in states other than Alaska, Washington, and Oregon (together holding 49.7 percent of the total catcher processor crew quota units). As of the 2010/2011 quota allocation process, these figures were also unchanged.

## **Processor Quota Shares**

Little movement of processor quota share between communities has occurred since the implementation of the crab rationalization program. There have been a number of processor ownership changes that have precipitated the movement of processor quota between entities based directly or indirectly on provisions incorporated into the rationalization program itself, but to date the processing associated with this quota has largely occurred within the communities where the relevant processing history was accrued. This has occurred with changes of ownership structure of individual plants operating in Kodiak and King Cove, and multiple plants in Unalaska/Dutch Harbor, where all associated processing activity has remained in the community of origin. In a separate case in Unalaska/Dutch Harbor, processor quota necessarily divested from one entity as a result of ownership changes was acquired by an entity that did cause processing of that quota to occur in Adak for 1 year (2008/2009). However, in 2009/2010 that quota was again processed in Unalaska/Dutch Harbor (following the closure of the Adak plant).

A unique case of processor quota movement has occurred in the community of St. George. Crab processing occurred in St. George during the rationalization allocation qualifying period but had exited the community prior to the implementation of the crab rationalization. At present, the St. George harbor, damaged earlier in storms, is not considered adequate to support ongoing crab processing operations. The regionalization feature of the rationalization program that created the northern region has ensured that processing originally associated with St. George has occurred in nearby St. Paul, and for several of the early years of the program the City of St. Paul voluntarily and unilaterally rebated local landing taxes associated with that quota to the City of St. George. More recently, however, the Community Development Quota (CDQ) group of which St. George is a part has acquired those processing quota shares and St. George no longer derives taxes from landings occurring in St. Paul. While St. George, with the rest of the communities in the CDQ group of which St. George is a part, presumably benefits from the CDQ ownership of those shares, the processing of those shares still does not occur in St. George. As a result, the municipality does not benefit from taxes collected on the landing of that quota and the local community does not benefit from the secondary and indirect economic effects of having processing occur locally.

Another unique case of processor quota movement involves the community of False Pass. An incorporated municipality with the Aleutians East Borough, prior to rationalization False Pass benefited from local crab processing occurring on floating processors through collection of local

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fish taxes as well as through secondary and indirect business activity that accompanied being an active processing location. While False Pass was determined to be a community eligible for community protection measures under the rationalization program, the boundary for the unencumbered movement of processing shares under the community protection measures was designated as the borough, not the individual municipality. No processing of rationalized crab species has occurred in False Pass since the implementation of the rationalization program. While False Pass, with the rest of the communities in the Aleutians East Borough, presumably benefits from borough revenues derived from the landings of that quota elsewhere within the borough, the processing of those shares does not occur in False Pass. As a result, the municipality does not benefit from local municipal taxes collected on the landing of that quota and the local community does not benefit from the secondary and indirect economic effects of having processing occur locally.

## **SUMMARY OF SOCIAL IMPACTS BY COMMUNITY: INCORPORATION OF QUALITATIVE INFORMATION**

Social impacts attributable to the crab rationalization program are not evenly distributed among communities for a variety of reasons described below. While a number of particularly salient issues exist in at least some communities, the number of communities affected by any particular issue tends to be small. For example, among Alaska communities, disruptions or adverse impacts to support sector businesses, outside of basic fuel sales and gear storage activities, are largely confined to Unalaska/Dutch Harbor, King Cove, and Kodiak. Among Alaska communities, crew employment opportunity losses as a salient issue are sharply focused on King Cove and Kodiak. Local governance and revenue considerations among Alaska communities, in terms of the efficacy of community protection measures compared to other communities, are issues primarily in St. George and False Pass. The following sections summarize impacts across sectors on a community-by-community basis.

### **Alaska Primary Study Communities**

This section summarizes salient social impacts in the areas of harvesting, processing, support services, and local governance and revenue for the eight communities that have been tracked over the course of the pre-implementation social impact assessment, the 3-year post-implementation program review/social impact assessment, and the 5-year post-implementation program review/social impact assessment (Unalaska/Dutch Harbor, Akutan, King Cove, Kodiak, Sand Point, Adak, St. Paul, and St. George). In general, the changes associated with rationalization have not been occurring in a vacuum. While crab fleet consolidation has been an issue for a number of different direct and indirect reasons, this consolidation has occurred during a time when Alaska community fleets in general have been getting smaller. While rationalization has not largely been seen as resulting in adverse social impacts regarding processing and local governance and revenue considerations (with few exceptions as noted below), support service businesses in a number of communities have also reported a longer term trend of decline, variously attributed to rationalization in other fisheries or changes in fishery market demands, among other factors. The degree of development of local support service sectors varies widely by community, as noted below, with some communities having virtually no vessel support capacity outside of marine fuel sales and gear storage, while at least a few have relatively broad support capabilities. The specific social impacts attributed to crab rationalization in each community are largely a function of the size and structure of the specific community, the nature and intensity of

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the community engagement in the crab fishery, and the relative level of dependence of the particular community on the crab fishery.

**Unalaska/Dutch Harbor.** Local fleet and crew issues are not as salient in Unalaska/Dutch Harbor as in several other communities due to relatively little historic direct engagement in the crab harvest sector. As the largest center of crab processing, the community remains substantially dependent on the rationalized fisheries, with apparently little change occurring with respect to relative proportions of local landings, despite some changes of ownership of processing quota shares. Processing operations at the individual plants have changed to varying degrees as a result of rationalization, but several reported being essentially pre-adapted by the earlier rationalization of the pollock fishery, and following the sale and exit of a large crab processing entity on the eve of the implementation of the program, the most obvious changes seen in processing entities in the community since implementation of the program have been attributed to a number of factors other than crab rationalization. Unalaska/Dutch Harbor is the primary regional support service hub for the crab fishery, and this has not changed with rationalization, but different subsectors and individual businesses were affected by rationalization in a variety of ways. Overall, field data would indicate that, in general, support sector employment levels for a number of direct vessel support businesses were declining prior to the implementation of rationalization, and that rationalization itself has reinforced that trend for at least some individual businesses, especially with regard to seasonal employment (and seasonal earning potential in the form of overtime for remaining employees). Individual businesses have varied widely in both their vulnerability to rationalization-related disruptions, if any (typically based on relative dependence on the crab fleet versus the pollock or cod fleets and/or non-fleet-related business), and in their resilience/ability to successfully adapt to changed circumstances when applicable. Co-occurring changes in local business conditions, including shifts in market share among local entities in some subsectors, complicate attributions of causality to crab rationalization in particular. No adverse impacts to local governance and revenues are apparent.

**Akutan.** Historically, no crab vessels have been owned by Akutan residents. While relatively few community members previously crewed on crab vessels, at least some residents did so in the past, so loss of these opportunities have been noted in this and other studies as a social impact in the community. Unlike other communities where crew job loss has surfaced as an issue, however, Akutan is a CDQ community and, as such, residents have access to crew positions on vessels owned by their particular CDQ group. For some, remaining crew positions are not considered as attractive as pre-rationalization crew positions, even when available, due to the changed nature of the positions being perceived as fitting less well into an integrated, multisource approach to employment and income generation in a local socioeconomic context where natural resource and economic opportunity fluctuations are relatively common over both the short and long term. Such an employment or income plurality approach may combine several different opportunities over the course of a given year or span of years that may include participation in smaller scale local commercial fisheries and non-fishing-related enterprises that may be lucrative but temporary, such as local construction jobs, combined with socially important pursuits outside the wage economy, such as subsistence activities. Prior to rationalization, and particularly in the years immediately prior to rationalization, crab crew positions were ideal for integrating into a suite of employment and income opportunities, as time commitment away from the community was relatively minimal and the economic returns were relatively high. Akutan remains an important center of processing for rationalized crab species,

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and there is no indication that rationalization has had adverse impacts on processing in the community. Whatever temporary disruption may have occurred in the very small local support service sector early in the rationalization program reportedly had evened out by the time of the 3-year program review. No adverse impacts to local governance and revenues are apparent.

**King Cove.** Historically, at least a few locally owned vessels participated in BSAI crab fisheries that have come under the rationalization program, but none do so at present. In addition, a number of crab vessels owned outside of the community would typically spend a portion of the year in the community and consistently hire crew from King Cove prior to rationalization, but this pattern has not been seen since rationalization either. With consolidation of the fleet, King Cove residents lost a locally significant number of crew opportunities through vessels with local ties exiting these fisheries, and these losses of crew positions are considered by many to be the primary social impact of rationalization in the community. King Cove residents also reported that the remaining crew positions that may be available are less attractive than pre-rationalization crew positions, for the same reasons noted in the Akutan summary. Unlike Akutan, however, King Cove is not a CDQ community and thus does not enjoy the additional fishery access that accompanies CDQ status. King Cove is unique among Alaska communities in the combination of all local vessels exiting the crab fisheries, the shift from local residents holding multiple crew positions on multiple crab vessels from outside of the community to no crew positions held by any local residents on any crab vessel, the decline of the number of locally held catcher vessel owner quota units since initial allocations, and a decline in the number of unique catcher vessel crew quota holders and the number of catcher vessel crew quota units held in all crab fisheries for which initial allocations were issued. These conditions are perceived by at least some in the community, including some community and borough leadership, as adversely affecting a type of economic plurality strategy on the community level, as the community as a whole is subject to both short- and long-term economic opportunity fluctuations, both in terms of fluctuations in the local and regional natural resource base and episodic economic opportunities that depend on fluctuating state and federal budgets and variable larger scale economic conditions. King Cove was and remains a processing center for BSAI crab. While some ownership of processing quota shares has changed since the implementation of the program, all King Cove affiliated shares are still processed in the community and no major changes to processing operations are apparent. In terms of support service businesses, an earlier local government-sponsored study based on confidential sales tax information concluded that it was difficult to see any clear negative effect of crab rationalization on sales (with one exception). However, time series interviews would suggest that there is a perception of declines in local support businesses related to loss of local crew jobs and subsequent re-spending of local crew wages in the community and declines in support businesses related to fewer vessels to service and fewer people coming into King Cove from outside of the community (and spending money in the community) as a result of rationalization. Support businesses in King Cove tend to be very small and, over the course of the 5 years of the rationalization program, owners have tended to adapt in a variety of ways that make documenting business disruption and assigning causality of that disruption to crab rationalization difficult, particularly as there has been an increase in local fishery-related economic vitality that has accompanied relatively favorable conditions in other locally important fisheries. Despite some apparent short-term disruptions to some specific harbor revenues in the initial years following the implementation of the rationalization program, no adverse impacts to local governance and revenues are apparent, such that local leadership has characterized the financial situation of the community as being as strong and healthy as it has ever been.

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**Kodiak.** Among Alaska communities, Kodiak has the largest locally owned BSAI crab fleet, as it did prior to rationalization, accounting for more than half of all Alaska vessels both pre- and post-rationalization. With fleet consolidation under the program, however, Kodiak also saw the largest number of locally owned vessels exit the fishery of any Alaska community. The percentage of total fishery harvest attributed to Kodiak vessels was about the same for pre- and post-rationalization for both Bristol Bay red king crab and Bering Sea snow crab, while the number of Kodiak residents holding catcher vessel owner quota shares and the number of quota units held have increased since initial allocation. Crew job loss associated with the fleet consolidation is the main direct social impact issue for Kodiak and, just as it lost more vessels than any other community, so did it lose the most local crew opportunities. While some of these vessels have remained in the community and continue to generate some economic activity for support service businesses and, in some cases, for crew in other fisheries (and the local vessels remaining in the BSAI crab fisheries have increased the Kodiak fleet harvest share of those fisheries), this has not benefited a number of former crew members. Kodiak, with one of the largest residential commercial fishing fleets in the state, arguably has more alternate crew opportunities for ex-crab crew members in other fisheries than does any other community, and with the remaining largest BSAI crab fleet in the state arguably has more ongoing opportunities for those individuals looking to continue participation in the fishery than is the case in any other Alaska community. However, interviews suggest that these post-rationalization crew jobs may well be less attractive to local residents than pre-rationalization crew jobs for the same reasons noted in the Akutan discussion. In the years leading up to rationalization, between one and eight Kodiak plants processed Bristol Bay red king crab and between one and four Kodiak plants processed Bering Sea snow crab in any given year. Post-rationalization, only three plants are actually processing BSAI rationalized crab as a targeted activity. Due to confidentiality restrictions, processing volumes and values for these species cannot be disclosed, but given the lack of processor quota movement from the community, it is assumed that net processing volumes as a percentage of total fishery quota processed have not changed substantially. Further, according to interview data, processing employment levels at the processors were not adversely affected by BSAI crab rationalization and, unlike other communities profiled, Kodiak processors mainly utilize a local resident processing workforce. Quantitative sales tax information would suggest that no obvious major decline has occurred in local marine supply and service companies since the implementation of rationalization, but time series interviews with business owners suggest that there have been disruptions to at least a few operations, with individual businesses more or less quickly and successfully adapting to changed circumstances. Assigning causality of disruptions specifically to crab rationalization is particularly challenging, however, given that there was a longer term trend of support business decline, and especially support service employment decline, identified in the pre-implementation social impact assessment. No adverse impacts to local governance and revenues are apparent.

**Sand Point.** While Sand Point was among the original eight primary study communities tracked pre- and post-program implementation for rationalization related social impacts, it, unlike the other communities noted in this section, did not qualify as an “eligible crab community” for the purposes of applicability of community protection measures under the rationalization program (as it was not the site of 3 percent or more of qualified landings in any fishery included in the program). In general, according to community as well as borough leadership, Sand Point has been minimally affected by crab rationalization, especially compared to King Cove, its neighboring community within the Aleutians East Borough. While there has historically been some local ownership of crab vessels in Sand Point, and a number of local ties to the crab fleet

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remain, vessel consolidation, crew displacement, and support service sector business disruptions are not particularly salient issues in the community, consistent with a relatively low degree of dependency on the fishery and a lack of local processing of rationalized species. No adverse impacts to local governance and revenues are apparent.

**Adak.** Historically, Adak has not been home to a local crab fleet and, while processing of crab has taken place in the past, no Adak-based operation qualified for processor quota shares under the rationalization program. Adak is unique, however, in that a locally significant amount of crab was processed there following the close of the quota qualification period but prior to the implementation of the rationalization program itself, such that the program, from the community processing perspective, has functioned to reverse gains in local development of an important regional fishery. Further, an indirect effect of the program, according to local sources, has been to increase the competitive advantage of floating processors relative to the Adak plant within the local cod fishery. Adak has seen relatively little development of a vessel support service sector. The community does benefit from a rationalization program regional landing requirement in the western Aleutian Island golden king crab fishery and a direct allocation of quota to the community in that same fishery, the latter of which typically generates annual royalty revenues for the local municipal government, but the efficacy of those two community protection measures were limited by the local processing plant closure in 2009/2010. Local municipal revenues have been on the decline in Adak for several years due to multiple factors.

**St. Paul.** Historically, St. Paul has not been directly engaged in the BSAI crab fisheries as home to a local fleet or through local residents being employed as crew, nor is there a well-developed vessel support service sector in the community. The community has, however, been heavily engaged in the fishery as a site of crab processing and has benefited from a rationalization program regionalization community protection measure, which has ensured a continued level of landings in the north region that may not have otherwise occurred after the end of the race for fish. With the exit of processing from nearby St. George prior to the implementation of rationalization, St. Paul is currently the only community in the northern region where shore processing has taken place since program inception. St. Paul has also benefited from the rationalization program through its CDQ group, which, like other CDQ groups, saw an increase in crab allocations under the program. The local CDQ group has also made investments in crab harvesting and processing sectors that clearly were more attractive as a result of the rationalization program, and returns on those investments have benefited the community through reinvestment in local fisheries and fishing-related infrastructure, among other ways. No adverse impacts to local governance and revenues are apparent.

**St. George.** Like St. Paul, its neighboring community in the Pribilof Islands, St. George has not been directly engaged in the BSAI crab fisheries as home to a local fleet or through crew employment, nor is there a well-developed vessel support service sector in the community. During the rationalization program qualifying years, processing did occur in St. George, such that processing quota shares linked to St. George were issued, but actual processing had exited the community prior to implementation of the program due to storm damage to the St. George harbor in 2004. Processing has not returned to St. George in more recent years and landings of quota linked to St. George-affiliated processing shares have occurred primarily in St. Paul. In 2006, 2007, and 2008 the City of St. George benefited from voluntary transfers from the City of St. Paul of nearly all of the revenue that came from taxes collected on those landings. More recently, the CDQ group of which St. George is a part acquired some of the processing quota

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shares originally linked to St. George and reached contractual agreements with the entities holding the remaining processing quota shares, such that St. George, along with other member communities of the CDQ group, does presumably derive benefits from ownership of those shares. The rationalization program has not served to return processing to St. George, and thus the community does not derive benefits from local economic activities that typically accompany an operating plant and a delivering fleet, nor does it derive municipal revenues from taxes on local landings. It has benefited the community, however, as without the program it is unlikely that St. George would have received any continuing benefit from the processing that took place there prior to 2004.

### **Other Alaska Communities**

**False Pass and Port Moller.** False Pass and Port Moller, both within the Aleutians East Borough, qualified as eligible crab communities for applicability of community protection measures under the rationalization program. Prior to rationalization, False Pass derived economic benefits through local crab processing and fishery-associated activities, such as local gear storage, ancillary sales, and municipal revenues from pot movement and local landing taxes. Following rationalization, however, crab processing has not taken place in the community, resulting in substantial decreases in community public and private revenues. False Pass is unique with respect to being a year-round community determined to be eligible for right of first refusal and cooling-off period community protection measures, but effectively not receiving the same individual community level of protection as occurred with other year-round eligible crab communities, for a number of reasons. False Pass crab processing history was exclusively accrued through floating processing, and this history was essentially consolidated within the Aleutians East Borough, which did not trigger cooling-off provisions, such that post-rationalization processing of the processor quota that otherwise would have been associated with False Pass has apparently taken place elsewhere in the borough. Port Moller is unique among eligible crab communities on two accounts: it is not a year-round community and it is not an incorporated municipality. As with False Pass, following rationalization no local crab processing has taken place with processor quota associated with history originally accrued in Port Moller apparently being processed elsewhere in the borough. Unlike False Pass, however, as a seasonal industrial enclave, Port Moller is not considered to have experienced any adverse community/social impacts as a result of BSAI crab rationalization.

**Other CDQ Communities.** In general, CDQ entities benefited from the implementation of crab rationalization due to the increase in CDQ quota share in the initial allocations. Beyond direct CDQ allocations, a number of CDQ groups have obtained processor quota shares, catcher processor owner shares, and catcher vessel owner shares over the course of the rationalization program.

**Other Communities.** In addition to communities directly participating in the rationalized crab fisheries through being the site of processing, vessel ownership, catcher vessel owner quota ownership, catcher vessel crew quota ownership, and support service provision, communities also participate in a variety of less direct ways, including through crew employment. It is known that catcher vessel crab crew members were and are dispersed among multiple Alaska communities. Given the lack of reliable crew information, however, it is not possible to say whether the patterns directly mirror those for vessel participation, catcher vessel owner quota distribution, or catcher vessel crew quota distribution, or follow their own pattern. Similarly,

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some communities function as homeports for vessels that are not locally owned, but no systematic information exists on expenditure patterns of these vessels or other information to quantify local dependency on these vessels.

### **Communities Outside of Alaska**

**Washington.** Seattle is the community most engaged in the BSAI crab fisheries, within Washington or any other state, if gauged by the sheer number of locally owned vessels participating in the fisheries as a whole. Post-rationalization volume or value harvest data for the Seattle-Tacoma Consolidated Metropolitan Statistical Area cannot be broken out separately from the data for the communities in the rest of the state of Washington due to confidentiality restrictions. The Seattle fleet did, however, experience consolidation similar in proportion to that seen for the crab fleet as a whole, and annual average harvest values, as a proportion of the total harvest values for Washington vessels in the Bristol Bay red king crab fishery declined from 65.9 percent pre-rationalization to 62.8 percent post-rationalization. For the Bering Sea snow crab fishery, Washington vessels harvested approximately 64.5 percent of the total annual average harvest pre-rationalization and about 59.7 percent post-rationalization.

Seattle is also the location of regional if not company headquarters for a number of the processing firms engaged in the BSAI crab fisheries. Further, it is a major support service center for the fleet, both in terms of providing services directly and as the headquarters for a number of firms that provide support services out of Alaskan ports. While no adverse social impacts related to changes in processing firms under rationalization are known, the consolidation of the fleet likely affected a range of Seattle-based support businesses. Crab fishery support activity takes a variety of forms and does not appear to be heavily concentrated in any one area of Seattle. As a result, no localized social impacts resulting from BSAI crab rationalization are thought to have occurred, although clearly fewer crab crew jobs formerly filled by Seattle residents are available and at least some volume of Seattle-based or Seattle-managed support service work associated with the crab fleet has been lost.

**Oregon.** Communities in Oregon participated in the pre-rationalization BSAI crab fisheries primarily through ownership of catcher vessels. Following the implementation of rationalization, the number of Oregon vessels participating declined sharply. While data confidentiality restrictions limit the analysis specifically for Oregon, the known previous patterns of crab fishery engagement and limited interaction with industry participants would suggest that no substantial social impacts accrued to Oregon communities as a result of BSAI crab rationalization, although it is likely that some crew job loss did occur.

**Other States.** Communities in a number of other states participate in the BSAI crab fisheries through being the community of residence for some vessel owners or engagement of residents in employment in a variety of fishery or support sectors. No community level social impacts are known to have occurred in communities in these other states as a result of the rationalization program.

### **OTHER SOCIAL IMPACT ISSUES**

Skipper and crew issues have proven to be among the most problematic social impact issues for at least a few communities, including King Cove and Kodiak, but they appear to be less of a concern in most other Alaska communities, based on a number of factors, including a relative

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lack of historical participation in the harvest sector of the fishery or continuing access to post-rationalization crew positions through CDQ entities, among others. Other social impact issues are of concern in these and other communities as well.

### **Crew Issues**

**Loss of Opportunities.** The consolidation of the crab fleet that accompanied rationalization resulted in a parallel decrease in crew position opportunities, including opportunities for captains. While catcher vessel crew quota shares were a part of the rationalization program from the beginning, only captains were able to qualify for these shares, and data on pre-rationalization crew participation patterns are limited. In at least some communities, increasing the stability and the economic vitality of the crab fishery and rewarding historic participation of some sectors without offering or ensuring any benefits to historically participating crew has been seen as a fundamental equity issue. Beyond the issue of historic participation, evolving crew compensation issues are also perceived as a threat to typical fishery career progression or entry opportunities within one of the region's most important fisheries.

**Crew Compensation.** While approaches to calculating crew compensation vary from vessel to vessel and the percent of gross vessel revenues paid to crew in practice varies substantially between different fleet quartiles, the overall percent of gross vessel revenues paid to crew (including captain) has been declining across the fleet in post-rationalization years. The mean daily captain and crew pay post-rationalization, however, has not varied as much from pre-rationalization levels as might otherwise have been expected. In short, this is a complex issue that remains a salient concern.

**Employment Compatibility Issues.** With rationalization, the nature of remaining crew jobs has changed in a number of ways, including a lengthening of seasons. For the residents of at least some communities, longer seasons make crab crewing less compatible with other fishing and nonfishing opportunities in the community that are considered by some as an important part of an integrated yet diversified employment and income strategy (which, in turn, is consistent with preferred family/social arrangements). This "employment pluralism" strategy may be seen as an adaptive approach to fishing (and nonfishing) employment and income opportunities that vary considerably over time based on both short- and long-term resource fluctuations (as well as political/economic fluctuations that, in turn, result in fluctuations in various employment-producing opportunities such as major construction project funding). This is especially true for small communities where alternative employment options are limited by small-scale, relatively undiversified economies and subsistence pursuits are of relatively high importance (for cultural as well as sustenance reasons), but it is also true for communities like Kodiak, where crew members may use economic returns from one fishery to capitalize relatively small-scale owner-operator participation in other fisheries, with seasonal (and multiseason) fluctuations again influencing changes in relative dependence on individual fisheries.

### **Other Issues**

**Community Preclusion (Processing).** This remains a concern for at least some communities, with the cost of obtaining processor quota shares (or the effective unavailability of processor quota shares) being perceived as a potential bar to future entry or, in the case of Adak, future expansion (or a return to levels seen immediately prior to rationalization). Community protection

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measures under the program were directed toward maintaining participation of the communities that were actively engaged in and dependent upon the fishery during the qualification period, not toward ensuring future entry opportunities.

**Community Preclusion (Harvesting).** An “income pluralism” strategy, if not an employment pluralism strategy, has proven important over time for vessel owner/operators, particularly in communities with long-established commercial fishing traditions. The ability of vessel owners to move between commercial fisheries in response to both short- and long-term resource and economic fluctuations has been noted as an integral part of an adaptive approach to earning a living in a number of these communities for generations. There have been concerns expressed in at least some communities that fishery management programs that may serve to limit this type of flexibility, such as crab rationalization, may not be in the long-term best interests of communities dependent on an established residential fleet that is proportionately large compared to other local economic sectors. This would appear to be particularly of concern in those communities that are neither CDQ communities nor sizable enough to support a large vessel fleet with greater effective fishing ranges (and therefore at least some greater degree of spatial adaptability).

**Harvester/Processor Relationships.** Pre-implementation concerns over changes in harvester and processor relationships appear to have mitigated at least to a degree by the arbitration system built into the program.

**Processing Employment.** Another pre-implementation concern, this has not proven to be a salient issue due, at least in part, to the transient nature of most crab-specific processing employment, the fact that a number of the larger crab processors were already operating within an overall context that allowed crab processing to take place without bringing in dedicated crab crew, and/or the changed nature of processing under a rationalized system.

**Community Divisiveness and Equity Concerns.** Crab rationalization remains a divisive issue within and between communities. The basic structure of crab rationalization runs counter to strongly held opinions on the desired future state of fishery management for some communities, or groups associated with some communities. A number of people and organizations remain fundamentally philosophically opposed to rationalization programs, even in some cases where there have been apparent material benefits from the program. Particularly troubling to some, in a philosophical sense, is the perceived inequity of benefit that derives to absentee ownership through the quota leasing process, especially when the economic return to crew members for the harvest of those shares has been substantially reduced.

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