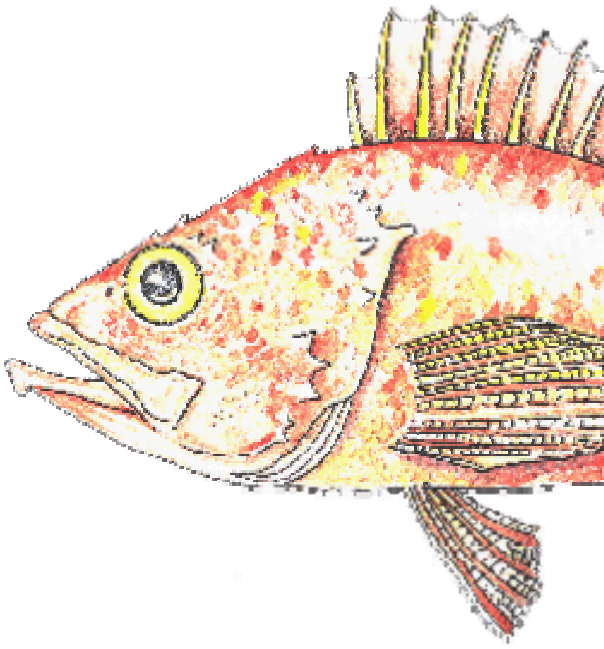


REGULATORY IMPACT REVIEW, AND

FINAL ENVIRONMENTAL ASSESSMENT

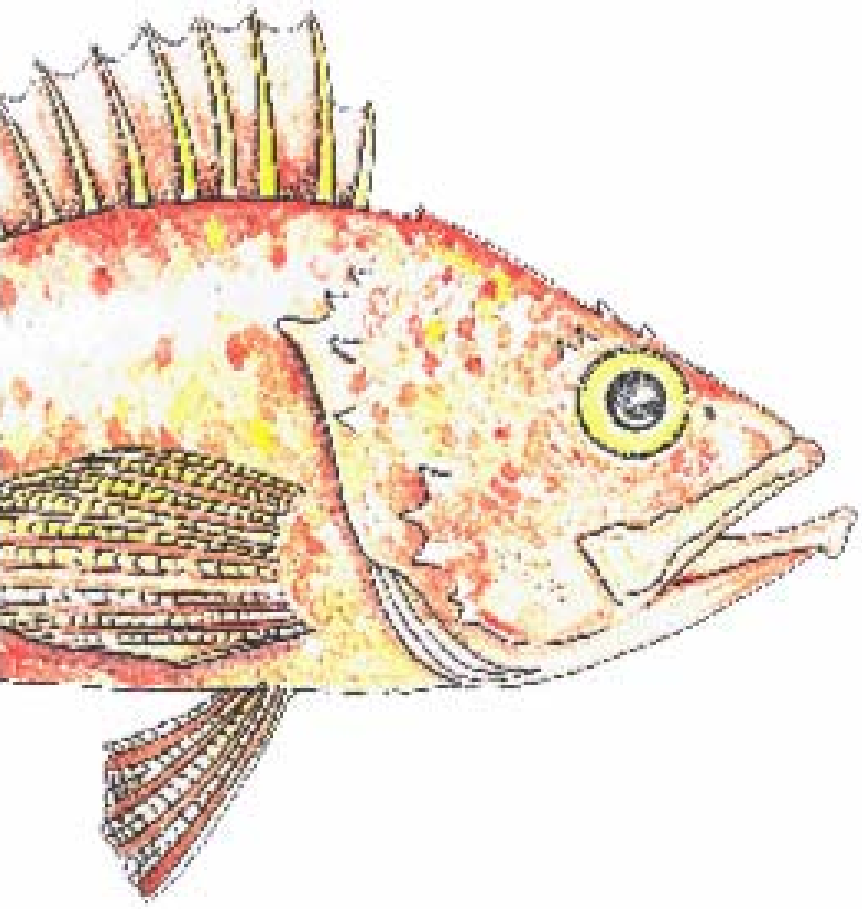
For proposed **Amendment 68** to the
Gulf of Alaska Fishery Management Plan

CENTRAL

GULF OF ALASKA

ROCKFISH DEMONSTRATION

PROGRAM



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Amendment 68 – August 2006

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Executive Summary

In Section 802 of the Consolidated Appropriations Act of 2004, the U.S. Congress included a directive to the Secretary of Commerce to establish, in consultation with the North Pacific Fishery Management Council (the Council), a pilot program for management of three rockfish fisheries in the Central Gulf of Alaska (the Central Gulf rockfish fisheries). At the February 2004 Council meeting, National Marine Fisheries Service (NOAA Fisheries) presented a brief discussion paper requesting Council input in the development of the pilot program. Based on this request and public testimony, the Council requested industry stakeholders to prepare and submit proposed alternatives for establishing the program to the Council at its April 2004 meeting. Industry representatives presented a proposal at that meeting that defined an alternative for management of the fisheries under the pilot program. Using the industry proposal and public input and staff discussion papers, the Council developed alternatives for the pilot program management of the rockfish fisheries at its June 2004, October 2004, December 2004, and February 2005 meetings. The Council conducted an initial review of the analysis of alternatives at its April 2005 meeting, directing staff to release the document, after making suggested revisions, for final review at its June 2005 meeting.

The Alternatives

To address its problem statement the Council has adopted two pilot program alternatives for the catcher vessel sector and two pilot program alternatives for the catcher processor sector for analysis, in addition to the status quo. For the catcher processor sector, one pilot program alternative would allow harvesters to form cooperatives, each of which would receive annual harvest share allocations based on the qualifying harvest histories of its members. Alternatively, should an operator not join a cooperative, that catcher processor license holder would receive an annual allocation based on the history associated with that license that could be fished independently.

The second catcher processor pilot program alternative (the preferred catcher processor alternative) would make an allocation to the sector based on the qualifying catch histories of catcher processors in the CGOA rockfish fisheries. Eligible catcher processors would be permitted to fish that allocation in a cooperative or fish in a limited access fishery, which would receive the allocation of all eligible catcher processors that do not join a cooperative.

For the catcher vessel sector, one pilot program alternative would allow eligible catcher vessels to join cooperatives that would be required to deliver their landings to processors that met threshold landing requirements during the processing qualifying years. Cooperatives would receive an annual harvest share allocation based on the qualifying harvest history of its members. The second catcher vessel alternative (the preferred alternative) would allow each harvester to join a cooperative in association with the processor to which it delivered the most pounds of CGOA rockfish during the processor qualifying period. Although no specific processor delivery requirement is created by this cooperative/processor relationship, since cooperative formation depends on the processor association, some delivery arrangement is likely to be incorporated into that relationship. Cooperative allocations under this alternative would also be based on members' qualifying harvest histories. Under both of the catcher vessel alternatives, harvesters that choose not to join a cooperative would be permitted to fish in a competitive fishery that receives an allocation based on the combined harvest histories of all those that did not join a cooperative.

Under all of the pilot program alternatives, set asides of CGOA rockfish would be made for an entry level fishery and to support incidental harvests in other directed fisheries.

Management of the Fisheries

Under its current management, the rockfish fisheries are conducted as a limited access race for fish. Under LLP management, license holders must declare their intention to use a license on a vessel with NOAA Fisheries. Non-trawl fishing in the rockfish fisheries begins on January 1st. The trawl season typically opens in early July and ongoing catch is monitored by managers with the closing timed to coincide with harvest of the TAC. Observer coverage varies with vessel size. In general, vessels that are 125 feet or longer LOA are required to have 100 percent observer coverage. Vessels under 125 feet, but 60 feet or greater in length are required to have 30 percent observer coverage. Vessels under 60 feet have no observer requirement.

Under the catcher processor alternatives, management of the fisheries would change substantially. Under all of the pilot program alternatives, cooperatives would be permitted to fish their allocations during an extended (but limited) season. This season extension and the exclusive allocations could require substantial monitoring increases on vessels that fish cooperative allocations. Management of allocations will require that all catch under the program be monitored. To meet this end, a protocol will need to be developed for the participants in the program to ensure that NOAA Fisheries adequately accounts for all catch. For catcher processors, NOAA Fisheries would require that all catch harvested by vessels using LLP licenses would need to have adequate observer coverage and monitoring and enforcement while the cooperative has any available allocation. NOAA Fisheries would require observer coverage to be extended to all fishing activities during this time to ensure adequate compliance with the allocations and sideboards applicable. NOAA Fisheries would establish minimum standards for the catcher processor fleet for all fishing under the program, specifically two observers (with each haul observed), flow scales, a sampling station with a motion-compensated platform scale (to verify accuracy of the flow scale), and adequate monitoing of at-sea discards. Information gathered onboard vessels would be used to validate catch accounting by NOAA Fisheries in-season management staff.

Management of the limited access fishery would differ substantially from the management of cooperatives. This fishery would continue to be prosecuted early in July, with managers monitoring harvests and timing the closing of the fishery to coincide with harvest of the sector TAC. Observer coverage would be the same as that required during a cooperative fishery to adequately manage rockfish harvests. In addition to managing aspects of the rockfish target fishery, NOAA Fisheries would need to approve and monitor and manage sideboards. Any participant who intends to, or does, participate in any of the fisheries governed by the sideboards during the July sideboard period must have adequate observer coverage onboard the vessel so that all catch taken under sideboards will be assessed against the overall sector harvest limit. NOAA Fisheries must also monitor any applicable stand-downs in the BSAI and Gulf of Alaska non-pollock groundfish fisheries. NOAA Fisheries also must oversee cooperative sideboards, which could be used to limit each cooperative to its historic catch in each of the July Gulf of Alaska groundfish fisheries, other than target rockfish, in place of the stand-downs. Cooperatives will need to maintain adequate montiroing and enforcements to prosecute sideboard fisheries, in lieu of stand-downs.

Under the catcher vessel cooperative with limited processor entry alternative, catcher vessels would have the option of either joining a cooperative (which would fish an allocation based on the collective catch histories of its members) or fishing in a limited access fishery (which would receive an allocation based on the aggregate qualifying catch histories of all operations choosing not to join a cooperative). The two types of allocations would require two different management approaches.

As under the catcher processor alternatives, implementation of the program will require that NOAA Fisheries determine the pool of eligible persons for the catcher vessel sector, the sector allocation and the individual histories of eligible persons. In addition, processor eligibility would be determined, based on processing histories. Cooperative agreements will be filed with NOAA Fisheries every one or two years (each year under the preferred alternative), which must be reviewed for adequacy (including monitoring plan). NOAA Fisheries will be required to make annual catch allocations to cooperatives (based on member histories) and to the limited access fishery.

As under the catcher processor alternatives, cooperative allocations under the catcher vessel alternatives would be fished during the extended season. Fishing of exclusive allocations during an extended season will require a substantial increase in monitoring above the current levels, but because catch is processed on-shore management changes would differ from those for catcher processors. Management of allocations will require increased catch monitoring under the program, as well. As a precursor, participants will be required to make announced rockfish pilot program trips, to distinguish rockfish pilot program fishing from participation in other fisheries and thus allow deployment of adequate observer coverage. All catch in a declared rockfish trip would be accounted against the applicable cooperative allocation under the program. Using this system of exclusive rockfish trips would also facilitate shoreside monitoring of offloads and counting of catch against allocations. Beyond these requirements, NOAA Fisheries intends to develop monitoring programs to ensure adequate but efficient monitoring. NOAA Fisheries intends to develop monitoring appropriate to the fishing activities of the participants. While NMFS expects that most catcher vessel catch accounting will take place shoreside, monitoring for compliance with discard and retention requirements, and sampling to determine the quantity and composition of discards will be necessary components of this program. Monitoring allocations of halibut PSC will be problematic because NMFS would not be able to use a vessel specific rate for unobserved trips or for unobserved hauls on observed trips. It is possible that some form of fleet-wide rate would have to be developed. Because of the paucity of data early in the season, NOAA Fisheries would probably be required to use an aggregate rate based on data from the prior year.

To manage and monitor the catcher vessel limited access fishery or directed fishing during July in the sideboard fisheries, NOAA Fisheries would require that any participant who intends to, or does, participate in any of these fisheries in July must have adequate observer coverage onboard the vessel and have offloads monitored so that all catch harvested during a sideboard managed fishery will be assessed against the overall sector harvest limit. NOAA Fisheries would not provide an individual allocation of sideboard fisheries, but will establish a sector allocation.

Participants in the entry level trawl fishery would be subject to management similar to management of the catcher vessels in the main program. Limited access fisheries for new non-trawl entrants and persons that choose not to participate in cooperatives would be managed in a manner similar to current management.

Participation and fishing practices

Maintaining current management is likely to result in the continuation of existing fishing practices and patterns. In the current fishery, non-trawl fishermen take very little of the TAC between the opening of the non-trawl fishery in January and the opening of the trawl fishery in July. Trawl fishermen race for catch of rockfish when the trawl season opens in July. Typically, Pacific Ocean perch are targeted first, followed by northern rockfish and pelagic shelf rockfish. In the past, catcher processors have caught more rockfish than catcher vessels. In recent years, however, the portion of the TACs caught by catcher vessels has increased and surpassed the catch

of catcher processors. The quality of fish harvested likely suffers from the race for fish. Rockfish are considered relatively difficult to handle and process, because of their spines and scales. These characteristics are said to make it more difficult to maintain quality when racing to maximize catch.

Trawl catcher processors must not only harvest fish rapidly, but also must process that fish rapidly, to maintain quality and accommodate additional catch. Discards can occur if the fish is not processed quickly enough to maintain its quality. With the current short seasons, most LLP holders not already participating in the rockfish fisheries are unlikely to perceive substantial gain from entering the fisheries. As a result, modest (if any) increase in participation should be expected, if current management is maintained.

Historic harvests of CGOA rockfish are used to make allocations, under the pilot program alternatives, so distribution of CGOA rockfish allocations both to and within the different sectors will be similar to the historic distribution of harvests during the qualifying years. The number of persons receiving allocations is approximately twice the average annual participation in the fisheries, showing that some participants have moved in and out of the fisheries over time. Within each cooperative, it may be anticipated that each member would receive revenues based on the allocation that the person brings to the cooperative, with participants that fish shares of others receiving compensation for their fishing expenses. Fishing within a cooperative, however, could be far more concentrated than the patterns that characterize the underlying allocations. Although the program is intended to rationalize the rockfish fishery, it is important to recognize the value of secondary species harvests. Historically, all of the secondary species have generated more revenues per pound for participants than the target rockfish. All of the pilot program alternatives permit persons to harvest secondary species allocations independent of the harvest of rockfish allocations. Given the value of the secondary species allocations and the harvest flexibility, participants can be expected to harvest their entire allocation of secondary species. Depending on incidental catch rates, it is likely that some cooperatives will choose to reserve a portion of the allocation of each secondary species until all of the target rockfish is harvested, after which all remaining secondary species allocations will be harvested.

Under the catcher processor alternatives, members of the sectors could decide to consolidate their rockfish allocations to realize efficiencies in the rockfish fisheries and other fisheries. A cooperative that uses relatively few members' vessels to harvest its annual allocation could potentially minimize observer and monitoring equipment costs (in addition to saving on total operating costs). A cooperative that is able to manage its own sideboards would be permitted to harvest its allocation over the longer season, freeing its members to enter other Gulf of Alaska fisheries in the beginning of July (without a stand-down). This ability to enter other fisheries should lead to cooperatives harvesting their allocations either earlier or later than the traditional July opening, to free their members to compete in other fisheries that open early in July. The cooperative, however, would only be permitted to harvest its historic share from those other fisheries, limiting any potential impact on others. Although cooperatives that manage their own sideboards can be expected to harvest their allocations outside of the traditional early July season, the exact timing of their CGOA rockfish fishing will likely depend on the operational needs of cooperative members and their fishing success. Low catch rates of rockfish, or high rates of incidental catch of secondary species or halibut, could also lead a cooperative to change its timing of rockfish targeting. Some longtime participants in the fishery suggest that rockfish aggregations are at their greatest in the summer months. If participants observe relatively high aggregations (and catch rates) in summer months, it is likely that their harvests will be concentrated in the summer regardless of whether the season is extended into the spring and fall. Catcher processors may have less incentive to fish outside of the summer months than catcher vessels, as most

produce only frozen head and gut and whole products and are less likely to attempt to serve fresh fish markets that may be more accessible to the shore-based fleet.

Participation and fishing practices of the catcher vessel sector are likely to change substantially from the status quo. Annual participation records show that between 30 and 35 catcher vessels participated in the fisheries each of the qualifying years. The number of persons receiving allocations is estimated at 47, more than 10 persons greater than average annual participation. The number of persons fishing under either catcher vessel alternative is likely to be fewer than the number of allocations and could be fewer than the participation levels of recent years. Consolidation within cooperatives will be the greatest contributor to the reduction in participation. Since cooperative formation requirements are relatively minimal under the processor limited entry alternative (four qualified participants), it is likely that most persons eligible for the catcher vessel sector will join cooperatives. To save on observer coverage and operational costs, it is likely that most cooperatives will consolidate harvests to some extent. Cooperatives are likely to distribute revenues based on the allocation that the person brings to the cooperative, with fishing vessels compensated for their expenses. Under an extended season, cooperative fishing is likely to take place outside of the traditional early July season. As with the catcher processor cooperatives, timing of fishing CGOA rockfish allocations will depend on the particular operational needs of members, market opportunities, and fishing success. While success in the fishery cannot be predicted, rockfish targeting should be expected to be concentrated during periods of the year when high catch rates of rockfish and low catch rates of secondary species and halibut occur. Fishing outside the season could provide an opportunity for some participants to try to serve markets (including a possible fresh market) that have been historically impossible to access because of the timing of the season. In addition, slowing of the race for fish will allow harvesters to focus more on improving quality of their landings. If higher quality production generates higher revenues, participants can be expected to adopt fishing techniques that improve quality, such as reducing total catch in each tow and improved icing of catch. Fishing costs could rise, but only for a more than commensurate rise in revenues.

Under the processor license limitation alternative, fishermen will have the flexibility to make deliveries to any qualified processor. Since five processors qualify (see below), cooperatives are likely to solicit competition for landings during the extended season. Patterns of deliveries cannot be predicted, but it is likely that cooperatives could deliver to more than one processor to take advantage of different market opportunities.

The catcher vessel limited access fishery will be prosecuted in the same manner as the catcher processor limited access fishery, described above. Participants can be expected to race for catch during the short season, with managers closing the fishery when they estimate that the limited access TAC has been caught. Secondary species MRAs will be reduced from current levels to limit total catch of the secondary species to the allocated amount. These reduced MRAs for valuable secondary species are likely to act as a substantial deterrent to participation in the limited access fishery. Since cooperative formation simply requires four members, and since all cooperatives are required to accept membership of any person eligible for the cooperative subject to the same terms and conditions governing other members, it is unlikely that anyone will choose to fish in the limited access fishery.

Fishing participation and patterns are likely to be similar under the catcher vessel alternative with processor associations (the preferred alternative). Cooperatives, however, will be constrained to association with a single processor. Given the processor involvement, it is likely that each cooperative will have limited latitude to pursue markets for their landings beyond the single associated processor. The implications of these rules for the temporal distribution of fishing (and

landings) cannot be predicted. Planning of fishing activity, however, will likely be more coordinated with the associated processor, which could limit the ability of harvesters to pursue the best market opportunities by changing timing of fishing. Each cooperative is likely to pattern its fishing to serve the markets pursued by its associated processor. The cooperative formation rule, together with the limitations on cooperative eligibility and the requirement of a processor association, could have some impact on whether some participants choose to join a cooperative. Specifically, since each participant will be eligible for a single cooperative that must associate with a particular processor and since cooperative formation requires 75 percent of the history eligible for a cooperative, the holders of that supermajority of history and the processor are likely to control the terms of the cooperative agreement. While both the cooperative and the processor will realize some benefit from more inclusive membership, it is possible that a cooperative agreement that suits the supermajority and the processor may not be agreeable to some minority participants. Cooperative membership, however, is likely to be favored by most participants in the program because of the reduced MRAs in the limited entry fishery.

Effects on processing practices

Processing participation and practices are likely to be similar to current participation and practices, if the status quo is maintained. Catcher processors in the rockfish fisheries currently produce mostly whole and head and gut products. Shore-based processors race to process landings in an attempt to maintain market share and to maintain at least a minimum quality standard for products. Quality, however, suffers because of the rapid rate of harvest and processing, which leads to the production of relatively lower value and lower quality products.

Processing by catcher processors under the catcher processor pilot program alternatives is likely to remain similar to the current processing by this sector. Most vessels in the sector are equipped for producing a few simple product forms (e.g., frozen whole, head and gut). Because of size and design limitations, it is unlikely that any of these vessels will change plant configurations to process higher-valued, more processed products.

Under the catcher vessel alternatives, only processors that have processed at least 250 metric tons of aggregate CGOA rockfish per year for four years between 1996 and 2000 will be qualified for the main program.[1] Five processors meet this qualification criterion, all of which are based in Kodiak.

Processing patterns at shore-based plants can be expected to change under the pilot program alternatives. Share allocations to cooperatives should provide cooperatives with the ability to improve quality of landings. These quality improvements should provide processors with the ability to pursue higher value-added product markets. Under the processor license limitation alternative, the structure of the market for landings should be competitive, inducing some processors to aggressively pursue new market opportunities, through product development and quality improvements to attract additional landings. Although competition should exist in the market for landings, harvesters are likely to time landings to accommodate processing schedules, which processors should reward, in turn, with higher ex-vessel prices. This timing of landings could be critical to processors meeting some market demands, particularly if new fresh markets were to be developed.

[1] A suboption in the motion would qualify any processor that processed in excess of 250 metric tons in any one year between 1996 and 2002, provided that the owner also invested in excess of a minimum threshold amount in the plant. Based on available data, it appears that one processor would meet this qualification.

Under the alternative with designated processor associations, it is possible that processing patterns could differ across processors. Harvesters have no choice of cooperatives to join, but will be eligible for a single cooperative associated with a specific processor. As a consequence, processors are unlikely to compete for landings on a regular basis, but only in developing the terms of the cooperative agreement, which is subject to the processor's approval. This limit on the competition for landings from the fishery could reduce competition among processors for markets for their outputs. While some processors may aggressively pursue any available markets, it is possible that others will show less interest in extracting maximum revenues from rockfish landings, particularly if their processing of those landings could interfere with their operations in other fisheries. So, processing under this alternative should resemble that of the previous alternative, however, fewer products could be produced for challenging high revenue markets, as some processors may not perceive the need to compete as aggressively for landings due to the limits on competition for landings that arise out of the alternative structure.

Catcher processor efficiency

Production efficiency[2] of the catcher processor sector under the status quo is limited to some degree by the race for fish under the current LLP fishery. Catcher processors are compelled to race for rockfish harvests against other catcher processors, as well as catcher vessels participating in rockfish fisheries during the few weeks they are open each year. Although catcher processors process their catch quickly, relative to catcher vessels, quality of harvests likely suffer to some extent, as participants adopt fishing techniques to maximize catch rates, which may lead to diminished quality and dissipation of a portion of the resource rents.

Under the pilot program alternatives, the catcher processor sector is likely to realize some gains in production efficiency, capturing greater rents from the fishery. The primary efficiency gains in the catcher processor sector under this alternative will result from participants slowing the pace of fishing and processing. In the slower fishery, participants are likely to be able to reduce expenditures on inputs, to some degree (e.g., possibly scaling down crew size slightly), and increasing outputs slightly (with less loss due to diminished quality).

Catcher vessel efficiency

Production efficiency of catcher vessels under the status quo is also limited by the short race for fish that has arisen under LLP management. Catcher vessel efficiency is particularly vulnerable under the current management, because catcher vessel efforts that maximize the share of the TAC also substantially diminish quality of landings. Returns to catcher vessels under the existing management program have been limited by the quality of their landings and the compressed time period in which those landings must be made. During the current seasons, most processors have needed to process rockfish deliveries quickly, to keep pace with the landings. These conditions have dampened competition for landings among the participating processors to some extent. The extent to which resource rents are captured and the division of those rents under this alternative is not known. In a fishery that is prosecuted as a limited access race-for-fish over a very short season, as the rockfish fisheries are, a substantial portion of the rents are likely to be dissipated.

[2] In the simplest terms, production efficiency is the difference between production revenues and production costs. Production efficiency is a measure of the effectiveness of a producer in using inputs to produce one or more outputs, focusing on the relationship between the quantity and quality of outputs produced and the quantity and quality of the various inputs (e.g., fuel, vessels, and labor) used for that production.

The catcher vessel pilot program alternatives are likely to improve catcher vessel efficiency over status quo management. Since participants will be able to gain exclusive share allocations by joining cooperatives, a harvester's share of the fishery will generally be unaffected by catch rates. Participants, instead, will refocus their efforts toward harvesting the cooperative's collective allocation in a manner that improves technical efficiency – reducing inputs and increasing the quality of rockfish deliveries. Most participants may be expected to choose to sacrifice some cost efficiencies (i.e., use more inputs per unit of rockfish catch, such as fuel) to improve the quality of deliveries with the expectation of receiving a higher ex-vessel price for landings. Precisely how these economic gains will be distributed between catcher vessel operators and processors cannot be predicted *a priori*.

Under the alternative with processor limited entry, harvesters should be able to generate additional competition for landings among the licensed processors under this alternative. Since qualified processors have processed in excess of 90 percent of all historic landings during the two to three week season, processors that have been unable to compete for additional landings because of capacity constraints during the brief season are likely to have the ability to process substantially greater quantities of rockfish, if landings can be timed to take advantage of available processing capacity. Catcher vessel participants are likely to have the greatest negotiating leverage in the ex-vessel market under this alternative, because of the extended season and the limited restriction on the processing market, relative to the alternative with processor associations. Overall, the ability to coordinate harvest activity and remove vessels from the fleet without loss of harvest share, together with a relative improvement in bargaining strength arising from the relatively weak processor protection of the limit on processor entry, should result in substantial improvements in harvest sector efficiency over the status quo.

Under the alternative with processor associations, operations of the catcher vessel sector should be similar to those under the processor limited entry alternative. Catcher vessel efficiencies, however, are likely to be smaller under this alternative because of the shift of negotiating leverage to processors from the rigid cooperative/processor associations. As above, precisely how these economic gains will be distributed between catcher vessel operators and processors cannot be predicted *a priori*.

Shore-based processing efficiency

Under the current management, fishermen race for catch, then all seek to land that catch with processors shortly after it is harvested. Because of the race for fish, fishermen have an economic incentive to take less care in handling their catch and may tend to extend the length of trips slightly to maximize fishing time on the grounds, further decreasing the quality of landings. Processors also race to process the resulting glut of landings from fishermen that are trying to maximize their shares of the total catch. Efficiency in the processing sector suffers, as lower valued products of poorer quality are produced. Efficiency is further eroded as crews must be substantially scaled up, but only for a short period of time, to accommodate the rapid pace of landings during the compressed season.

Under the pilot program alternatives, fishing will be slowed as cooperative receive exclusive allocations. Technical efficiency in processing should improve as processors are better able to schedule crews to process landings. Efficiency should also improve as processors improve product quality and produce more high quality products that cannot be produced under current management because of the relatively low quality of landings and the need to process those landings rapidly. Catcher vessel participants are likely to use cooperatives to coordinate landings, secondarily contributing to efficiency gains in the processing sector.

Processors may experience little improvement in their overall efficiency under the processor limited entry alternative because of their relatively weak negotiating position in the market for landings. Although entry is limited under this alternative, the capacity of qualified processors far exceeds that necessary to process landings in a slowed fishery with an extended season. Processors, however, should obtain normal profits from their processing, but any less efficient processors unable to realize normal profits may be expected to drop out of the rockfish fishery.

The alternative with processor associations provides processors with a substantial advantage in the market for landings through its processor/cooperative associations. Since each qualified catcher vessel participant will have to join a cooperative in association with a specific processor, fishermen will have substantially less negotiating leverage with respect to their landings. Potential negotiating leverage for the fishermen arises from withholding all rockfish landings or their landings in other fisheries. Fishermen's leverage from withholding rockfish landings is limited because the only alternative opportunity would be the limited access "race-for-fish" fishery, which is likely to be substantially less efficient. The outcome should be that processor efficiency improves substantially with the reduction in competition, processing costs, and product improvements (some arising from improved quality of landings). Processors are likely to capture most of the increase in rents under this alternative, improving overall processing efficiency.

Overall production efficiency

Overall production efficiency in the CGOA rockfish fisheries is likely to remain at its current level, if the status quo management is continued. For catcher processors, quality of products is relatively high as catch is processed quickly onboard. These vessels are likely to continue producing exclusively whole and/or head and gut products, as is the current practice. For the shore-based sector, quality of landings and processed products are likely to continue to suffer under a race-for-fish. In addition, the race-for-fish is likely to limit the ability of shore-based processors to produce higher valued products.

Overall production efficiency is likely to increase slightly under the catcher processor pilot program alternatives as catcher processors are able to make some quality improvements with the end of the race-for-fish, characteristic of current management. Product form (whole and head and gut) are likely to remain the same under this alternative due to operational limitations. Some efficiencies could be realized through the consolidation of catch on fewer vessels, but vessels will not be retired because rockfish is a minor part of each vessel's annual activity.

Overall production efficiency should improve substantially under the catcher vessel pilot program alternatives. Quality of rockfish landings should improve as the race for fish is ended. Processors should also be able to better handle landings, producing higher quality and higher valued products. Both sectors should realize some gains in efficiency through better scheduling of their activities. Costs should be reduced as participants in both sectors are able to determine inputs to reduce costs of production without concern over losing their share in the fishery, if production is slowed. Efficiency gains under the alternative with processor associations, however, could be less than under the other catcher vessel alternative as the strict cooperative/processor association could reduce the incentive for some processors to aggressively pursue markets for rockfish landings.

Effects on consumers

Under the status quo, consumers are likely to be supplied with products from the CGOA rockfish fisheries that resemble those currently produced. Catcher processors are likely to continue to

produce high quality frozen head and gut and whole fish, much of which is sold into Asian markets. An increasing portion of this production, however, is reprocessed and returns to the domestic U.S. market. Production from catcher vessels is likely to continue to suffer from poor handling. Landings are likely to be made into primarily head and gut and whole fish. Most of the catcher vessel production is currently sent to Asia, a portion of which returns to U.S. markets after reprocessing. Some catch is made into fillets at the primary processing plant, but the ability to make quality fillets is limited, because of the quality of the landings and the time pressures arising from the race-for-fish.

Products under the pilot program alternatives from the catcher processor sector, fishing rockfish in the CGOA, are likely to be similar to current production. Some quality improvement may occur, but these vessels already produce relatively high quality products because their catch is processed onboard soon after it is harvested, rather than held round in a hold for the duration of a trip, then transported to a processing facility.

The majority of the catcher processor output from the CGOA rockfish fishery is exported, for reprocessing, where it enters the highly competitive world seafood marketplace. Better quality primary production means less waste during reprocessing, which, in turn, means more finished product and lower production costs per unit of input. The U.S. is a significant net importer of seafood, and a substantial portion of this reprocessed CGOA fish re-enters the U.S. consumer market. It follows that U.S. consumers stand to benefit directly from quality improvements resulting from the CGOA pilot project. These benefits may take the form of higher quality, lower priced, and more abundant supplies of seafood in the domestic market. Because consumers have many "substitutes" in the seafood marketplace from which to choose, increased supplies and/or quality of one product form will tend to force prices lower for all close substitutes. While estimation of the size, distribution, and timing of these benefits must await empirical data, these consumer benefits would be expected to emerge, following adoption of the proposed pilot program.

Substantial changes are likely to occur in the production of catcher vessel harvests to the potential benefit of consumers. Catcher vessel landings are likely to be of higher quality under both of the catcher vessel pilot program alternatives. Processors are also likely to slow lines allowing them to produce fillets, instead of the less processed whole and head and gut products currently produced, increasing production for U.S. markets. Some processors are likely to attempt to serve domestic fresh markets, which would also benefit U.S. consumers. Most of the benefits of production improvements in the fisheries are likely to be realized by U.S. consumers.

Management Costs

Under the status quo management, costs of management should remain at their current level. Under the pilot program alternatives, NOAA Fisheries will incur additional costs of determining eligibility and making allocations of history to participants under the program. Cooperative agreements will be reviewed by the agency. Annual allocations must be made to cooperatives (and to either a limited access fishery or individuals, if any persons eligible for the program choose not to join a cooperative). NOAA Fisheries will be required to conduct catch accounting for the different allocations, and monitor the allocations using observer data. The costs to NOAA Fisheries are likely to exceed the current costs of managing the rockfish fisheries under the LLP, which are in large part coordinated with management costs of several fisheries (and therefore are dispersed across several fisheries). Enforcement costs are also likely to rise under the pilot program, as enforcement personnel will be required to oversee activities over a longer period. In

addition, individual accountability for catch of cooperative allocations requires additional enforcement resources.

In addition to costs that will be borne by NOAA Fisheries, participants in the fishery are likely to have some additional costs. To date, NOAA Fisheries has maintained that to fully monitor total catch on a catcher processor requires the use of flow scales and sampling stations, with every haul observed. Added costs of observers are difficult to predict under the program. A requirement that all catch be observed is likely to result in some added observer coverage for vessels harvesting fish under the program. The extent of the additional coverage, however, is difficult to predict because participants may in cooperatives coordinate and consolidate fishing activity under the program, to reduce the number of vessels, fishing days, and thereby observer coverage costs. Observer costs for catcher vessels, which are borne by the fleet, are likely to increase to provide adequate information concerning fishing activity under the program. The extent of these additional costs is not known, and depends on the specific monitoring program developed by NOAA Fisheries and the fishing practices of participants. To reduce observer costs (and operational costs), it is likely that some rockfish harvesting will be consolidated within (and possibly across) cooperatives.

Environmental benefits

Improvements in environmental conditions are valued by the public at large. For example, preservation of endangered species is often considered to have significant value to the American public. In the current fisheries, catch of all species of interest are limited either by TAC or by PSC limits. Managers monitor harvests in-season, closing the fisheries when the total allowable catch is estimated to have been taken. Managers have become quite adept in their estimates, and have generally succeeded in maintaining catch below TAC. Occasionally, TACs are exceeded, but overages have not exceeded overfishing limits, nor threatened stocks. Public non-use benefits derived from the management of healthy stocks of these species are likely to be maintained, if the current management is perpetuated. Under the pilot program alternatives, catch of all species of interest will continue to be limited by TAC and/or PSC limits. These limits should be effectively maintained through the monitoring and management program, perpetuating the current non-use public benefit derived from maintenance of healthy stocks.

Net benefits to the Nation

If the current management of the rockfish fisheries is continued, net benefits to the Nation are likely to remain at their current level. For catcher processors, quality of their whole and head and gut production is relatively high. Although much of the fish is exported for secondary processing, an increasing amount returns to the U.S.

For the shore-based sector, quality of landings and value of processed products suffer from production inefficiency at both the harvesting and processing levels. Consumer benefits attributable to these harvests are diminished by poor quality and low product value. In addition, a substantial portion of any attributable consumer benefit that may be associated with this fishery is not realized by U.S. consumers, as a large majority of this production is sold into foreign markets. Costs of monitoring and management are relatively low, as catch is monitored at the fleet level. Non-use benefits to the U.S. public (to the extent that such values are associated with CGOA rockfish) are likely diminished to some extent by waste and bycatch.

Net benefits to the Nation will be affected by a few different factors under the catcher processor pilot program alternatives. Production efficiency (input use, per unit of output of a given quality)

should increase, as some participants realize moderate improvements in quality of production. The fleet is likely to continue to deliver only primary (or partially) processed product forms (i.e., whole and/or head and gut). Vessel size, design, and characteristics largely preclude production of alternative "value-added" product forms (e.g., load line certification requirements). Most of the product is likely to continue to be transported overseas for secondary processing. Portions of that production, however, return to the United States. U.S. consumers are likely to benefit from any quality improvements arising under the program. Since the cooperative allocations under the program are binding, fewer discards are likely, as they are deducted from cooperative allocations (i.e., improved utilization). A portion of the increase in quantity of production, arising from the reduction in discards, is also likely to benefit U.S. consumers. Costs of management, monitoring, and enforcement will increase to administer and oversee the cooperative allocations. Some vessels may be required to purchase, install, and maintain additional monitoring equipment.

A few different factors will affect net benefits to the Nation under the catcher vessel pilot program alternatives. Slowing the rate of fishing and extending the season should potentially lead to substantial increases in production efficiency, as participants in both the fishing and processing sectors improve quality, given higher value products are made possible by improved quality of the raw fish being delivered. These production improvements should lead to benefits for U.S. consumers, as this sector is likely to increase production of value-added products for domestic markets. Increased administration and oversight necessary for cooperative allocations, and an extended season will result in an increase in costs of management, monitoring, and enforcement. Participants may also be required to employ additional observer coverage. Some additional benefits to the Nation could arise through reduction in bycatch, since the program requires full retention of several species that may currently be discarded. Since discard rates of these species are relatively low in the current fishery, these benefits are likely not substantial. Overall gains in net benefits to the Nation, however, could be lower under the alternative with processor associations than under the alternative without those associations, if processors perceive less need to compete in product markets because of their market power deriving from the relatively tight linkage of the processor associations under this alternative. Whether competition in product markets is dampened depends on the specific situation of the processors and fishermen that deliver to those processors (including factors such as the markets the processor serves, the extent of involvement of the processor and fishermen in other fisheries, and the cost of developing participation in new and challenging markets).

One general benefit of the pilot program is likely to arise from its limited and experimental scope. The Council is currently considering a more comprehensive rationalization program of this type that would apply to all Gulf of Alaska groundfish fisheries. Any lessons learned from this program can be applied to improve on the benefits realized (and reduce the costs) under that broader, longer term program. Although the magnitude of any benefit of the program as a demonstration model is speculative, the program should provide benefits in the design, development, and implementation of the Gulf of Alaska program and others under consideration.

Target rockfish stocks

Current management of the fisheries (and fishing patterns) should continue under the status quo. Rockfish are conservatively managed under in the current fishery, with catch limited by TAC. Under the status quo management, a TAC can unintentionally be exceeded, if managers have difficulty projecting when the fleet will have completed catch of the TAC. Allowable biological catch limits are rarely, if ever exceeded, and it can be expected that, under the status quo, overfishing limits will not be exceeded.

The pilot program alternatives should have no adverse impact on target rockfish populations. These species will continue to be managed by conservatively set TACs. Cooperative allocations in the fisheries should effectively limit catch to the TACs. More precise management of the TACs should be possible under the change in management, as individuals within a cooperative will be responsible for any overage. Some potential benefit could arise, if participants distribute catch over larger areas and/or time periods, reducing any potential local depletion that may occur under the current management. Under the status quo, effort is concentrated as a result of participants attempting to maximize their catch during relative short openings. Any beneficial effect from greater spatial distribution of catch is likely to be limited, if participants perceive a benefit to concentrating catch, say to reduce costs or increase revenues. For catcher vessels, concentration of catch in close proximity to processors could improve quality of landings, as needed to serve some higher valued markets. For catcher processors, concentration of catch spatially and temporally could reduce costs, if consistent high catch rates are observed at particular times and locations. In conclusion, no negative impacts to rockfish stocks are expected from any of the pilot program alternatives.

Allocated secondary species and prohibited species catch

Under the status quo management, catch of secondary species (Pacific cod, sablefish, shortraker, rougheye, and thornyheads) in the target rockfish fishery will continue to be limited by MRA and TACs that limit overall catch from all fisheries. Although catch of these species is substantial, each of these species is managed under a conservative TAC. In addition, separate TACs for shortraker and rougheye were implemented in 2005, to ensure the integrity of these independent stocks. Halibut is managed as a PSC in the CGOA rockfish fisheries. Catch of halibut is required to be discarded and is accounted for against the deep-water complex PSC allocation. Although attainment of the halibut PSC limit has occasionally required the closure of the target rockfish fisheries, the fishery does not have adverse effects on halibut stocks.

Similar to the target rockfish stocks, no negative effects on secondary species stocks are expected to occur under any of the pilot program alternatives. Catch of most of these species will be limited by allocations to cooperatives, which are more restrictive than the current MRAs. In addition, discards are not permitted for allocated secondary species under the pilot program. Management of these allocations should contribute to more precise management of stocks under the program. Management of unallocated secondary species (Pacific cod for the catcher processor sector, and shortraker and rougheye for the catcher vessel sector) will be subject to reduced MRAs. Overall harvests will continue to be limited by TACs that apply to total catch from all fisheries. The pilot program will also be prosecuted with allocations of halibut mortality to each cooperative. These allocations will constrain halibut bycatch and will prohibit participants in the program from fishing in excess of their halibut allocations. Although some fishing could take place outside of the traditional July season (a period when halibut bycatch has been observed to be low), bycatch losses will be constrained by the allocations of halibut mortality. The allocations of halibut PSC are based on historic halibut mortality in the fisheries and will not allow overall halibut mortality in Central Gulf of Alaska fisheries to exceed historic levels. As a result, the pilot program alternatives should have no negative impact on halibut stocks.

Unallocated prohibited species catch

In the current rockfish fishery, prohibited species harvests are not at levels that raise concern. Fishing patterns are not expected to differ under any of the alternatives (including the status quo and the pilot program alternatives) in a manner that will affect prohibited species catch.

Consequently, no adverse effects on prohibited species catch are expected under any of the alternatives.

Other unallocated species

Fishing patterns are not expected to differ under any of the alternatives (including the status quo and the pilot program alternatives) in a manner that will affect catch of unallocated species. Consequently, no adverse effects on prohibited species catch are expected under any of the alternatives.

Benthic habitat and essential fish habitat

Maintaining the current management will perpetuate current fishing practices and concentrate fishing for rockfish temporally and spatially. Current fishing, however, is likely to have some effect on benthic habitat, but minimal and temporary effects on essential fish habitat. No impacts associated with FMP managed fisheries were found to have more than minimal and temporary adverse effects on EFH based on Final Environmental Impact Statement (EIS) concerning essential fish habitat (NMFS/NPFMC, 2005). The effects of fishing activities, specifically trawl gear on benthic habitat generally and in the GOA is discussed in the Programmatic Supplemental EIS (PSEIS) (NMFS, 2001). Under the pilot program alternatives rockfish fishing could be distributed over a longer season and may disperse spatially, as a result of the removal of time constraints by the cooperative allocations. Overall, the rockfish fisheries are likely to continue to have minimal effects on essential fish habitat. No negative impacts to essential fish habitat are likely under the pilot program alternatives.

Endangered or threatened species

None of the alternatives are expected to have negative impacts on endangered or threatened species, beyond those identified in previous consultations under section 7 of the Endangered Species Act. Some spatial and temporal dispersion of rockfish catch could occur under the pilot program alternatives. This change in the distribution of catch is expected to be minor and is not expected to have any affect on any endangered or threatened species.

Forage fish

Catch of forage fish is expected to be unaffected by any of the alternatives. Consequently, no impacts on forage fish are expected under any of the alternatives.

Marine mammals and seabirds

Direct and indirect interactions between marine mammals or seabirds and harvests from the rockfish fisheries are not expected to differ under any of the alternatives, as total catch is expected to be the same under all of the alternatives and the distribution of catch is not expected to differ in a way that will affect interactions.

The ecosystem

Although some temporal and spatial dispersion of catch in the rockfish fisheries could occur under the pilot program alternatives, none of the alternatives are expected to have a negative effect on the Gulf of Alaska marine ecosystem.

Environmental justice

Under the pilot program alternatives, some consolidation of fishing activity could occur in the rockfish fisheries. This consolidation could affect income for participants on vessels that no longer participate in the rockfish fishery. This consolidation is unlikely to result in the removal of vessels from all fisheries and could lead to some of the vessels that leave the rockfish fisheries increasing their activities in other fisheries (to the extent permitted by sideboard limitations and cooperative agreements). As a result, the impacts to vessel owners and crewmembers may not be negative, even if rockfish fishing activity decreases. In addition, the degree to which any impacts will affect minority or low-income vessel owners or crewmembers cannot be determined because demographics of vessel owners and crewmembers are not available.

Shore-based processing crews could be affected under the pilot program alternatives, although most effects are likely to benefit these workers. The pilot program alternatives are likely to result in the distribution of landings over a longer period of time, particularly when shore plants are not processing catch from other fisheries. This distribution of landings could result in a loss of some "peak" seasonal positions, but will also result in greater stability for crews that are employed as year-round processing workers. Both seasonal and full time positions are disproportionately held by persons with low incomes and minorities.

1. Introduction

In Section 802 of the Consolidated Appropriations Act of 2004, the U.S. Congress included a directive to the Secretary of Commerce to establish, in consultation with the North Pacific Fishery Management Council (the Council), a pilot program for management of three rockfish fisheries in the Central Gulf of Alaska (the Central Gulf rockfish fisheries).[3] At the February 2004 Council meeting, National Marine Fisheries Service (NOAA Fisheries) presented a brief discussion paper requesting Council input in the development of the pilot program. Based on this request and public testimony, the Council requested industry stakeholders to prepare and submit proposed alternatives for establishing the program to the Council at its April 2004 meeting. Industry representatives presented a proposal at that meeting that defined an alternative for management of the fisheries under the pilot program. Using the industry proposal and public input and staff discussion papers, the Council developed alternatives for the pilot program management of the rockfish fisheries at its June 2004, October 2004, December 2004, and February 2005 meetings. At its April 2005 meeting, the Council conducted an initial review of this analysis, after which the Council recommended release of the document for final review and action at its June 2005 meeting. Because of the different characteristics of the catcher vessel fleet and the catcher processor fleet, the Council has developed different, but closely related alternatives for these two sectors. In the case of the catcher vessel sector, the Council has developed for analysis two cooperative programs that differ in the relationships that would be established between participating catcher vessels and processors. In the case of the catcher processor sector, the Council has developed for analysis a cooperative program alternative and an alternative that simply makes a sector allocation.

At its June 2005 meeting, the Council selected its preferred alternative to establish the pilot program. For the catcher processor sector, the Council identified as its preferred alternative a cooperative program under which non-members of cooperatives fish in a limited access fishery. For the catcher vessel sector, the Council identified as its preferred alternative, a cooperative program under which each catcher vessel participant is eligible for a cooperative in association with the processor to which it delivered the most pounds of CGOA rockfish during the processor qualifying years. Catcher vessel participants that choose not to join a cooperative would be permitted to fish in a limited access fishery.

Management actions for these rockfish fisheries must comply with applicable Federal laws and regulations. Although several guide this action, the principal laws and regulations that govern this action are the Consolidated Appropriations Act of 2004, the Magnuson-Stevens Act (MSA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act, and Executive Order 12866.

This document contains a Regulatory Impact Review, a Regulatory Flexibility Analysis, and an Environmental Assessment of the alternatives for the demonstration program management of the Central Gulf of Alaska Pacific Ocean perch, Northern rockfish, and pelagic shelf rockfish (which comprises dusky rockfish, yellowtail rockfish, and widow rockfish) fisheries. Section 2 contains the Regulatory Impact Analysis, including the problem statement, a brief background, and a detailed description of the alternatives, the existing conditions in the fisheries, analyses of the

[3] A legislative floor statement providing some definition of the program envisioned by Congress is attached hereto as Appendix 1A. NOAA General Counsel provided the Council with a legal opinion concerning several aspects of the pilot program authorized the legislation. A copy of that opinion is attached as Appendix 1B.

economic and socioeconomic effects of the alternatives, elements, and options; Section 3 contains the Environmental Assessment; Section 4 contains a brief discussion of the MSA National Standards and a fishery impact statement.

2. Regulatory Impact Review

This chapter provides an economic analysis of the action, addressing the requirements of Presidential Executive Order 12866 (E.O. 12866), which requires a cost and benefit analysis of federal regulatory actions.

The requirements of E.O. 12866 (58 FR 51735; October 4, 1993) are summarized in the following statement from the order:

> 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 nonetheless 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 further 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 $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local 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 novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

This Regulatory Impact Review assesses several different economic effects of the alternatives to assess the effects of the alternatives on the net benefits to the Nation. In general, the economic effects of the different alternatives cannot be quantified. Quantitative estimation of the effects requires accurate data concerning several aspects of the fishery, many of which are not available. In addition, several factors limit the predictability of the impacts of the alternatives on these fisheries. Some program aspects of the alternatives are unique. For example, the processor associations under the "catcher vessel cooperative with processor association" alternative, differs from any implemented in any fishery to date (including the Bering Sea pollock fisheries, which it most nearly resembles). Quantification of impacts would require detailed cost data from the harvesting and processing sectors and substantial data concerning downstream markets and thorough economic analysis of all of these data. No such information or analyses are currently available. Due to these shortcomings, much of the economic analysis is qualitative, supplemented with any quantitative information available.

2.1. Problem Statement

The Council has developed the following problem statement defining its purpose for development of the rockfish pilot program:

> The present management structure of the CGOA rockfish fishery continues to exacerbate the race for fish with:
>
> - Increased catching and processing capacity entering the fishery,
> - Reduced economic viability of the historical harvesters (both catcher vessels and catcher processors) and processors,
> - Decreased safety,
> - Economic instability of the residential processor labor force,
> - Reduced product value and utilization,
> - Jeopardy to historical groundfish community stability,
> - Limited ability to adapt to Magnuson-Stevens Act (MSA) requirements to minimize bycatch and protect habitat.
>
> While the Council is formulating GOA comprehensive rationalization to address similar problems in other fisheries, a short-term solution is needed to stabilize the community of Kodiak. Kodiak has experienced multiple processing plant closures, its residential work force is at risk due to shorter and shorter processing seasons and the community fish tax revenues continue to decrease as fish prices and port landings decrease. Congress recognized these problems and directed the Secretary in consultation with the Council, to implement a pilot rockfish program with the following legislation:
>
> > SEC. 802. GULF OF ALASKA ROCKFISH DEMONSTRATION PROGRAM. The Secretary of Commerce, in consultation with the North Pacific Fishery Management Council, shall establish a pilot program that recognizes the historic participation of fishing vessels (1996 to 2002, best 5 of 7 years) and historic participation of fish processors (1996 to 2000, best 4 of 5 years) for pacific ocean perch, northern rockfish, and pelagic shelf rockfish harvested in Central Gulf of Alaska. Such a pilot program shall (1) provide for a set-aside of up to 5 percent for the total allowable catch of such fisheries for catcher vessels not eligible to participate in the pilot program, which shall be delivered to shore-based fish processors not eligible to participate in the pilot program; (2) establish catch limits for non-rockfish species and non-target rockfish species currently harvested with pacific ocean perch, northern rockfish, and pelagic shelf rockfish, which shall be based on historical harvesting of such bycatch species. The pilot program will sunset when a Gulf of Alaska Groundfish comprehensive rationalization plan is authorized by the Council and implemented by the Secretary, or 2 years from date of implementation, whichever is earlier.
>
> The fishing fleets have had little experience with cooperative fishery management and needs to begin the educational process. For the fishery to be rationalized all aspects of the economic portfolio of the fishery needs to recognized. To stabilize the fishery economy all the historical players – harvesters (both catcher vessels and catcher processors) and processors need to be recognized in a meaningful way. The demonstration program is designed as a short-term program for immediate economic relief until comprehensive GOA rationalization can be implemented.

2.2. Background

The rockfish species that are the subject of this program are primarily harvested using trawl gear, although some directed fishing with fixed gear has occurred. In the Central Gulf of Alaska, the directed trawl fisheries for these rockfish typically begin about the first of July. Directed fishing for these rockfish with hook-and-line opens on January 1. Separate total allowable catches (TACs) are set for the three different species. Trawl participants usually begin by targeting Pacific Ocean perch until that directed fishery is completed, then move on to the directed

Northern rockfish and pelagic shelf rockfish fisheries. The directed fisheries for all three species are usually completed during the month of July.

The current entry limitations to the harvest sector in Gulf of Alaska groundfish fisheries (which include the rockfish fisheries) have restricted the fisheries to historic participants.[4] The first measure limiting entry established a vessel moratorium in 1995 that generally limited entry to vessels that made a legal landing of a moratorium-designated species between January 1, 1988 and February 9, 1992. The second, and current, limitation is the License Limitation Program (LLP), under which licenses were issued to vessel owners that used their vessels to make groundfish harvests that meet both a general landing requirement and an area landing requirement. To meet the general requirement, a vessel must have a landing of a groundfish species during the general qualifying period (GQP), which is from January 1, 1988 to June 27, 1992.[5] To qualify for an area endorsement, a vessel must have a minimum number of landings from the applicable endorsement area during the endorsement qualification period, which is from January 1, 1992 to June 17, 1995. Separate endorsements apply to the Bering Sea, the Aleutian Islands, the Western Gulf of Alaska, the Central Gulf of Alaska (which also authorizes participation in West Yakutat), and the Southeast Outside management area. Landing requirements for endorsement qualification vary with vessel length, area, and vessel designation (i.e., catcher vessel or catcher/processor).

Although these limitations on entry have restricted the introduction of additional harvest capital in the fisheries, entry limitations alone are insufficient to substantially improve efficiency in the Central Gulf rockfish fisheries. For example, in the fisheries that are the subject of this program, all harvests take place in the course of a few weeks in the year. Although in some instances, participants may choose to concentrate landings for efficiency reasons, the level of concentration in the current fisheries contributes to inefficiency in both harvesting and processing. Harvesters add costs and sacrifice quality of landings by racing to obtain the largest possible share of the TAC prior to the fishery closing. Processors work quickly to offload and process landings to obtain market share and avoid spoilage of landings.

Slowing this race for fish will provide participants in both sectors with the opportunity to realize efficiencies and reduce waste. Allowing participants to schedule their activities to coordinate with participation in other fisheries should also improve efficiencies. Allowing participants to determine inputs to reduce costs of production and improve product recovery rates and quality, without risking loss of share of the fishery, should also improve efficiency. In addition, timing participation in response to market conditions could provide for some improvement in economic returns. Consumers could also benefit from slowing the race for fish through improvements in quality and quantity of outputs as product recovery rates rise.

2.3. Description of the Alternatives

To address its problem statement, the Council has adopted two pilot program alternatives for the catcher processor sector, and two pilot program alternatives for the catcher vessel sector, for analysis, in addition to the status quo. For the catcher processor sector, one pilot program alternative (the catcher processor cooperative alternative) would allow harvesters to form cooperatives, each of which would receive an annual harvest share allocation based on the

[4] In addition to the measures discussed here, a complete discussion of the evolution of management of the fisheries is contained in the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (National Marine Fisheries Service, 2004).

[5] An exception extends the GQP for vessels less than 60 feet that fish with pot or jig gear until December 31, 1994.

qualified harvest histories of its members. Catcher processor license holders who do not join a cooperative would receive an annual individual allocation based on the history associated with their license that could be fished independently.

The second catcher processor pilot program alternative (the catcher processor sector allocation alternative with cooperatives – the preferred alternative) would make an allocation to the sector, based on the histories of catcher processors in the CGOA rockfish fisheries. Participants in the sector could either join a cooperative, which would fish a cooperative allocation, or fish in a limited access fishery with other non-members of cooperatives (instead of receiving an individual allocation as under the other alternative).

For the catcher vessel sector, one alternative (the catcher vessel cooperative with limited processor entry alternative) would allow harvesters to form cooperatives, which would receive allocations based on members' qualified harvest histories. These cooperatives would be required to deliver their landings to processors that met threshold landing requirements during the processing qualifying years.

The second catcher vessel pilot program alternative (the catcher vessel cooperative with processor associations alternative – the preferred alternative) would allow each harvester to join a cooperative in association with the processor to which it delivered the most pounds of CGOA rockfish during the processor qualifying period. Each cooperative would receive an annual harvest share allocation based on the qualified harvest history of its members. Although no "explicit" processor delivery requirement is created by this cooperative/processor relationship, since cooperative formation depends on the processor association, some delivery arrangement should be expected to be incorporated into that relationship as defined by the parties, because these catcher vessels do not have the ability to seek membership in any other co-op, even if they cannot reach mutually acceptable terms with their "designated" processor. Under both of the catcher vessel alternatives, harvesters that choose not to join a cooperative would be permitted to fish in a competitive fishery that receives an allocation based on the harvest histories of all CGOA catcher vessels not affiliated with a cooperatives.

Under all pilot program alternatives, set asides of CGOA rockfish would be made for an entry level fishery and to support incidental harvests in other directed fisheries.

The pilot program alternatives are derived from a common set of elements with differences that reflect the different operations of the two fleets. The specific elements and options that define the pilot program alternatives follow the brief description of the alternatives (including the status quo) below.

2.3.1. The status quo alternative

Under the status quo, participation in these rockfish fisheries is limited to holders of valid LLP licenses endorsed for the Central Gulf of Alaska. Directed fishing by the trawl sector, which dominates these fisheries, begins around July 1, with the specific opening date being set to accommodate the longline sablefish survey and monitoring over the 4th of July holiday weekend. Participants catch a variety of species during the directed CGOA rockfish fishery, and top off on other valuable species, such as sablefish and Pacific cod. These other species are currently managed under "bycatch status", with a maximum retainable allowance (MRA), which limits retention of these species to a percent of the retained target harvest. Harvests are monitored in-season and each of the target rockfish fisheries is closed when managers estimate that the TAC is harvested. Directed fishing allowances are set to accommodate incidental catch of the rockfish

species in other fisheries during the remainder of the year. After closure of the directed fishery, the three rockfish species of concern here are managed on a bycatch basis and are subject to MRAs in other target fisheries, limiting the retention of these rockfish relative to target species.

2.3.2. The pilot program alternatives

The different pilot program alternatives substantially overlap with one another. The summaries that follow reference each other to avoid repetition. For example, under all of the pilot program alternatives, allocations are made to two sectors, trawl catcher processors and trawl catcher vessels. These allocations are then distributed to individual operations based on their historic harvests. Since these allocations (i.e., sectoral and individual) are the same under the different alternatives, the allocations are shown only once, and then are referenced to describe the distributions under the other alternatives.

Catcher processor sector allocation with cooperatives (the preferred alternative for catcher processors)

Under the catcher processor sector allocation with cooperatives alternative, allocations would be made to the trawl catcher processor sector for target rockfish species and four of the five secondary species (sablefish, shortraker, rougheye, and thornyhead) based on the historic harvests of sector members.[6] Participants in the sector could either join a cooperative, which would fish the combined allocation of its members in accordance with a cooperative agreement, or fish in a limited access, competitive fishery, which would receive an allocation based on the history of all operators that remain unaffiliated with a cooperatives.[7] A license holder's fishing history would be the history of the vessel that led to the license and the history of any vessel that fished using the license.

Two TAC set asides of the target rockfish will be made prior to allocations to the sectors under the pilot program. The first of these set asides would allocate 5 percent of the TAC for each target rockfish species, which would be divided equally between two entry level fisheries (one for trawl fishermen and the other for non-trawl fishermen). The entry level fisheries would be open to harvesters that are not eligible for the primary program. All deliveries from the entry level fisheries must be made to processors that are not eligible for the primary program. The entry level trawl fishery would be prosecuted as a competitive limited access fishery, open to any LLP license holders endorsed for the CGOA on application. The trawl fishery is scheduled to open on the 1st of May, if PSC is available. If PSC is unavailable at that time, the fishery would open upon the next release of PSC. The non-trawl fishery would also be conducted as a competitive fishery open to all applicants eligible to participate in the CGOA limited access fisheries. The non-trawl entry level fishery would open on the 1st of January.

The second set aside of target CGOA rockfish would be an incidental catch allowance (ICA) to support incidental catch of rockfish by participants in other directed fisheries. This set aside will be based on the incidental catch needs of other fisheries, which are estimated using rockfish incidental catch rates from those non-rockfish directed fisheries in recent years.

After removal of the two set asides, the remainder of the target rockfish TAC would be allocated to the two sectors participating the pilot program. Allocations of the target rockfish to each sector would be based on retained catch (excluding landings processed into meal) by qualified vessels in

[6] Pacific cod, the fifth secondary species, would be managed using a 4 percent MRA.
[7] Since the allocations to non-members of cooperatives would be made to the limited access fishery, no provision for opting out of the rockfish fishery is necessary under this alternative. Persons that do not wish to fish rockfish would be eligible for, but not required to, fish in the limited access fishery.

the sector during the directed fishing season, using each vessel's best five of the seven years, from 1996 to 2002 (the qualifying period). Different years could be used for each species, by each vessel, for determining the allocation to maximize the catch history attributable to that vessel. For catcher processors, Weekly Processing Report data will be used to calculate qualifying catch. Any holder of a permanent or interim LLP license, at the time of implementation that had at least one targeted harvest of CGOA rockfish during the qualifying period, would be eligible for the program.

The secondary species allocations (shortraker, rougheye, thornyhead, and sablefish) to the sector would be based on catch of those species by the sector during the qualifying years, while targeting rockfish. The allocations of these species would be a percentage of the TAC, based on the average annual percentage of retained catch of all sectors, harvested by the sector in the CGOA rockfish fishery. Under this approach, the sector's annual percentage of retained secondary species catch while targeting rockfish, relative to total retained catch of that secondary species by all gear types and participants, would be averaged over the qualifying years. Within the sector, these secondary species allocations would be allocated in proportion to the allocation of CGOA rockfish to cooperatives and the limited access fishery. Pacific cod would be managed using a revised maximum retainable allowance percentage of 4 percent of target rockfish. All other species (except halibut PSC) would be managed using the current MRA levels.

Halibut mortality would also be allocated under the pilot program, based on halibut mortality during the qualifying period. The total allocation to the pilot program would be based on total mortality, summed across both sectors, during the qualifying period (1996 to 2002, inclusive). To determine the annual allocation to the pilot program, the total mortality would be divided by the number of qualifying years (seven). This percentage of the overall allocation would be divided among the sectors, based on each sector's relative share of the target rockfish allocation under the program (i.e., total qualified rockfish pounds).

Cooperative agreements under this alternative would have a term of one year, and would include a fishing plan for the harvest of the cooperative's allocation. Cooperatives are intended only to conduct and coordinate fishing of their member's allocations, and would not be formed under the Fishermen's Collective Marketing Act (and therefore could not negotiate prices). Cooperative members would be jointly and severally liable for the harvest of the cooperative's allocation. The cooperative would be required to file its agreement with NOAA Fisheries to receive an annual allocation. A cooperative would be required to accept membership of any LLP license holder eligible for the cooperative subject to the same terms and conditions as governing other members. A cooperative could include fishing practice codes of conduct in its membership agreement. Cooperatives that meet a minimum two member threshold would be permitted to engage in the transfer of annual allocations to other cooperatives. Catcher processors could also transfer annual allocations to catcher vessel cooperatives, but could not acquire annual allocations from catcher vessel cooperatives. Any transfers would be temporary transfers of a single year's annual allocation with the history reverting to the LLP license from which it came. No person would be permitted to hold or use in excess of 20 percent of the catcher processor pool. This cap would be applied to limit the amount of shares that a person could bring to a cooperative, either through license holding or through inter-cooperative transfers. To apply this cap, inter-cooperative transfers would need to be conducted through individuals. In addition, no catcher processor could harvest in excess of 60 percent of the catcher processor pool.[8] Persons or vessels with history in excess of these limits would be grandfathered at their historic levels.

[8] History transferred to catcher vessel cooperatives would remain subject to the catcher processor caps and would not be subject to catcher vessel or shoreside processor caps.

The season for the rockfish cooperatives would be extended substantially beyond the current season. The specific season length will be set to meet the management needs of NOAA Fisheries (including monitoring requirements). The Council has recommended a season that opens on the 1st of May, and extends until the 15th of November. As under current management, the limited access portion of the catcher processor CGOA rockfish fishery would open in the beginning of July, and would close when its participants have fully harvested the allocation in that fishery. All species, except for the target rockfish, would be managed with MRAs. The allocated species (shortraker, rougheye, thornyhead, and sablefish) would be managed with a revised MRA, intended to maintain catch levels below the allocated amount. Pacific cod would be managed with a revised MRA of 4 percent. All other species would be managed with MRAs at their current levels.

An LLP license holder that is eligible for the program would be permitted to transfer the license. The transfer would also transfer any privilege to participate in the program that is associated with or arises from holding the license. The interest in the program that is derived from the license would not be severable from the license, nor divisible.

Under all of the pilot program alternatives, sideboards will be established to limit encroachment of participants in the pilot program on other fisheries. Since the CGOA rockfish fishery is prosecuted in July, sideboards are generally intended to limit pilot program participants to their historic harvests in other fisheries during July. Specifically, in Gulf fisheries that are historically constrained by TAC, eligible participants from each sector would be limited to their historic catch, in the aggregate. Sideboards for Gulf fisheries that are historically constrained by halibut PSC would limit eligible participants in each sector to their historic halibut mortality in the month of July, in the aggregate. Since halibut in the Gulf is not managed in each fishery, but is managed Gulf-wide for the deep-water complex and the shallow-water complex, management of the sideboard on a fishery-by-fishery basis would be substantially more complicated than managing one sideboard for the deep-water complex and a second sideboard for the shallow-water complex. NOAA Fisheries would develop two separate halibut sideboards (one for the deep-water complex and the other for the shallow-water complex).[9] These July halibut sideboards would be administered by ending fishing in halibut limited fisheries in a complex by sector members eligible for the rockfish program when the sector halibut limitation is reached in that complex.

Additionally, each catcher processor participant would be required to abide by a stand-down in all the Bering Sea and Aleutian Islands and Gulf of Alaska non-pollock groundfish fisheries. The stand-down would start on the July opening of the rockfish fishery and end on the earlier of two weeks or on the harvest of 90 percent of the participant's cooperative allocation, if the harvest of the allocation began on the traditional July opening. The maximum stand-down would allow participants to begin at a time other than early July, provided they are willing to abide by the two week stand-down.

In lieu of the stand-down in the Gulf of Alaska groundfish fisheries (other than the CGOA rockfish fisheries), a cooperative may (subject to NMFS approval) manage a sideboard of its catch in Gulf of Alaska groundfish fisheries. Under this approach, a cooperative would be limited in the aggregate to the historic catch of target species, if target catch constrains the fishery (or halibut PSC, for halibut PSC constrained fisheries) of its members in the qualifying years.

[9] The deep-water complex includes sablefish, rockfish, deepwater flatfish, rex sole, and arrowtooth flounder. The shallow-water complex includes flathead sole, shallow water flatfish, pollock, and Pacific cod.

Participants that choose to fish in the limited access fishery and who account for less than 5 percent of the allocated catcher processor history of Pacific Ocean perch, would be subject to no sideboard or stand-down, beyond the aggregate sector sideboards. Limited access fishery participants that account for 5 percent or more of the sector's Pacific Ocean perch would be required to stand-down in Gulf of Alaska, as well as in the Bering Sea and Aleutian Islands non-pollock groundfish fisheries, until 90 percent of the limited access Pacific Ocean perch is harvested.

Eligible catcher processors could also choose to "opt-out" of the program, forgoing the opportunity to fish CGOA rockfish. Participants that choose to opt-out would be subject to two week stand-downs in the Gulf of Alaska, Bering Sea, and Aleutian Islands fisheries in which they have less than two years of participation during the first week of July in the qualifying years. History of vessels that "opt-out" of the pilot program would be reallocated within the catcher processor sector, based on history to persons that elect to remain in the fishery.

A program review would also be conducted at the end of both the first and second year under all of the pilot program alternatives. This review would assess the effects of the program on harvesters, processors, communities, and conservation.

Catcher processor cooperatives and individual allocations

Under the catcher processor cooperative and individual allocation alternative, sector allocations of target rockfish, secondary species, and halibut PSC would be made to the catcher processor sector, as described under the catcher processor sector allocation with cooperatives alternative.

After determining the catcher processor sector target rockfish allocations, those allocations would be divided among eligible catcher processors, based on their qualified CGOA rockfish harvest histories. A license holder's fishing history would be the history of the vessel that led to the license and the history of any vessel that fished using the license. Similarly, secondary species (identified above) and halibut PSC would be allocated in proportion to the allocation of CGOA rockfish. Each eligible catcher processor license holder would have the choice of either joining a cooperative, to which an annual allocation would be made based on the history of its members, or receiving an annual allocation based on its own fishing history, which could be fished independently. Pacific cod would be managed by a revised MRA of 4 percent of target rockfish for participating catcher processors. All other species would be managed under their current MRAs.

Sideboards would limit the participation of eligible catcher processors in other fisheries as described under the catcher processor sector allocation with cooperatives alternative above, with one exception. Since this alternative does not include a limited access fishery, the limited access sideboards would not apply. Program reviews would be conducted under this alternative, as under the catcher processor sector allocation with cooperatives alternative.

Catcher vessel cooperative with limited processor entry

Under this alternative, the catcher vessel sector would generally receive a sector allocation of CGOA rockfish, secondary species, and halibut PSC as described under the catcher processor sector allocation alternative. The catcher vessel sector, however, would also receive an allocation of Pacific cod, based on average annual percentage of total CGOA retained catch of Pacific cod taken by the sector during the CGOA rockfish fishery (instead of fishing under an MRA, as the catcher processor sector would). The Council also considered several options for management of shortraker and rougheye rockfish for the catcher vessels sector, including an adjusted allocation or fishing those species under an MRA. Specific options for management of these species for the

catcher vessel sector appear in 3.3.1.2 of the elements and options below.[10] Cooperative allocations of CGOA rockfish, secondary species, and halibut PSC would be based on the collective CGOA target rockfish histories of members during the qualifying years based on the method and qualifying years described under the catcher processor alternatives.

Holders of permanent or interim catcher vessel LLP licenses with targeted catch of CGOA rockfish in the qualifying years would be eligible for the main program. Eligible license holders would have the choice of either joining a cooperative, to which an annual allocation would be made based on the rockfish history of its members, or fishing in a limited entry competitive fishery open to eligible license holders that choose not to join a cooperative. The limited access fishery would receive the allocation of non-members of cooperatives. The limited access fishery would be closed on the catch of the allocation of CGOA rockfish or allocated halibut PSC necessary to support the fishery. Since the secondary species allocations are too small to support the current MRAs, MRAs for secondary species would be reduced from their current level in the limited access fishery, to a level that is likely to support incidental catch within the limits of that allocation.

All catcher vessel harvests (including those in the limited access fishery) would be required to be delivered to an eligible processor. To be eligible, a processor must have processed in excess of 250 metric tons of CGOA rockfish per year, in four of the years from 1996 to 2000, inclusive. An option could qualify any processor that processed in excess of 250 metric tons of aggregate CGOA rockfish in any one of the qualifying years, provided that the processor has invested in excess of a threshold amount (either $1,000,000 or $5,000,000) in its facility.[11] Processor licenses would not be transferable. In determining eligibility for a processing license, if a facility has closed and another processor has purchased the history of the closed facility, that history would be credited to the purchaser. Processing by a single entity would be limited to 30 percent of the catcher vessel sector allocation. Any processor that historically processed in excess of the cap would be grandfathered at its historic level of processing.

A cooperative would be required to have a minimum of 4 eligible LLPs. The cooperative would be required to file its agreement with the NOAA Fisheries to receive an annual allocation. As under the catcher processor cooperative alternative, cooperative agreements would have a term of one year[12] and would include a fishing plan for the harvest of the cooperative's allocation. Cooperatives are intended only to conduct and coordinate fishing of their member's allocations and would not be FCMA cooperatives.[13] Cooperative members would be jointly and severally liable for the harvest of the cooperative's allocation. A cooperative would be required to accept membership of any LLP license holder eligible for the cooperative, subject to the same terms and conditions as governing other members. A cooperative could include fishing practice codes of conduct in its membership agreement. Processor affiliated license holders would be permitted to

[10] The preferred alternative examines the Council's preferred option for shortraker and rougheye management, a 2 percent aggregate MRA along with provision to put shortraker rockfish on PSC status, if the fleet catches in excess of 9.72 percent of the shortraker TAC.
[11] The Council chose not to include this suboption in its preferred alternative.
[12] The Council considered an option for a two year term for cooperative agreements that it chose not to include in its preferred alternative.
[13] FCMA refers to the Fishermen's Collective Marketing Act (15 U.S.C. 521), under which fishermen are granted limited antitrust protection to form cooperatives for collectively catching, producing, preparing for market, processing, handling, and marketing products. As such, harvest cooperatives formed under this action would not necessarily be subject to the antitrust immunity of the FCMA. Whether participants in the harvest cooperatives under this program would be eligible to form a cooperative under the FCMA, would be subject to the rules of that Act.

join cooperatives, but would not be permitted to engage in price negotiations, except as permitted by antitrust laws.

Cooperatives would be permitted to engage in the transfer of annual allocations. Catcher vessel cooperatives would be permitted to acquire annual allocations from catcher processor cooperatives, but could not transfer annual allocations to catcher processor cooperatives. Any transfers would be temporary transfers of a single year's annual allocation with the history remaining with the LLP license from which it originates. Future annual allocations would be based on the cooperative membership of the LLP holder. No catcher vessel cooperative would be permitted to hold or use in excess of 30 percent of the catcher vessel sector's allocation, while no person would be permitted to hold or use in excess of 5 percent of the catcher vessel sector's allocation. This cap would be applied to limit the amount of shares that a person could bring to a cooperative, either through license holding or through inter-cooperative leasing. To apply this cap, inter-cooperative transfers would need to be conducted through individuals. Persons receiving an allocation in excess of the cap would be grandfathered at the level of the allocation.

Sideboards would limit the participation of eligible catcher vessels in other fisheries. As would be applied to catcher processors, a general sideboard would limit catcher vessel participants, in the aggregate, to their historic harvests in other fisheries in the month of July, the month during which the rockfish fisheries have been prosecuted historically. To accomplish this end, in Gulf fisheries that are historically constrained by TAC, eligible participants from each sector would be limited to their historic catch in the month of July, in the aggregate. Sideboards for Gulf fisheries that are historically constrained by halibut PSC would limit eligible participants in each sector to their historic halibut mortality in the month of July, in the aggregate. Since halibut in the Gulf is not managed in each fishery, but is managed for the deep-water complex and the shallow-water complex, management of the sideboard on a fishery-by-fishery basis would be substantially more complicated than managing one sideboard for the deep-water complex and a second sideboard for the shallow-water complex. NOAA Fisheries would develop two separate halibut sideboards (one for the deep-water complex and the other for the shallow-water complex).[14] Qualified catcher vessels would also be limited by a second set of sideboards that would prohibit their entry to the Bering Sea and Aleutian Islands direct fisheries for yellowfin sole, "other" flatfish, or Pacific Ocean perch in the month of July. In addition, qualified catcher vessels would be limited in the month of July to their historic average total catch in the Bering Sea and Aleutian Islands Pacific cod fishery, in the aggregate. Catcher vessel participants in the AFA that are not exempt from Gulf sideboards under the AFA would be exempt from any sideboards under this program.[15] Program reviews would be conducted as under the catcher processor sector allocation alternative.

Catcher vessel cooperative with processor associations (the preferred catcher vessel alternative)

Under this alternative, the catcher vessel sector would receive an allocation as described under the catcher processor sector allocation alternative. In addition, annual allocations of CGOA rockfish, secondary species (with the exception of shortraker and rougheye rockfish), and halibut PSC would be made to cooperatives, based on the CGOA rockfish history of their members, and to a limited access fishery, as described under the preceding catcher vessel alternative. Shortraker and rougheye would be managed under a 2 percent aggregate MRA, along with a provision to put

[14] The deep-water complex includes sablefish, rockfish, deepwater flatfish, rex sole, and arrowtooth flounder. The shallow-water complex includes flathead sole, shallowwater flatfish, pollock, and Pacific cod.

[15] The Council considered an option to exempt all AFA participants from these sideboards, but elected to only exempt those vessels that are not exempt from the AFA sideboards in the Gulf.

shortraker rockfish on PSC status, if the fleet catches in excess of 9.72 percent of the shortraker TAC. Holders of a permanent or interim CGOA LLP license at the time of implementation, with a targeted landing of CGOA rockfish in the directed fishery, would be eligible for the program.

Eligible catcher vessel LLP license holders would have the choice of either joining a cooperative, orfishing in a limited entry competitive fishery open to eligible license holders that choose not to join a cooperative. The allocation to the competitive, limited access fishery would be based on the combined histories of participants in that fishery. All harvests from the competitive, limited access fishery must be landed with an eligible processor. This competitive fishery would be closed on the attainment of the allocation of CGOA rockfish, or PSC halibut that is necessary to support that rockfish harvest. Secondary species would be managed in the limited access fishery as described under the previous catcher vessel alternative.

Each eligible catcher vessel license holder would be eligible to join a cooperative associated with the eligible processor to which it delivered the most pounds of CGOA rockfish during the processor qualifying period (1996 through 2000), four years as selected by each eligible processor). To be eligible, a processor must have processed in excess of 250 metric tons of CGOA rockfish per year in four of the years from 1996 to 2000, inclusive.[16] In determining eligibility for a processing license, if a facility has closed and another processor has purchased the history of the closed facility, that history would be credited to the purchaser.

The terms of the cooperative/processor association are not specified, but would be subject to negotiation and agreement by each processor and its associated cooperative. Processor licenses and associations would not be transferable. No processing entity would be permitted to process in excess of 30 percent of the aggregate catcher vessel sector allocation. Any processor that historically processed in excess of the chosen cap would be grandfathered at its historic level of processing.

Only a single cooperative may form in association with each eligible processor. To form, a cooperative would be required to have membership of the holders of in excess of 75 percent of the harvest history eligible for the cooperative. The cooperative would be required to file its agreement, and a contract with the associated processor, with the NOAA Fisheries to receive an annual allocation. Cooperatives are intended only to conduct and coordinate fishing of their member's allocations and would not be FCMA cooperatives. As under the catcher processor cooperative alternative, cooperative agreements would have a term of one year and would include a fishing plan for the harvest of the cooperative's allocation. Cooperative members would be jointly and severally liable for the harvest of the cooperative's allocation. A cooperative would be required to accept membership of any LLP license holder eligible for the cooperative, subject to the same terms and conditions as governing other members. A cooperative could include fishing practice codes of conduct in its membership agreement. Processor affiliated license holders would be permitted to join cooperatives, but would not be permitted to engage in price negotiations, except as permitted by antitrust laws. No catcher vessel cooperative would be permitted to hold or use in excess of 30 percent of the catcher vessel sector's allocation, while no person would be permitted to hold or use in excess of 5 percent of the catcher vessel sector's allocation. This cap would be applied to limit the amount of shares that a person could bring to a cooperative, either

[16] The Council motion identifying alternatives for analysis was unclear whether this alternative includes the option to qualify any processor that processed in excess of 250 metric tons of aggregate CGOA rockfish, in any one of the qualifying years, provided that the processor has invested in excess of a threshold amount (either $1,000,000 or $5,000,000) in its facility. The analysis examined that option. The Council, however, chose to exclude it from its preferred alternative.

through license holding or through inter-cooperative leasing. To apply this cap, inter-cooperative transfers would need to be conducted through individuals. Persons receiving an allocation in excess of the cap would be grandfathered at the level of the allocation.

Cooperatives would be permitted to engage in the transfer of annual allocations, subject to the consent of the associated processor. Catcher vessel cooperatives would be permitted to acquire annual allocations from catcher processor cooperatives, but could not transfer annual allocations to catcher processor cooperatives. Any transfers would be temporary transfers of a single year's annual allocation, with the history remaining with the LLP license of origin. Future annual allocations would be based on the cooperative membership of the LLP holder.

Sideboards are intended to limit eligible participants in the catcher vessel program to their historic activity in other fisheries. The sideboards under this alternative are the same as those described under the catcher vessel cooperative with limited processor entry alternative. A program review would be conducted under this alternative, as described under the catcher vessel cooperative with limited processor entry alternative.

Elements and options defining the pilot program alternatives

The Council has identified the following elements and options to define its alternatives. Elements included in the Council's preferred alternative are shown in bold.

Central Gulf of Alaska Rockfish Pilot Program
Alternatives, Elements and Options

The Council recommends the following elements and options for the CGOA Rockfish Pilot program be included for analysis:

Catcher Vessel Alternatives

1) **Status Quo**
2) **Cooperative program with license limitation program for processors**
3) **Cooperative program with cooperative/processor associations**

Catcher Processor Alternatives

1) **Status Quo**
2) **Cooperative Program**
3) **Sector Allocation**

Alternatives 2 and 3 are defined by the following elements and options. Differences in the elements and options between the two alternatives and across the two sectors are noted.

1 Set-asides

Prior to allocation of catch history to the sectors, NMFS shall set aside:

1.1 ICA: An Incidental Catch Allocation (ICA) of POP, Northern rockfish and pelagic shelf rockfish to meet the incidental catch needs of fisheries not included in the pilot program

1.2 Entry Level Fishery: A percentage of POP, Northern rockfish and pelagic shelf rockfish for catcher vessels not eligible to participate in the program, as mandated in the Congressional language. For the duration of this program, the annual set aside will be 5% of each of these target rockfish species.

- **Allocations shall be apportioned between trawl and non-trawl gear:**

50/50

The trawl sector's 50 percent allocation by weight (based on the aggregate TAC for Pacific Ocean perch, Northern and pelagic shelf rockfish) shall first be Pacific Ocean perch.

- **o Unharvested allocations to either sector shall be available to both sectors at the end of the third quarter.**
- **o Prosecution of the entry level fishery will be supported by general allocations of PSC to the gear type not allocated under 3.3.1.3 and the general allocations of secondary species not allocated under 3.3.1.2**

2 Entry-Level Fishery

2.1 Catcher Vessel Participation:

Vessels that can participate in the Entry Level fishery are those vessels that did not qualify for the CGOA rockfish pilot program.

2.2 Processor Participation:

Processors who purchase and process the entry level rockfish quota must be non-qualified processors.

2.3 Fishery participation:

Before the beginning of each fishing year an application must be filed with NMFS by the interested vessel that includes a statement from a non-qualified processor confirming an available market.

2.4 NMFS will determine:

- **NMFS will provide for an entry level fishery, which will be a limited access competitive fishery in the non-trawl and trawl sectors.**
  Equal shares distributions to the vessel applicants in the trawl sector
  Limited access competitive fishery in the non-trawl sector
  Entry permits are non-transferable and must be fished by the named vessel

Start dates for the entry level fishery should be January 1 for fixed gear and approximately May 1 (if sufficient halibut PSC is available, if there is not the start date will be on the next release of halibut PSC) for trawl gear.

The Council recommends to NMFS to exempt the entry level non-trawl sector from VMS requirements.

3 Sector Allocations

3.1 Sector Definitions

Trawl catcher vessel

Trawl catcher processor

A trawl catcher-processor is a trawl vessel that has a CP LLP license and that processes its catch on board.

3.2 Rationalized Areas

- **History is allocated for the CGOA only (NMFS statistical areas 620 and 630)**

3.3 Sector Allocations

- **Catch history is determined by the sector qualified catch in pounds as a proportion of the total qualified catch in pounds.**
- **Sector allocation is based on individual qualified vessel histories with the drop-2 provision at the vessel level.**
- **The eligibility for entry into the program is one targeted landing of POP, Northern rockfish or PSR caught in CGOA during the qualifying period.**
- **The CP catch history will be based on WPR data.**

3.3.1 Each sector is allocated catch history based on:

The sum of all catch history of vessels in that sector for which it earned a valid, permanent, fully transferable CGOA LLP endorsement, for the years 1996-2002 drop two.

Suboption: include history of vessels which hold a valid interim endorsement on implementation of the program

3.3.1.1 Target species:

- **Qualified target species history is allocated based on retained catch (excluding meal)**
- **History will be allocated to each sector for POP, Northern rockfish and PSR caught in CGOA based on retained catch during the open season**
- **Different years may be used for determining the history of each of the three rockfish species.**
- **Full retention of the target rockfish species required**

3.3.1.2 Secondary species:

- **Secondary species history is allocated based on retained catch over retained catch while targeting the primary rockfish species listed above.**
- **History will be allocated to each sector for sablefish, shortraker/rougheye rockfish, thornyheads and Pacific cod.**

  Participants must retain all allocated secondary species and stop fishing when cap is reached.
- **All non-allocated secondary species will be managed by MRA, as in the current regime. This includes Arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, pollock, other species, Atka mackerel and other rockfish.**
- **Except as otherwise provided below, secondary species allocations will be based on:**

  Percentage of catch by sector of the secondary species within the rockfish target fisheries divided by the total number of years in the qualifying period. The calculated percentage is multiplied by the secondary species quota for that fishery year and allocated to each sector in the pilot program (retained catch over retained catch).

  Allocations of Pacific cod as a secondary species will be at the following rate of harvest history:

  100 percent

  For the offshore sector, Pacific cod history will be managed by MRA of 4 percent.

  Shortraker and Rougheye

  For the CP sector, a shortraker allocation of 30.03 % of the TAC, to be managed as a hard cap, and a rougheye allocation of 58.87% of the TAC, to be managed as a hard cap.

For the CV sector, shortraker and rougheye should be managed with a combined MRA of 2%. If harvest of shortraker by the CV sector reaches 9.72 % of the shortraker TAC, then shortraker should go on PSC status for that sector.

Allocations of shortraker and rougheye as a secondary species will be at the following rate of harvest history:
75 to 100 percent

Options for management of shortraker and rougheye for the catcher vessel sector:

Option 1: The shortraker/rougheye allocation for the catcher vessel sector will be based on the total catch of the sector during the target rockfish fishery over total catch of all sectors which yields the highest annual percentage during the qualifying years. The shortraker/rougheye hard cap for the catcher vessel target rockfish fishery will be calculated based on the aggregate shortraker/rougheye TAC and then divided:
A) 50 percent shortraker and 50 percent rougheye
B) 60 percent shortraker and 40 percent rougheye

Option 2: Manage catcher vessel shortraker and rougheye using an MRA between 0.7 percent (average use) and 1.1 percent (highest annual use)

(The analysis shall include a discussion of other fisheries that take shortraker and rougheye incidentally and what the impacts to those fisheries might be of allocating amounts of shortraker and rougheye to the rockfish trawl fisheries that may not leave enough TAC to accommodate historical harvests in other fisheries (i.e., it appears that historical catch in other fisheries exceeds what the 2005 amount available would be after trawl rockfish allocations are subtracted from the TAC).)

3.3.1.3 Prohibited species (halibut mortality):

- **Allocation to the pilot program will be based on historic average usage, calculated by dividing the total number of metric tons of halibut mortality in the CGOA rockfish target fisheries during the years '96-'02 by the number of years (7). This allocation will be divided between sectors based on:**
  The relative amount of target rockfish species allocated to each sector (e.g., total qualified catch).

4 Allocation from Sector to Vessel

4.1 Within each sector, history will be assigned to LLP holders with CGOA endorsement that qualify for a sector under the 'sector allocations' above. The allocations will be to the current owner of the LLP of the vessel which earned the history.

4.2 Basis for the distribution to the LLP license holder is: the catch history of the vessel on which the LLP license is based and shall be on a fishery-by-fishery basis. The underlying principle of this program is one history per license. In cases where the fishing privileges (i.e., moratorium qualification or LLP license) of an LLP qualifying vessel have been transferred, the distribution of harvest shares to the LLP shall be based on the aggregate catch histories of (1) the vessel on which LLP license was based up to the date of transfer, and (2) the vessel owned or controlled by the LLP license holder and identified by the license holder as having been operated under the fishing

privileges of the LLP qualifying vessel after the date of transfer. (Only one catch history per LLP license.)

4.3 Target species:

Each LLP holder will receive an allocation of history equivalent to their proportion of the total of the sector qualifying history.

4.4 Secondary species:

Each LLP holder will receive an allocation of sector history proportional to their allocation of target rockfish history

4.5 PSC (halibut mortality)

- **Each LLP holder will receive an allocation of halibut mortality equivalent to their proportion of the sector rockfish history**

4.6 Allocations of secondary species:

May be fished independently of the primary species allocations.

5 Co-op provisions

5.1 Duration of cooperative agreements is 1 year. *(option for 2 years)*

5.2 For all sectors

- **The co-op membership agreement and the Contract will be filed with the RAM Division. The Contract must contain a fishing plan for the harvest of all co-op fish.**
- **Co-op members shall internally allocate and manage the co-op's allocation per the Contract.**
- **Subject to any harvesting caps that may be adopted, allocated history may be transferred and consolidated within the co-op to the extent permitted under the Contract.**
- **The Contract must have a monitoring program. Co-op members are jointly and severally responsible for co-op vessels harvesting in the aggregate no more than their co-op's allocation of rockfish species, secondary species and PSC mortality, as may be adjusted by inter-co-op transfers.**
- **Co-ops may adopt and enforce fishing practice codes of conduct as part of their membership agreement.**
- **Co-op membership agreements shall allow for the entry of other eligible harvesters into the co-op under the same terms and conditions as agreed to by the original agreement.**
- **Co-ops will report annually to the Council as per AFA.**
- **The cooperatives formed under this program are harvest associations that are intended only to conduct and coordinate harvest activities of their members and are not FCMA cooperatives. Processor affiliated vessels will be permitted to join harvest cooperatives.**

The Council recommends a season start date of May 1 and a closing date of November 15.

5.3 CP sector:

For Alternative 2:

History is allocated to the current owner of the LLP of the vessel that earned the history.

- *Owners may fish their allocation independently if the LLP has a CGOA endorsement, or may enter into a cooperative arrangement with other owners.*
- *More than one co-op may form within the sector*
- *Any number of eligible LLPs may form a co-op*
- *Allocations may be transferred between co-ops of at least:*
  two LLPs

For Alternative 3:

History is allocated to the current owner of the LLP of the vessel that earned the history.

- **More than one co-op may form within the sector**
- **Allocations may be transferred between co-ops of at least:**
  two LLPs
- **Harvesters may elect not to join a co-op, and continue to fish in an LLP/Open Access fishery. The LLP's historic share will be fished in a competitive fishery open to rockfish qualified vessels who are not members of a cooperative.**
- **Participants would have a choice of participating in a co-op, participating in a limited access fishery, or opting out of the rockfish pilot program.**

5.4 CV sector:

For Alternative 2:

- *Voluntary co-ops may form between eligible harvesters.*
- *All cooperative harvests under this program must be delivered to eligible processors.*
- *Harvesters may elect not to join a co-op, and continue to fish in an LLP/Open Access fishery. The LLP's share will be fished in a competitive fishery open to rockfish qualified vessels who are not members of a cooperative and must be delivered to one of the qualified processors.*
- *An eligible processor is a processing facility that has purchased 250 MT of aggregate Pacific Ocean Perch, Northern Rockfish, and Pelagic Shelf rockfish harvest per year, for 4 years, from 1996 to 2000. Eligible processors will be issued a license under this program. Licenses are not transferable.*
  Suboption: An eligible processor is a processing facility with a substantial investment of depreciated capital assets:
  Option A) $1,000,000 or more
  Option B) $5,000,000 or more, and
  that has purchased 250 MT of aggregate Pacific Ocean Perch, Northern Rockfish, and Pelagic Shelf rockfish in any of the qualifying years.
- *If a processing facility has closed down and another processing facility has acquired that processing history through purchase, for the purpose of determining processor eligibility the history belongs to the facility that purchased that history. That history can only be credited to another facility in the community that it was generated in for purposes of establishing eligibility under this program.*
- *The harvesters that enter into a co-op membership agreement shall be the members of the co-op.*
- *A pre-season Contract between eligible, willing harvesters is a pre-requisite to a cooperative receiving an annual allocation.*
- *Co-op membership agreements will specify that processor affiliated harvesters cannot participate in price setting negotiations except as permitted by general antitrust law.*
- *Catcher vessel cooperatives are required to have at least 4 eligible LLPs*
- *Co-ops may engage in inter-cooperative transfers of annual allocations to other cooperatives.*
- *No processor associations required by co-ops.*

For Alternative 3:

- **Voluntary co-ops may form between eligible harvesters in association with processors.**
- **Catcher vessel co-ops must be associated with an eligible processor.**
- **An eligible processor is a processing facility that has purchased 250 MT of aggregate Pacific Ocean Perch, Northern Rockfish, and Pelagic Shelf rockfish harvest per year, for 4 years, from 1996 to 2000.**
- **A harvester is eligible to join a cooperative in association with the processing facility to which the harvester delivered the most pounds of the three rockfish species combined during the year's 1996 – 2000 drop 1 year (processor chooses the year to drop, same year for all LLPs). If an LLP holder has no deliveries to a qualified processor, the LLP holder may join a coop with any one of the qualified processors, but their membership would not be considered in determining whether the threshold is met for co-op formation.**
- **Harvesters may elect not to join a co-op, and continue to fish in an LLP/Open Access fishery. The LLP's share will be fished in a competitive fishery open to rockfish qualified vessels who are not members of a cooperative and must be delivered to one of the qualified processors.**
- **If a processing facility has closed down and another processing facility has acquired that processing history through purchase, the history belongs to the facility that purchased that history. That history must remain in the community that it was generated in.**
- **The harvesters that enter into a co-op membership agreement shall be the members of the co-op. The processor will be an associate of the cooperative but will not be a cooperative member.**
- **A pre-season Contract between eligible, willing harvesters in association with a processor is a pre-requisite to a cooperative receiving an annual allocation.**
- **Co-op membership agreements will specify that processor affiliated harvesters cannot participate in price setting negotiations except as permitted by general antitrust law.**
- **Processors are limited to 1 co-op per plant.**
- **Catcher vessel cooperatives are required to have at least:**
  75 percent of the eligible historical shares for each co-op associated with its processor.
- **Co-ops may engage in inter-cooperative transfers of annual allocations to other cooperatives with agreement of the associated qualified processor.**

5.5 Sector Transfer provisions

CP annual allocations may be transferred to CV cooperatives. CV annual allocations may not be transferred to CP cooperatives.

All transfers of annual allocations would be temporary and history would revert to the original LLP at the beginning of the next year.

A person holding an LLP that is eligible for this program may transfer that LLP. That transfer will effectively transfer all history associated with the LLP and any privilege to participate in this program that might be derived from the LLP.

6 Co-op harvest use caps

6.1 CVs:

No person may hold or use more than 5% of the CV historic shares, using the individual and collective rule (with grandfather provision).

Control of harvest share by a CV co-op shall be capped at:
30% of aggregate POP, Northern Rockfish and PSR for the CV sector

6.2 CPs:

No person may hold or use more than 20% of the CP historic shares, using the individual and collective rule (with grandfather provision).

Control of harvest share by a CP shall be capped at:
60% of aggregate POP, Northern Rockfish and PSR for the CP sector
Eligible CPs will be grandfathered at the current level

7 Shoreside processor use caps

Shoreside processors shall be capped at the entity level.
No processor shall process more than:
30% of aggregate POP, Northern Rockfish and PSR for the CV sector
Eligible Processors will be grandfathered.

The year 2002 will be used as a base (or index) year for applying the aggregate caps.

8 Program Review

Program will be reviewed the first and second year after implementation to objectively measure the success of the program, including benefits and impacts to harvesters, processors and communities. Conservation benefits of the program would also be assessed. The shortraker/rougheye allocation and assessment will be reviewed.

In the event this program has a duration of longer than two years, the Council will analyze the viability of the entry level fishery.

As part of its annual review, the Council should consider the effects of "opting-out" of the CP rockfish program. Specifically, if the Council finds that the opt-out provision is used to consolidate rockfish catch while avoiding rockfish program sideboards, then the Council should take immediate action to provide a disincentive for future abuses by allocating "opt-out" fish to the fishery, and not the sector.

9 Sideboards

9.1 General Provisions

There are no exemptions from sideboards, except for a partial exemption for CP vessels which opt out of the pilot program or join cooperatives.

a. For fisheries that close on TAC in the GOA, the qualified vessels in each sector (trawl CV and trawl CP) would be limited, in aggregate, in the month of July to the historic average catch of those vessels based on the retained catch as a percentage of the retained catch in the fishery in the month of July during the qualification years 1996 to 2002. Fisheries that this sideboard provision would apply to include West Yakutat rockfish and WGOA rockfish.

b. For flatfish fisheries in the GOA that close because of halibut bycatch, the qualified vessels in each sector (trawl CV and trawl CP) would be limited, in the aggregate, in the month of July to the historic average halibut mortality taken by those vessels in the target flatfish fisheries in the month of July by deep and shallow complex as a Gulf-wide cap.

c. In the event that one or more target rockfish fisheries are not open, sideboard restrictions will not apply for those target allocations.

- IFQ halibut and sablefish are exempt from sideboard provisions

9.2 CP Specific Sideboard Provisions

CP vessels may decide to opt out of the CGOA pilot program on an annual basis. These CP vessels may not target POP, Northern rockfish or Pelagic Shelf rockfish in the CGOA in the years they choose to opt out. They may retain these species up to the MRA amount in other fisheries. They will be sideboarded at the sector level in the GOA as described in 9.1.

The history of CP vessels which opt out will remain with the sector.

CPs that opt out of the rockfish pilot program will be prohibited, for two weeks following the start of the traditional July rockfish fishery, from entering other GOA fisheries in which they have not previously participated. Participation shall be defined as having been in the target fishery during the first week of July in at least two of the qualifying years. For purposes of qualifying under this provision, history from area 650 (SEO) will be considered the same as history from area 640 (WY). The following weekending dates will be used for determining participation in a target fishery:

1996 – July 6
1997 – July 5
1998 – July 4
1999 – July 10
2000 – July 15
2001 – July 7
2002 – July 6

Opting out is an annual decision. CP vessels which choose to opt out must so notify NMFS. The decision to opt out should not in any way alter the status of their catch history for future rationalization programs.

For the CP sector, the pilot program fishery participants must either:

1) **start fishing in the target rockfish fisheries at the same time as the opening of the CGOA rockfish limited access fisheries (in July) and harvest 90% of their CGOA**

rockfish allocation prior to entering any other BSAI or GOA non-pollock groundfish fishery, or

2) **stand-down for two weeks from the opening of the CGOA rockfish limited access fishery prior to participating in any other BSAI or GOA non-pollock groundfish fishery.**

A vessel which has met either stand-down requirement can then move into the BSAI or GOA open access fisheries subject to the sector level limitations in the GOA in 9.1.

To the extent permitted by the motion, history may be leased between vessels. Each person that transfers its history to another CP or CV must still refrain from operating in any other BSAI or GOA non-pollock groundfish fishery until the earlier of:

1) **90% of all of the CGOA rockfish allocation on the stacked vessel is harvested in the CGOA, provided fishing of the allocation began on or after the opening of the CGOA rockfish limited access fishery**
2) **two weeks from the opening of the CGOA rockfish limited access fishery prior to participating in any other BSAI or GOA non-pollock groundfish fishery.**

Members of a cooperative will be subject to all limitations and restrictions described in 9.1 and 9.2 except that cooperative members shall not be subject to any stand-down in the GOA groundfish fisheries. The stand-down provision in the BSAI groundfish fisheries will apply to cooperative members.

In addition to the other limitations and restrictions described above, each cooperative will be limited in the aggregate:

a. **for fisheries that close on TAC in the GOA in the month of July, to the historic average total catch of the cooperative members in the month of July during the qualification years 1996 to 2002. Fisheries that this sideboard provision would apply to include West Yakutat rockfish and WGOA rockfish, and**
b. **for flatfish fisheries in the GOA that close because of halibut bycatch in the month of July, to the historic average halibut mortality taken by cooperative members in the target flatfish fisheries in the month of July by deep and shallow complex.**

For Alternative 3:

The limited access fishery starts at the same time as the traditional rockfish target fishery (early July). For vessels that account for less than 5 percent of the allocated CP history in the Pacific Ocean perch fishery that participate in the limited access rockfish fishery, there are no additional intra-sector sideboards. For vessels that account for greater than or equal to 5 percent of the allocated CP history in the Pacific Ocean fishery that participate in the limited access rockfish fishery, GOA and BSAI stand-downs are in place until 90 percent of the limited access Pacific Ocean perch quota is achieved.

The effects of the Council motion on CP sideboards can be summarized to contain the following provisions:

<u>Opt OUT Vessels</u>

1-subject to 9.1(a) at aggregate sector level – (WYAK & WGOA rockfish)
2-subject to 9.1(b) at aggregate sector level – (GOA flatfish halibut limits)

3-prohibited from directed fishing for CGOA rockfish
4-stand-downs do not apply (except in GOA fisheries for which a vessel doesn't have prior participation)
5-history stays with sector (pro-rata to Limited Access and Coop vessels)

Opt IN Vessels (Co-op)

1-subject to 9.1(a) at aggregate sector level – (WYAK & WGOA rockfish)
2-subject to 9.1(b) at aggregate sector level – (GOA flatfish halibut limits)
3-also subject to co-op's share of 9.1(a) sideboard – (WYAK & WGOA rockfish)
4-also subject to co-op's share of 9.1(b) sideboard – (GOA flatfish halibut limits)
5-subject to 2 week stand-down in BSAI groundfish
6-not subject to stand-downs in GOA fisheries – IF - NMFS accepts the co-op sideboard monitoring program – ELSE – 2 week stand-down or until 90 % of the co-op's CGOA rockfish is harvested

Opt IN Vessels – (Limited Access)

1-subject to 9.1(a) at aggregate sector level – (WYAK & WGOA rockfish)
2-subject to 9.1(b) at aggregate sector level – (GOA flatfish halibut limits)
3-can't fish CGOA rockfish before July
4-If 5% or >, THEN:
a) stand-down from BSAI groundfish until 90% of POP taken
b) stand-down from GOA non-pollock groundfish until 90% of CGOA POP is taken
5-If <5%, THEN:
a) 2 week stand-down from BSAI groundfish doesn't apply
b) 2 week stand-down from GOA non-pollock groundfish doesn't apply

9.3 CV Specific Sideboard Provisions

- **The qualifying vessels in the trawl CV sector cannot participate in the directed yellowfin sole, other flatfish (flathead, etc) or Pacific Ocean perch fisheries in the BSAI in the month of July.**
- **Qualifying vessels in the trawl CV sector would be limited, in aggregate, in the month of July, to the historic average catch of those vessels in the BSAI Pacific cod fishery based on the retained catch as a percentage of retained catch in the CV trawl fishery in July during the qualification years 1996 to 2002.**
- **AFA non-GOA exempt CVs qualified under this program are subject to the restraints of AFA sideboards and their coop agreement, and not subject to additional sideboards under this program.**

In the event this program has a duration of more than 2 years, the Council will reconsider the issue of use/ownership caps for companies and vessels.

2.4. Existing Conditions in the Fishery

This section describes the conditions in the CGOA rockfish fishery under the current management. Because the status quo alternative is continuation of the current management and continuation of that management is unlikely to result in substantial change in the fisheries, this

section also provides much of the status quo baseline that is used to assess the effects of the pilot program alternatives under consideration. The section begins with a brief description of the management of the fisheries, and the stocks, biology, and environmental conditions. Participation patterns in harvesting and processing in the fisheries are described, including a discussion of the relationship between those two sectors and a brief summary of the other fisheries that CGOA rockfish participants also participate in. Ex-vessel pricing practices are described and estimated historic prices are provided. Product markets are described and estimated historic first wholesale prices are provided. A brief description of community and social conditions are provided as background for the socioeconomic analysis.

2.4.1. Management of the fisheries

Under the current management the Gulf of Alaska rockfish fisheries open on January 1st for non-trawl gear participants. The opening for trawl gear is near July 1st, but varies year-to-year. The trawl opening is generally timed to coincide with the availability of the quarterly halibut PSC allocation. The fishery is also timed to accommodate the sablefish longline survey that occurs later in the summer. The rockfish fisheries, which also take some sablefish, must be completed early enough to allow the redistribution of sablefish stocks to avoid possible survey bias. The opening is also scheduled to accommodate in-season management so that managers have adequate catch and effort information to make Federal Register closure announcements, if needed, avoiding the 4th of July holiday weekend. The opening typically coincides with the openings of the Aleutian Islands Pacific Ocean perch and Bering Sea flathead sole fisheries to distribute effort among the fisheries.

Both the trawl and non-trawl fisheries are prosecuted from a single TAC, with the harvest from the trawl fishery limited to the remaining available TAC after the non-trawl fleet has prosecuted the fishery from its January 1st opening. Since the non-trawl fleet has shown little interest in the fisheries historically, most of the TAC has been harvested by the trawl fleet. Table 1 summarizes trawl openings and closings for all gear types in the CGOA directed rockfish fishery, by species, from 1996 through 2003.

Table 1. Season openings (trawl only) and closings (all gear) of the Central Gulf of Alaska directed rockfish fisheries by species 1996 through 2003.

			Closures			
Year	Opening for species	Opening date	Pacific Ocean Perch	Northern Rockfish	Pelagic Shelf Rockfish	Reason
1996	all	July 1	July 11	July 20	none	TAC (POP, Nor)
1996 closure		---	July 15	---	---	PSC
1997	all (incl.PSR nearshore)	July 1	July 7	July 10	June 7	TAC
1997	PSR offshore	July 1	---	---	July 15	TAC
1997 closure	POP	---	July 19	---	---	PSC
1998	all	July 1	July 6	July 14	July 19	TAC
1998 reopen	POP	July 12	July 14	---	---	TAC
1998 closure	POP	---	July 27	---	---	PSC
1999	all	July 4	July 11	July 19	---	TAC(POP, Nor)
1999 reopen	POP, Nor	August 6	August 8	August 10	---	TAC(POP, Nor)
1999 closure		---	September 3	September 3	September 3	PSC
2000	all	July 4	July 15	July 26	July 26	TAC(POP, Nor)/HAL(PSR)
2001	all	July 1	July 12	July 23	July 23	TAC(POP)/HAL(Nor, PSR)
2001 reopen	Nor, PSR	October 1	n/a	October 21	October 21	HAL
2002	all	June 30	July 8	July 21	July 21	TAC
2002 closure		---	August 5	---	---	PSC
2003	all	June 29	July 8	July 31	July 29	TAC

TAC - Total Allowable Catch

PSC - Prohibited Species Catch

Nor - Northern rockfish

PSR - Pelagic Shelf rockfish

Source: NOAA fisheries status reports and groundfish closure summaries

The closings show the general progression of participation in the rockfish fisheries. Most participants target Pacific Ocean perch first, until the TAC of that species is fully harvested. Pacific Ocean perch are a larger biomass and typically are easier to target than the other two species. The season for Pacific Ocean perch usually lasts between one and two weeks. Once the Pacific Ocean perch fishery is closed, vessels will usually move on to the northern rockfish or pelagic shelf rockfish directed fisheries, although some vessels move on to other fisheries in and outside of the CGOA. The directed fisheries for northern rockfish and pelagic shelf rockfish typically last less than one month, closing before the end of July. Managers have exercised some caution in managing the fishery, occasionally closing the fisheries to ensure that the TAC is not exceeded. When sufficient TAC has remained available, managers have reopened the fisheries later to allow participants to complete the harvest.

Typically, harvests of the rockfish TACs have resulted in closure of the fisheries, although at times halibut PSC in the deep-water complex has closed the fisheries. In 2000, halibut PSC closed the pelagic shelf rockfish fishery. In 2001, halibut PSC closed both the northern rockfish and pelagic shelf rockfish fisheries in July. The fisheries were reopened on October 1st, when the fourth quarter halibut allocation became available. The fisheries closed again near the end of October, after harvest of the deep-water halibut PSC allocation.

Until 1998, the Federally-managed rockfish fisheries in the CGOA included nearshore pelagic shelf rockfish (i.e., black and blue rockfish), which are prosecuted primarily in State waters. These species were targeted primarily with non-trawl gear. In 1997 non-trawl effort in the nearshore pelagic shelf rockfish fishery closed that fishery on June 7th, prior to the trawl opening. In 1998, the State took over management of the nearshore pelagic shelf rockfish fisheries. Those fisheries are currently prosecuted exclusively in State waters.

2.4.2. Stocks, biology, and environmental conditions

Current harvests of all species by vessels participating in the rockfish fishery are below overfishing levels. In addition, fishing may have impacts on the benthic habitat, but no impacts associated with FMP-managed fisheries were found to have more than a minimal and temporary adverse effect on essential fish habitat (NMFS/NPFMC, 2005). The fishery has no adverse effects endangered species, marine mammals, seabirds, or forage fish. A complete discussion of the environmental impacts of the fishery is provided in the Environmental Assessment in Section 3 below.

2.4.3. The harvest sector

The CGOA rockfish fisheries in Federal waters are currently prosecuted almost exclusively with trawl gear. Generally, participation in the Federal CGOA rockfish fisheries requires an LLP license with the requisite gear, area, and operation (catcher vessel or catcher processor) endorsements. In addition, the LLP limits the length of a vessel that may use a license based on the length of the qualifying vessel.

In recent years, an increasing number of fixed gear participants (both jig and longline) have expressed an interest in participating in the rockfish fisheries.[17] Participation with jig gear by

[17] For purposes of this discussion, the rockfish fisheries refer exclusively to the Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish fisheries in Federal waters, as currently defined. Black and blue rockfish, which were formerly part of the pelagic shelf rockfish aggregation and are currently harvested primarily by fixed gear vessels in State waters, are not included in this program and are not the focus of this analysis.

vessels of 26 feet or less is permitted without an LLP. Table 2 shows the number of LLP licenses issued for the CGOA, by gear, operation, and maximum length overall permitted by the license. The table shows that a substantial number of vessels are eligible to participate in the CGOA rockfish fisheries. Currently, RAM Division has issued 25 trawl-endorsed, permanent catcher processor licenses and 171 trawl-endorsed, permanent catcher vessel licenses endorsed for operation in the CGOA. RAM division has also issued in excess of 900 non-trawl licenses endorsed for the CGOA.

Table 2. LLP licenses endorsed for the Central Gulf of Alaska by gear, maximum length overall, license status, and vessel type.

	Maximum length		vessel type		
Gear	**overall**	**LLP license status**	catcher processor	catcher vessel	**total**
trawl	under 60 feet	permanent	0	64	64
		interim	0	4	4
	60 feet or greater and less than 125	permanent	8	91	99
		interim	2	3	5
	125 feet or greater	permanent	17	16	33
		interim	2	1	3
	subtotal		29	179	208
non-trawl	under 60 feet	permanent	5	698	703
		interim	1	17	18
	60 feet or greater and less than 125	permanent	24	173	197
		interim	2	11	13
	125 feet or greater	permanent	19	3	22
		interim	5	2	7
	subtotal		56	904	960
all gear (unique licenses)	under 60 feet	permanent	5	704	709
		interim	1	18	19
	60 feet or greater and less than 125	permanent	29	211	240
		interim	4	13	17
	125 feet or greater	permanent	31	16	47
		interim	6	2	8
	total		76	964	1040

Source: RAM Division, Groundfish LLP License List, August 3, 2004.

Although a substantial number of vessels are eligible to participate in the CGOA rockfish fisheries, most vessels eligible for the fisheries do not participate. Table 3 shows vessel participation and harvests in metric tons, by sector, during the open season from 1996 through 2002, by vessels with at least one targeted landing of rockfish during that time period.[18] The table shows the three different sectors identified by the Council, non-trawl catcher vessels, trawl catcher vessels, and trawl catcher processors. The table divides the harvests of each sector by LLP license status, showing the harvests of holders of permanent LLP licenses, interim LLP licenses,[19] and persons that do not hold LLP licenses.[20] Table 4, the companion table, shows the portion of the annual harvest and total harvest caught by the different sectors. In addition, tables showing participation patterns for vessels in both sectors, appears in Appendix 2.

[18] The open season for trawl gear begins in early July, and ends when either the TAC is fully harvested or when the deep water halibut PSC allocation is taken. The non-trawl season opens on January 1st, and closes at the same time as the trawl season closure. Landings data for catcher vessels are from Alaska Department of Fish and Game fish tickets. Landings data for catcher processors are from Federal Weekly Processing Reports.

[19] Recall that interim status is applied to any license under dispute. The dispute could, but need not, relate to the Central Gulf of Alaska endorsement.

[20] Since NOAA Fisheries implemented the LLP in 1998, it is clear that no participants held LLP licenses before that time. Participants with "no LLPs" in seasons prior to 1998 are those participants that do not appear to have qualified for an LLP license.

Table 3. Participation in the Central Gulf of Alaska rockfish fisheries by gear, vessel type, and LLP status, 1996 through 2002.

			Pacific Ocean perch		Northern rockfish		Pelagic shelf rockfish	
Year	Sector	LLP status	Metric tons	Number of vessels	Metric tons	Number of vessels	Metric tons	Number of vessels
1996	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	2,216.7	28	854.7	23	334.6	26
		interim						
		none						
	Trawl catcher processor	permanent	1,301.4	7	1,981.9**	7	1,183.9	7
		interim	56.2**	2	*	1	*	1
		none	*	1	*	1	*	1
	Total		3,574.2	38	2,836.6	32	1,571.7	37
1997	Non-trawl catcher vessel	permanent			*	1	*	1
		interim						
		none					*	2
	Trawl catcher vessel	permanent	2,259.1	26	758.3	17	198.6	21
		interim						
		none						
	Trawl catcher processor	permanent	2,994.2	10	1,115.7	10	1,387.4	10
		interim						
		none	576.3	3	*	3	*	3
	Total		5,829.6	39	2,264.0	31	1,815.6	37
1998	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	2,356.9	30	1,754.4	30	615.8	29
		interim						
		none						
	Trawl catcher processor	permanent	3,999.3**	7	896.0**	6	1,264.5	7
		interim						
		none	*	2	*	2	*	2
	Total		6,356.3	39	2,650.4	38	2,355.7	40
1999	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	2,430.2	31	1,882.3	32	1,293.2	32
		interim						
		none						
	Trawl catcher processor	permanent	3,114.4	7	1,249.7	6	1,784.1	7
		interim						
		none	1,017.6	3	528.3	3	*	3
	Total		6,562.2	41	3,660.4	41	3,364.0	44

Source:NPFMC Rockfish Database 2004, Version 1

* withheld for confidentiality

** includes any amounts from confidential cells immediately below.

*** includes amounts from confidential cells immediately above and below.

Table **3**. Participation in the Central Gulf of Alaska rockfish fisheries by gear, vessel type, and LLP status, 1996 through 2002 (continued).

			Pacific Ocean perch		Northern rockfish		Pelagic shelf rockfish	
Year	Sector	LLP status	Metric tons	Number of vessels	Metric tons	Number of vessels	Metric tons	Number of vessels
2000	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	4,011.7**	30	1,681.2**	30	2,241.0***	30
		interim	*	1	*	1	*	1
		none						
	Trawl catcher processor	permanent	3,106.4	5	450.5	4	511.0	5
		interim						
		none						
	Total		7,118.1	36	2,131.7	35	2,752.0	38
2001	Non-trawl catcher vessel	permanent						
		interim						
		none					4.0	6
	Trawl catcher vessel	permanent	3,652.2**	31	1,239.7**	28	1,232.6**	31
		interim	*	1	*	1	*	1
		none	*	1	*	1	*	1
	Trawl catcher processor	permanent	4,419.3	7	819.5	7	902.1	7
		interim						
		none						
	Total		8,071.6	40	2,059.2	37	2,138.6	46
2002	Non-trawl catcher vessel	permanent						
		interim						
		none					2.1	8
	Trawl catcher vessel	permanent	4,423.1**	32	2,099.4**	29	1,265.6**	32
		interim	*	1	*	1	*	1
		none						
	Trawl catcher processor	permanent	2,912.5	6	584.4	6	1,152.2	6
		interim						
		none						
	Total		7,335.6	39	2,683.9	36	2,419.9	47
All years (totals)	Non-trawl catcher vessel	permanent			*	1	16.8**	1
		interim						
		none					*	21
	Trawl catcher vessel	permanent	21,350.0**	47	10,270.1**	46	7,181.3**	46
		interim	*	2	*	2	*	2
		none	*	1	*	1	*	1
	Trawl catcher processor	permanent	20,825.3**	13	6,560.1**	12	8,192.0**	12
		interim	*	2	*	1	*	1
		none	2,672.3	5	1,403.1	5	1,027.5	5
	Total		44,847.6	70	18,286.2	68	16,417.6	89

Source:NPFMC Rockfish Database 2004, Version 1

* withheld for confidentiality

** includes any amounts from confidential cells immediately below.

*** includes amounts from confidential cells immediately above and below.

Table 4. Percent of catch in Central Gulf of Alaska rockfish fishery by gear, vessel type, and LLP status, 1996 through 2002.

			Pacific Ocean perch		Northern rockfish		Pelagic shelf rockfish	
Year	Sector	LLP status	Percent of total	Number of vessels	Percent of total	Number of vessels	Percent of total	Number of vessels
1996	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	62.0	28	30.1	23	21.3	26
		interim						
		none						
	Trawl catcher processor	permanent	36.4	7	70.9**	7	75.3	7
		interim	1.6**	2	*	1	*	1
		none	*	1	*	1	*	1
1997	Non-trawl catcher vessel	permanent			*	1	*	1
		interim						
		none					*	2
	Trawl catcher vessel	permanent	38.8	26	33.5	17	10.9	21
		interim						
		none						
	Trawl catcher processor	permanent	51.4	10	49.3	10	76.4	10
		interim						
		none	9.9	3	*	3	*	3
1998	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	37.1	30	66.2	30	26.1	29
		interim						
		none						
	Trawl catcher processor	permanent	62.9**	7	33.8**	6	53.7	7
		interim						
		none	*	2	*	2	*	2
1999	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	37.0	31	51.4	32	38.4	32
		interim						
		none						
	Trawl catcher processor	permanent	47.5	7	34.1	6	53.0	7
		interim						
		none	15.5	3	14.4	3	*	3

Source:NPFMC Rockfish Database 2004, Version 1

* withheld for confidentiality

** includes any amounts from confidential cells immediately below.

*** includes amounts from confidential cells immediately above and below.

Table 4. Percent of catch in Central Gulf of Alaska rockfish fishery by gear, vessel type, and LLP status, 1996 through 2002 (continued).

			Pacific Ocean perch		Northern rockfish		Pelagic shelf rockfish	
Year	Sector	LLP status	Percent of total	Number of vessels	Percent of total	Number of vessels	Percent of total	Number of vessels
2000	Non-trawl catcher vessel	permanent						
		interim						
		none					*	2
	Trawl catcher vessel	permanent	56.4**	30	78.9**	30	81.4***	30
		interim	*	1	*	1	*	1
		none						
	Trawl catcher processor	permanent	43.6	5	21.1	4	18.6	5
		interim						
		none						
2001	Non-trawl catcher vessel	permanent						
		interim						
		none					0.2	6
	Trawl catcher vessel	permanent	45.2**	31	60.2**	28	57.8**	31
		interim	*	1	*	1	*	1
		none	*	1	*	1	*	1
	Trawl catcher processor	permanent	54.8	7	39.8	7	42.2	7
		interim						
		none						
2002	Non-trawl catcher vessel	permanent						
		interim						
		none					0.0	8
	Trawl catcher vessel	permanent	60.3**	32	78.2**	29	52.4**	32
		interim	*	1	*	1	*	1
		none						
	Trawl catcher processor	permanent	39.7	6	21.8	6	47.6	6
		interim						
		none						
All years (totals)	Non-trawl catcher vessel	permanent			*	1	0.01**	1
		interim						
		none					*	21
	Trawl catcher vessel	permanent	47.6**	47	56.5**	46	43.7**	46
		interim	*	2	*	2	*	2
		none	*	1	*	1	*	1
	Trawl catcher processor	permanent	46.4**	13	35.9**	12	49.9**	12
		interim	*	2	*	1	*	1
		none	6.0	5	7.7	5	6.3	5

Source:NPFMC Rockfish Database 2004, Version 1
* withheld for confidentiality
** includes any amounts from confidential cells immediately below.
*** includes amounts from confidential cells immediately above and below.

Total harvests of the three rockfish species have varied somewhat over the years. Pacific Ocean perch harvests have generally increased from a low of almost 3,600 metric tons in 1996, to a high of over 8,000 metric tons in 2001. Northern rockfish harvests follow no apparent pattern and have ranged from slightly more than 2,000 metric tons in 2001, to almost 3,700 metric tons in 1999, the only year during this period that harvests exceeded 3,000 metric tons. Harvests of pelagic shelf rockfish rose from almost 1,600 metric tons in 1996, to over 3,300 metric tons in 1999. In the three years since 1999, harvests have ranged from approximately 2,100 metric tons to approximately 2,750 metric tons. The total harvest of Pacific Ocean perch, the most valuable of the rockfish species, was more than double that of the other two species during the years shown.

The tables show relatively consistent participation across sectors. In the non-trawl catcher vessel sector, two or fewer vessels showed landings of each rockfish species prior to 2001. No non-trawl catcher vessels had any landings of Pacific Ocean perch between 1996 and 2002. In 2001 and 2002, 6 vessels and 8 vessels, respectively, had landings of pelagic shelf rockfish, accounting for less than 1 percent of the landings in that fishery. Total landings by the non-trawl sector from 1996 through 2002, were less than 1 percent of the total landings for all three species. Because

the non-trawl sector has very limited participation in the CGOA rockfish fisheries, much of the discussion in this section pertains only to trawl catcher vessels and trawl catcher processors.

Trawl catcher vessel participation in the rockfish fisheries ranged from 23 vessels to 32 vessels. In 1996 and 1997, fewer trawl catcher vessels participated in the fisheries than in later years. The portion of the three rockfish species harvested by trawl catcher vessels generally rose in later years, with the increase in participation. In 1996, however, trawl catcher vessels harvested approximately 62 percent of Pacific Ocean perch, the highest percentage harvested by the sector in any year. Overall, the harvests of the three rockfish species by trawl catcher vessels ranged from 44 percent of the pelagic shelf rockfish, to 56 percent of the northern rockfish. Although about 30 trawl catcher vessels participated in the different CGOA rockfish fisheries in each year, the specific vessels that participated varied year to year. From 1996 through 2002, approximately 50 different trawl catcher vessels participated in the each of the fisheries.

Fewer trawl catcher processors participated in the rockfish fisheries than trawl catcher vessels in the time period considered. A high of 13 trawl catcher processors participated, in 1997, and a low of 5 in 2000. Since non-trawl vessels have shown minimal participation, the trawl catcher processors generally compete only with trawl catcher vessels in the rockfish fisheries. Harvests of all three species have fluctuated over the years, following no discernable pattern. Harvests of Pacific Ocean perch have ranged from approximately 1,300 metric tons in 1996, to approximately 4,400 metric tons in 2001. Trawl catcher processors have harvested between 38 percent (in 1996) and 63 percent (in 1998 and 1999) of the Pacific Ocean perch in this fishery. Participation by vessels without LLP licenses has been greater in the trawl catcher processor sector than in the trawl catcher vessel sector, with unlicensed vessels harvesting between 6 and 8 percent of the different rockfish species. As with trawl catcher vessels, a variety of trawl catcher processors participate in the CGOA rockfish fisheries. So, although the annual participation by trawl catcher processors in the different fisheries has ranged from 4 vessels to 13 vessels, the total number of unique vessels that have participated in each of the different fisheries during the period is between 18 and 20.

Table 5 shows the retained catch of different species of fish by vessels targeting CGOA rockfish from 1996 through 2002.[21] The table also shows the current retainable percentage used for computing maximum retainable amounts for incidental catch (as defined by 50 CFR Section 679.20(e) and Table 10 to part 679). Since some retainable percentages have changed over time, the retainable percentages presented in the table should be used only for comparison of historic retention with current allowable retention amounts. The retainable percentage is used to determine the maximum amount of an incidental catch species that can be retained by a vessel, as a percentage of the CGOA rockfish target species.[22]

[21] The vessel counts in this table show the number of different vessels that have participated in the fishery over the specified period. Because other tables in the analysis of alternatives track "participants" with transfers of histories from vessels, the numbers of vessels and participants over the same time period may differ.

[22] Since the percentage used to determine the maximum retainable amount is applied to all species that are open for direct fishing, some of the "other species" retention in the table could increase the amount of the different species that could be retained.

Table 5. Retained catch and current retainable percentages for vessels targeting Central Gulf of Alaska rockfish, 1996 through 2002.

Sector	LLP license status	Target rockfish			Pacific cod			Sablefish		
		Number of vessels	Metric tons	Percent of total	Number of vessels	Metric tons	Percent of target rockfish	Number of vessels	Metric tons	Percent of target rockfish
Retainable percentage***				-			20			7
Trawl catcher vessel	permanent	49	38,148.3	81.7	47	4,293.9	11.3	49	2,455.6	6.4
	interim	2	*	*	2	*	*	2	*	*
	none	1	*	*	1	*	*	1	*	*
Trawl catcher processor	permanent	17	35,501.0	84.8	15	510.2	1.4	17	1,679.2	4.7
	interim	2	*	*	0	0.0	*	2	*	*
	none	5	5,102.9	87.0	5	*	*	5	237.2	4.6
Total		76	79,481.7	83.3	70	5,012.9	6.3	76	4,427.6	5.6

Sector	LLP license status	Shortraker/rougheye			Thornyheads			Other			All Species
		Number of vessels	Metric tons	Percent of target rockfish	Number of vessels	Metric tons	Percent of target rockfish	Number of vessels	Metric tons	Percent of target rockfish	Metric tons
Retainable percentage***				15**			15**			-	
Trawl catcher vessel	permanent	46	231.9	0.6	49	290.6	0.8	48	1,244.5	3.3	46,664.8
	interim	2	*	*	2	*	*	2	*	*	*
	none	1	*	*	1	*	*	1	*	*	*
Trawl catcher processor	permanent	16	2,295.4	6.5	17	584.9	1.6	17	1,288.5	3.6	41,859.2
	interim	1	*	*	2	*	*	2	*	*	*
	none	5	278.0	5.4	5	53.0	1.0	5	81.5	1.6	5,868.6
Total		71	2,807.4	3.5	76	943.2	1.2	75	2,692.7	3.4	95,365.4

* Withheld for confidentiality
** Retainable percentage is for combined retention of Shortraker/rougheye and thornyheads.
*** Retainable percentages refer to the current retainable percentage and are provided for comparison of historic catch to current allowable retention.
Source:NPFMC Rockfish Database 2004, Version 1

As the table shows, CGOA rockfish is the large majority of retained catch for vessels targeting rockfish. Trawl catcher vessels have significant retention of both Pacific cod[23] and sablefish, with sablefish retained harvests of approximately 6.4 percent of target rockfish (within a percent of the retainable percentage for that species). Pacific cod retention by trawl catcher vessels is slightly more than one-half the current retainable percentage. Trawl catcher processors have had slightly less harvest of sablefish, relative to their harvest of target rockfish (slightly more than 2 percent less than the current retainable percentage). Harvests of all other species (including Pacific cod) are substantially less than the retainable percentage. These figures suggest that in most instances, the retainable percentage has limited only harvests of sablefish, by vessels targeting rockfish. Trawl catcher processors have also harvested substantial amounts of shortraker/rougheye incidentally to their target rockfish harvests. During the years presented, catcher processor harvest of shortraker/rougheye was approximately 6.5 percent of their target rockfish harvests. Further information concerning catch of these species is provided in Appendix 3, which shows the retained and total catch, by vessel type, and total catch from the Central Gulf of Alaska for these species during the qualifying years.

In addition to groundfish species, participants in the rockfish fishery also bycatch halibut. Currently, halibut is a prohibited species and halibut caught while trawling for rockfish are required to be discarded. Table 6 shows the estimated annual catch and mortality of halibut in the Central Gulf of Alaska rockfish fisheries, by vessel type. The catcher processor sector halibut mortality is based upon estimates of halibut bycatch from observer data. NOAA Fisheries estimates the total halibut caught by the catcher processor trawl fleet, then calculates halibut mortality, using a halibut mortality factor. The average estimated annual halibut mortality for the catcher processor sector is 111.29 mt, over the period from 1996-2002. The total average annual halibut mortality for the catcher vessel sector is 113.06 mt.

For purposes of calculating PSC usage in the catcher vessel sector, processor weekly production reports are utilized to calculate the retained groundfish harvests by target fishery. The amount of

[23] Under Increased Retention/Improved Utilization regulations, 100 percent of Pacific cod catch must be retained.

halibut discarded by the catcher vessel fleet is estimated by NOAA Fisheries, using projections from observer data.

Table 6. Estimated halibut catch and mortality in the Central Gulf of Alaska rockfish fisheries (1996-2002).

year	vessel type	estimated halibut harvest (mt)	estimated halibut mortality (mt)	targeted rockfish harvest (mt)
1996	CP	88.75	50.61	7,111.95
1997	CP	221.24	143.81	8,718.47
1998	CP	215.22	146.35	9,049.53
1999	CP	263.54	168.64	9,322.94
2000	CP	72.67	47.96	6,202.18
2001	CP	160.37	110.64	7,881.36
2002	CP	160.86	110.99	6,114.43
totals (mt)	CP	1,182.66	779.00	54,400.86
average annual halibut mortality (mt.)			**111.29**	

year	vessel type	estimated halibut harvest (mt)	estimated halibut mortality (mt)	targeted rockfish harvest (mt)
1996	CV	163.11	92.98	7,340.23
1997	CV	76.21	49.54	4,669.52
1998	CV	127.72	86.84	5,680.23
1999	CV	194.26	124.33	8,797.19
2000	CV	206.62	136.36	10,574.27
2001	CV	298.91	206.27	8,786.00
2002	CV	137.82	95.10	10,143.63
totals (mt)	CV	1,204.65	791.42	55,991.07
average annual halibut mortality (mt.)			**113.06**	

Source: Summarized from NMFS GOAHALX 1996-02. Program data, 1996-2002.

Participation by Rockfish Vessels in Other Fisheries

Since the rockfish fisheries are prosecuted only in July, vessels that participate in the rockfish fisheries also participate in several other fisheries in the Gulf of Alaska and the Bering Sea and Aleutian Islands.[24]

Table 7 below shows the ex-vessel gross revenues of catcher vessels, eligible for the CGOA rockfish pilot program, from 1996 through 2002. The table shows that these vessels have substantial participation in several other fisheries, primarily pollock and Pacific cod. Comparing this table to Table 13 and Table 14, below, one can see that revenues from the CGOA rockfish

[24] In addition, many of the vessels that have participated in the rockfish fisheries have also participated in other fisheries, both in and out of the CGOA, in the month of July. This section provides background on the overall activity of vessels that target CGOA groundfish. Additional information on the participation of these vessels in other fisheries in the month of July is contained in the analysis of the effects on other fisheries in section 2.5.17 below.

fisheries (including revenues from secondary species harvested in the fishery) are a minor part of the total revenues of catcher vessels eligible for the CGOA rockfish fishery (i.e., less than 10 percent of total ex-vessel gross revenues).

Table 7. Ex-vessel gross revenues of catcher vessels eligible for the CGOA rockfish pilot program (1996-2002).

	Pollock		Pacific cod		Rockfish		Flatfish and other groundfish	
Year	Number of vessels	Ex vessel gross revenues ($1,000)	Number of vessels	Ex vessel gross revenues ($1,000)	Number of vessels	Ex vessel gross revenues ($1,000)	Number of vessels	Ex vessel gross revenues ($1,000)
1996	44	13,430	46	7,118	43	650	43	5,821
1997	46	15,742	46	9,532	43	671	46	5,386
1998	48	13,719	48	6,736	44	905	48	3,066
1999	48	18,327	46	13,037	45	1,106	47	2,664
2000	46	25,204	46	9,962	40	1,357	46	4,676
2001	47	22,310	47	9,538	44	760	46	3,299
2002	44	14,533	45	8,924	41	939	44	3,405
Total	48	139,248	48	73,965	48	6,602	48	31,760

	Halibut		Crab and other species		All species	
Year	Number of vessels	Ex vessel gross revenues ($1,000)	Number of vessels	Ex vessel gross revenues ($1,000)	Number of vessels	Ex vessel gross revenues ($1,000)
1996	14	1,761	8	431	47	29,211
1997	16	2,348	10	1,155	46	34,833
1998	15	1,419	9	1,433	48	27,277
1999	13	2,399	6	1,471	48	39,004
2000	12	2,599	7	1,033	47	44,832
2001	11	1,799	18	686	47	38,392
2002	0	0	21	890	45	28,692
Total	18	13,985	33	7,592	48	273,152

Source: NPFMC Rockfish Database, Version 1.

Table 8, below, shows total product weights and revenues for the catcher processor sector during the qualifying years. In considering the table, note that these data reflect all rockfish production , including rockfish from the CGOA. Comparing this table with Table 17 and Table 18 shows that revenues from the CGOA rockfish fisheries (including production from secondary species) are a relatively small portion (i.e., slightly less than 5 percent) of the annual revenues of eligible catcher processors. In addition, some catcher processors eligible for the program also participate in the Bering Sea and Aleutian Island crab fisheries. Products and revenues from those fisheries are not included in Table 8.

Table 8. Total product weights and first wholesale revenues of CGOA rockfish eligible catcher processors in groundfish fisheries (1995-2002).

	Pollock			Pacific cod			Rockfish		
Year	Number of vessels	Pounds of product (1,000s)	First wholesale revenues ($1,000s)	Number of vessels	Pounds of product (1,000s)	First wholesale revenues ($1,000s)	Number of vessels	Pounds of product (1,000s)	First wholesale revenues ($1,000s)
1996	8	6,276	5,357	15	9,631	7,200	15	18,376	13,031
1997	11	3,322	3,657	15	11,523	6,913	14	18,258	12,790
1998	13	9,370	5,558	13	16,322	14,526	12	11,871	5,628
1999	12	6,181	1,675	12	11,242	13,362	11	19,234	8,963
2000	12	6,858	4,390	12	13,385	15,840	12	10,933	6,820
2001	12	7,831	4,506	12	15,908	17,410	11	10,210	4,572
2002	12	7,819	4,754	12	17,400	16,824	11	12,247	7,508
Total	14	47,658	29,897	15	95,412	92,075	15	101,129	59,311

	Flatfish and other species			All species		
Year	Number of vessels	Pounds of product (1,000s)	First wholesale revenues	Number of vessels	Pounds of product (1,000s)	First wholesale revenues
1995	15	104,323	68,170	15	132,426	91,333
1996	15	119,986	84,743	15	154,269	110,332
1997	15	133,212	69,779	15	166,316	93,139
1998	13	98,793	41,763	13	136,356	67,475
1999	12	84,484	41,996	12	121,141	65,997
2000	12	92,615	49,744	12	123,791	76,794
2001	12	91,687	53,606	12	125,637	80,093
2002	12	89,000	48,971	12	126,465	78,056
Total	15	814,101	458,772	15	1,086,401	663,218

Source: NPFMC Rockfish Database, Version 1.

Captains and Crew in the Rockfish Fisheries[25]

Trawl catcher vessels in the CGOA rockfish fisheries are typically operated by a captain and two to four crewmembers. Since the fisheries have a very short duration, rockfish captains and crew often work on the same vessel in other fisheries, throughout the year. A limited number of crew, however, work on other vessels in other fisheries, including fixed gear fisheries for crab and halibut. Captains and crew are typically compensated using a share system, under which they receive a portion of the revenues generated by the vessel during the season. Crew shares are typically on the order of 5 to 10 percent of gross ex-vessel revenues, after fuel, food, observer coverage, freight and cargo insurance, fiber (in the case of catcher processors), and trip specific expenses are deducted. A captain's share is typically one and one-half times the average crew share. Both captain and crew earn relatively larger shares on vessels with fewer crew. Total crew shares (including the captain's share) are on the order of 30 to 40 percent of gross revenues, depending on circumstances and deductions in determining the revenue basis on which shares are calculated.

In addition to fishing crews of similar size to those found on trawl catcher vessels, trawl catcher processors employ processing crews. The sizes of processing crews vary with the size of the vessel. The largest vessels have crews in excess of 50. Small vessels carry crews of fewer than 30 persons. Some deck crew also work in the processing plant. As with catcher vessels, catcher processor crews often work in several other fisheries, in addition to the rockfish fisheries, as the CGOA rockfish fisheries is of relatively short duration. Most crews remain with the vessel on which they fish CGOA rockfish, throughout the remainder of the year. Rockfish catcher processor crews are compensated based on vessel revenues, but earn a slightly lower percentage

[25] The knowledge of captain and crew activity on rockfish vessels is limited by a shortage of data. The following summary, therefore, relies on anecdotal information from participants in the fisheries.

of revenues, since processed product generates higher revenues. Deck crew on processing vessels earn a share of between 1.5 percent and 3 percent, while the captains earn approximately between 5 and 10 percent. Processing crew earn between 0.5 percent and 2 percent, while the factory foreman earns approximately 1.5 to 3 percent. Some crewmembers (such as cooks) may be paid a daily wage (or receive a daily minimum) in some instances. Shares likely differ with the expenses that are deducted in determining the revenue basis on which shares are calculated. In some cases, long term crews may be provided additional benefits, such as health insurance. Total crew shares on catcher processors might be slightly lower as a proportion of gross, than on catcher vessels, as they are based on processed product revenues, and are on the order of 25 to 35 percent of the basis revenues.

2.4.4. The processing sector

This section summarizes processor participation in the CGOA rockfish fisheries. Several processors have received deliveries from these fisheries in recent years. Table 9, Table 10, and Table 11 show deliveries of CGOA Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish, respectively, to processors by processor qualification (under the catcher vessel alternatives) and port from 1996 through 2002. For purposes of qualification, the tables used the criteria identified in the main portion of the motion (and not the suboption).[26] It appears that one processor satisfies the suboption criteria, however, this number is not certain given limitations and the lack of availability of information concerning investments in facilities. Any processor that is eligible for the main program would then be ineligible for the entry level fishery.

Table 9. Landings with processors by qualification and port – CGOA Pacific Ocean perch.

		Cordova		Kodiak		Sand Point		Seward		Totals	
Year		Plants	Tons	Plants	Tons	Plants	Tons	Plants	Tons	Plants	Tons
1996	qualifying			6	2,216.7					6	2,216.7
	non-qualifying										
1997	qualifying			5	2259.1**					5	2259.1**
	non-qualifying	1	*	1	*			1	*	3	*
1998	qualifying			6	2356.9**					6	2356.9**
	non-qualifying					2	*			2	*
1999	qualifying			6	2430.2**					6	2430.2**
	non-qualifying					1	*			1	*
2000	qualifying			6	4011.7**					6	4011.7**
	non-qualifying			1	*					1	*
2001	qualifying			6	3,652.2					6	3,652.2
	non-qualifying										
2002	qualifying			5	4,423.1					5	4,423.1
	non-qualifying										
All	qualifying			6	20,607.4					6	20,607.4
	non-qualifying	1	*	2	*	2	*	1	*	6	742.6

* Withheld for confidentiality

**Includes amounts from same year withheld for confidentiality.

Table 9 shows landings with processors, by qualification and port, of CGOA Pacific Ocean perch. The table shows that less than 5 percent of landings were with processors that are not qualified for the program. Six qualifying processors and six non-qualifying processors received landings between 1996 and 2002. Qualifying processor showed consistent participation with all six participating in 5 of the 7 years. Only one of the non-qualifying processors participated in more

[26] To qualify, a processor must have received in excess of 250 metric tons of CGOA rockfish in 4 of the 5 years, from 1996 to 2000.

than one year. All qualifying processors are based in Kodiak. Non-qualifying processors are based in Cordova, Kodiak, Sand Point, and Seward.

Table 10. Landings with processors by qualification and port – CGOA Northern rockfish.

Year		Kodiak		Seward		Totals	
		Plants	Tons	Plants	Tons	Plants	Tons
1996	qualifying	6	854.7			6	854.7
	non-qualifying						
1997	qualifying	5	811.2			5	811.2
	non-qualifying						
1998	qualifying	6	1,754.4**			6	1,754.4**
	non-qualifying			2	*	2	*
1999	qualifying	6	1,882.3**			6	1,882.3**
	non-qualifying			1	*	1	*
2000	qualifying	6	1,681.2**			6	1,681.2**
	non-qualifying	1	*			1	*
2001	qualifying	6	1,239.7			6	1,239.7
	non-qualifying						
2002	qualifying	5	2,099.4			5	2,099.4
	non-qualifying						
All	qualifying	6	10,323.0**			6	10,323.0**
	non-qualifying	1	*	2	*	3	*

* Withheld for confidentiality

**Includes amounts from same year withheld for confidentiality.

Table 10 shows participation of processors in the CGOA Northern rockfish fishery, from 1996 through 2002. Six qualified and three unqualified processors participated in the fishery during this period. Because only three unqualified processors participated in the fishery, no information concerning the distribution of landings between qualified and unqualified processors can be revealed. As in the Pacific Ocean perch fishery, all six qualified processors participated in 5 of the 7 years shown, while only one unqualified processor participated in more than one year. All qualified processors are from Kodiak, while the unqualified processors are from Kodiak and Seward.

Table 11. Landings with processors by qualification and port - CGOA Pelagic shelf rockfish.
-

Year		Cordova		Kodiak		Seward		Totals	
		Plants	Tons	Plants	Tons	Plants	Tons	Plants	Tons
1996	qualifying			6	335.3*			6	335.3*
	non-qualifying					1	*	1	*
1997	qualifying			5	208.1**			5	208.1**
	non-qualifying	1	*					1	*
1998	qualifying			5	587.3			5	587.3
	non-qualifying			1	*	3	*	4	28.6
1999	qualifying			6	1293.6**			6	1293.6**
	non-qualifying			1	*	1	*	2	*
2000	qualifying			6	2240.0**			6	2240.0**
	non-qualifying			2	*			2	*
2001	qualifying			6	1236.6**			6	1236.6**
	non-qualifying			3	*			3	*
2002	qualifying			6	1267.7**			6	1267.7**
	non-qualifying			2	*			2	**
All	qualifying			6	6,940.7			6	6,940.7
	non-qualifying	1	*	4	219.5**	4	38.0	9	257.5

* Withheld for confidentiality

**Includes amounts from same year withheld for confidentiality.

Table 11 shows deliveries to processors of CGOA pelagic shelf rockfish, from 1996 through 2002. The table shows that 6 qualifying processors and 9 non-qualifying processor received deliveries of pelagic shelf rockfish during this period. Non-qualifying processors showed little consistent participation, except in Kodiak, where at least two non-qualifying processors participated in each of the last three years. Although participation by non-qualifying processors was more consistent in the pelagic shelf rockfish fishery than the other rockfish fisheries, landings with non-qualifying processors account for less than 5 percent of the total landings during this period.

Table 12, below, shows processing of all species by qualifying processors, from 1996 through 2002. The data in the table are from the State of Alaska Commercial Operators Annual Reports. Since these data are not reported on a management area basis, all of the production numbers could include amounts from management areas other than the Central Gulf of Alaska.

Table 12. Production and first wholesale revenues by species of qualifying processors (1996-2002).

	Target rockfish*			Other groundfish			Halibut		
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Number of processors	Pounds of product	First wholesale revenues ($)	Number of processors	Pounds of product	First wholesale revenues ($)
1996	5	2,177,681	1,079,184	6	76,293,620	97,178,910	6	5,851,288	17,663,681
1997	5	2,525,305	2,100,228	5	46,306,362	61,626,500	5	10,416,152	27,021,252
1998	6	3,182,861	4,138,575	6	60,225,492	75,263,476	5	6,793,551	12,908,444
1999	6	10,882,418	2,222,039	6	85,186,290	83,485,862	5	4,610,994	12,807,574
2000	6	3,918,959	3,109,583	6	52,037,853	80,525,827	6	3,671,595	10,699,500
2001	6	3,567,277	3,258,214	6	47,316,488	63,578,566	4	3,772,819	9,298,905
2002	6	4,503,351	4,739,876	6	41,264,425	59,797,762	5	3,672,234	11,673,430
Total	6	30,757,852	20,647,699	6	408,630,530	521,456,903	6	38,788,633	102,072,786

	Shellfish			Salmon			Other		
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Number of processors	Pounds of product	First wholesale revenues ($)	Number of processors	Pounds of product	First wholesale revenues ($)
1996	5	1,087,704	4,819,521	5	19,069,365	36,979,713	6	3,426,434	5,165,301
1997	4	953,567	3,487,086	5	16,003,627	24,954,048	5	4,771,908	3,500,340
1998	3	*	*	5	22,878,189	33,176,023	5	1,942,002	1,637,775
1999	4	680,224	4,996,787	5	21,681,651	34,300,890	5	1,607,692	1,427,174
2000	3	*	*	5	21,632,006	32,214,388	5	1,661,827	1,424,343
2001	6	1,144,961	7,026,051	5	30,990,164	34,964,468	4	2,460,394	1,914,696
2002	6	1,202,454	7,708,056	4	31,559,447	34,453,075	5	1,842,279	1,506,087
Total	6	7,479,807	38,706,671	5	163,814,449	231,042,605	6	17,712,536	16,575,716

* Includes only allocated target rockfish species .
** Withheld for confidentiality.
Source: Rockfish pilot program database (Version 1).

The table shows that rockfish production is a relatively small portion of the total production by qualified processing plants (slightly less than 5 percent of total production by weight and slightly more than 2 percent of total production by first wholesale revenue). The first wholesale revenues for rockfish show that qualifying processors received substantially less for target rockfish products than for other species. Although, overall, target rockfish production has increased in recent years, the production of other groundfish has declined substantially over the time period shown, which resulted from stock declines in some target species, primarily pollock.

2.4.5. Ex-vessel pricing and harvester/processor relationships

Ex-vessel prices are negotiated informally by the rockfish fleet in the preseason. Fishermen often contact processors in the preseason to inquire about pricing for the season. In addition, the fleet that delivers to a processor may meet with the processor to discuss delivery scheduling among fleet members. A processor typically offers a common price to all of its fleet members. Fishermen often communicate with each other concerning processor price offers, but most perceive that little

negotiating leverage exists. In the last few years, a new processor has entered the market and reportedly has offered a slightly higher price than all other processors. The new entrant has drawn some vessels away from other processors, but most of the fishermen have remained with their historic processor. Usually, fishermen will remain with their primary processor throughout the season. Harvesters typically deliver on a rotation, with fishing trips of less than 72 hours, to maintain product quality. Fishermen typically do not receive payment for low quality fish that cannot be marketed, except as meal. At times fishermen will move to another processor for a delivery midseason. These movements are typically made to avoid loss of quality because of a long wait to offload, and at times are facilitated by the processors.

Occasionally, post season bonuses are paid by processors, in response to good market prices for products, or in response to prices of competing processors. Processors in the rockfish fisheries are reported to maintain relatively stable fleets, with most fishermen delivering to their rockfish processor, throughout the year, in other fisheries as well. When fishermen do move between processors, they typically move all of their deliveries, not just rockfish deliveries.

Secondary species (particularly Pacific cod and sablefish) are an important part of pricing in the rockfish fisheries. Fishermen typically inquire of the price of these species in the preseason. Prices of Pacific cod are typically based on the directed season price from earlier in the year, with a possible downward adjustment for the absence of milt and roe, and the lower quality observed in the summer months. Sablefish prices are based on prices in the IFQ fishery, with some downward adjustment for lower quality in the trawl fishery.

Fishermen typically separate Pacific cod and sablefish from rockfish, and store them in iced totes. Pacific cod are usually bled. Sablefish are sometimes bled or headed and gutted. Both species bring a substantially higher price than the target rockfish and are priced based on quality, so fishermen give extra attention to their care. Shortraker, rougheye, and thornyheads also bring a premium price, but are caught in substantially lower quantities than Pacific cod and sablefish.

Table 13 shows the number of catcher vessels, landings, ex-vessel revenues, and average ex-vessel price, from 1996 through 2002, in the CGOA rockfish fisheries.

Table 13. Number of catcher vessels, landings, ex-vessel revenues, and average ex-vessel prices in the Central Gulf of Alaska Rockfish Fisheries (1996-2002).

Year	Gear	Pacific Ocean perch				Northern rockfish				Pelagic shelf rockfish			
		Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)	Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)	Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)
1996	Non-trawl									2	*	*	*
	Trawl	28	2,216.7	254,473	0.052	23	854.7	88,561	0.047	26	334.6	40,886	0.055
1997	Non-trawl					1	*	*	*	3	*	*	*
	Trawl	26	2,259.1	253,427	0.051	17	758.3	88,603	0.053	21	198.6	22,416	0.051
1998	Non-trawl									2	*	*	*
	Trawl	30	2,356.9	363,728	0.070	30	1,754.4	232,063	0.060	29	615.8	81,450	0.060
1999	Non-trawl									2	*	*	*
	Trawl	31	2,430.2	421,440	0.079	32	1,882.3	290,483	0.070	32	1,293.2	199,577	0.070
2000	Non-trawl									2	*	*	*
	Trawl	31	4,011.7	636,787	0.072	31	1,681.2	233,503	0.063	31	2,240.9	301,359	0.061
2001	Non-trawl									6	4.0	2,374	0.272
	Trawl	33	3,652.2	402,587	0.050	30	1,239.7	136,652	0.050	33	1,232.6	138,534	0.051
2002	Non-trawl									8	2.1	1,224	0.261
	Trawl	33	4,423.1	477,812	0.049	30	2,099.4	231,422	0.050	33	1,265.6	147,873	0.053
Total	Non-trawl					1	*	*	*	22	16.8	6,333	0.171
	Trawl	47	21,350.0	2,810,255	0.060	46	10,270.1	1,301,287	0.057	46	7,181.3	932,095	0.059

Source: NPFMC Rockfish Database, Version 1
* Withheld for confidentiality

As the table shows, trawl ex-vessel prices ranged from slightly less than 5 cents per pound, to almost 8 cents per pound, during this period. Prices were at their highest in 1996, 1997, and 1998.

No particular relationship appears to exist across species, as the prices varied relative to each other, across the years. Non-trawl ex-vessel prices were substantially higher, particularly in the last two reported years, when they were almost 5 times the trawl price.

Table 14 shows the number of vessels, landings, ex-vessel gross revenues, and average ex-vessel price for secondary species harvested by vessels with permanent LLPs targeting rockfish, from 1996 through 2002.

Table 14. Number of catcher vessels, landings, ex-vessel revenues, and average ex-vessel prices for catch of secondary species by vessels with permanent LLPs in the Central Gulf of Alaska Rockfish Fisheries (1996-2002).

	Pacific Cod				Sablefish				Shortraker/rougheye				Thornyhead			
Year	Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)	Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)	Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)	Number of vessels	Landings (mt)	Ex vessel gross revenues ($)	Average ex vessel price ($/lb)
1996	1	*	*	*	29	504.5	1,911,716	1.719	21	48.0	11,122	0.105	28	52.4	99,795	0.864
1997	24	114.7**	46,426**	0.184**	25	234.9	924,039	1.784	16	12.1	3,744	0.140	21	32.1	36,083	0.509
1998	31	378.2	135,869	0.163	31	273.8	665,041	1.102	25	39.6	10,396	0.119	29	69.1	59,783	0.392
1999	32	684.3	430,746	0.286	31	324.8	1,074,795	1.501	18	16.6	3,241	0.089	29	24.7	26,976	0.496
2000	30	1,014.0	701,281	0.314	30	450.2	1,532,063	1.544	21	45.3	17,354	0.174	27	60.4	44,151	0.332
2001	31	856.6	512,167	0.271	31	312.5	966,734	1.403	13	51.0	10,401	0.093	22	24.9	25,681	0.468
2002	32	1,245.9	672,974	0.245	32	355.0	1,101,153	1.407	24	19.3	4,420	0.104	23	27.1	17,011	0.285
Total	47	4,293.9	2,499,464	0.264	49	2,455.6	8,175,541	1.510	46	231.9	60,677	0.119	49	290.7	309,481	0.483

* Withheld for confidentiality

** Includes amount from adjacent cell.

Source: NPFMC Rockfish Database, 2004, Version 1.

As the table shows, vessels in the rockfish fishery have historically received substantially higher prices for landings of secondary species, than targeted rockfish. Revenues in the fishery from catch of sablefish have exceeded revenues for all target rockfish combined. Revenues from Pacific cod exceed revenues from northern rockfish and pelagic shelf rockfish combined. Catcher vessels have substantially less revenue from catch of non-target rockfish, although the average ex-vessel price for thornyheads exceeds the ex-vessel price for Pacific cod.

Limited information is available concerning vertical integration in the fishery. In addition, confidentiality limitations prevent any specific description of the few vertically integrate processors. Because of these limitations, a qualitative discussion of the impacts of vertical integration is provided in the analysis of alternatives. Vertical integration likely has minor effects on the current fishery. Vertically integrated processors likely have a slight advantage arising from certain deliveries from their own vessels and through added information concerning fishing costs and operations. This information likely provides only a minimal negotiating advantage in the current fishery, because of the concentrated season.

2.4.6. Product markets

Several different products are made from rockfish, in the current fishery. Production differs somewhat across the two sectors (inshore and offshore). To provide a better understanding of these differences, the information in this section is separated by sector. Table 15 shows production quantities, first wholesale revenues, and average prices, from 1996 through 2002, from Commercial Operators Annual Reports. These data are aggregated across all management areas, therefore the separation of products from the Central Gulf of Alaska directed rockfish fishery was not possible.

Table 15. Production, first wholesale revenues, and average prices of rockfish products by inshore processors that received targeted rockfish from the Central Gulf of Alaska (1996-2002).

Pacific Ocean perch

	Fillets				Surimi				Whole and head & gut			
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)
1996	1	*	*	*	1	*	*	*	5	1,342,691	522,566	0.389
1997	4	640,739**	925,912**	1.445	2	*	*	*	5	1,126,674	396,216	0.352
1998	6	970,533	1,803,902	1.859					6	733,822	282,951	0.386
1999	6	517,886	620,246	1.198	1	*	*	*	3	*	*	*
2000	6	982,950	1,120,501	1.140	1	*	*	*	4	1,794,058**	524,196**	0.292
2001	6	991,028	1,424,641	1.438	1	*	*	*	4	909,472	376,516	0.414
2002	5	894,835	1,928,008	2.155	3	*	*	*	4	1,018,763	334,915	0.329
Total	8	4,997,971	7,823,210	1.565	4	3,525,587	2,310,370	0.655	10	7,670,954	2,437,360	0.318

Northern rockfish

	Fillets				Surimi				Whole and head & gut			
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)
1996	1	*	*	*					4	220,283	54,003	0.245
1997	2	*	*	*	1	*	*	*	3	*	*	*
1998	6	515,255	950,746	1.845	1	*	*	*	5	912,626	455,257	0.499
1999	2	*	*	*					4	1,454,105	218,307	0.150
2000	4	492,520	484,189	0.983					4	258,709	49,673	0.192
2001	5	278,678	426,790	1.531					3	*	*	*
2002	6	258,794	453,880	1.754	1	*	*	*	3	*	*	*
Total	7	2,049,212	3,132,966	1.529	2	*	*	*	7	3,184,011	920,369	0.289

Pelagic shelf rockfish

	Fillets				Surimi				Whole and head & gut			
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)
1996	2	*	*	*					3	*	*	*
1997	3	*	*	*					6	581,819**	397,218**	0.683
1998	5	100,252	187,523	1.871					8	664,874	686,326	1.032
1999	4	191,497	290,935	1.519					5	609,521	315,509	0.518
2000	5	640,093	809,193	1.264					4	178,084	46,258	0.260
2001	6	369,367	564,578	1.529					6	440,054	270,096	0.614
2002	5	149,677	254,740	1.702	1	*	*	*	5	209,745	297,559	1.419
Total	10	1,533,828	2,301,611	1.501	1	*	*	*	13	2,684,097	2,012,966	0.750

* Withheld for confidentiality.
** Includes amount from adjacent cell.
Source: Commercial Operators Annual Reports

The data show that most production of rockfish is whole fish and 'headed and gutted' fish. These products generate substantially less revenue than fillets, which sell for approximately 5 times the whole or head and gut price for all species. Accepting that whole and head and gut products have substantially higher recovery rates, the return per pound of raw fish from fillet production is substantially higher than that for whole and head and gut products.[27] The price differential across species is relatively small, although in recent years whole and headed and gutted pelagic shelf rockfish have sold for substantially more than whole and headed and gutted Pacific Ocean perch and northern rockfish. This price difference could be a reflection of increased non-trawl participation in the pelagic shelf rockfish fisheries, which tend to produce higher quality fish. Applying estimated recovery rates to these product weights, similar amounts of raw fish go into fillet production, as go into whole and head and gut products. The amount of raw fish that goes to surimi production cannot be revealed, because of confidentiality limits in two of the three fisheries, but is less than either whole or head and gut product forms in the Pacific Ocean perch fishery.

[27] Recovery rates are generally approximately 25 percent for fillets, 20 percent for surimi, and 55 percent for head and gut products.

In general, fillet production is largely sold into U.S. markets, and surimi production is largely sold into Asian markets. The whole fish, and head and gut production is delivered to Asia, where the whole fish is typically consumed and the head and gut is generally reprocessed. A portion of the head and gut production is returned to U.S. markets. Table 16 shows production of secondary species products by rockfish qualified processors.

Table 16. Production, first wholesale revenues, and average product prices of secondary species by inshore processors that received targeted rockfish from the Central Gulf of Alaska (1996-2002).

	Pacific cod				Sablefish				Rougheye			
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)
1996	7	25,471,631	29,562,779	1.161	5	1,480,541	5,857,093	3.956	3	*	*	*
1997	8	26,625,305	38,136,968	1.432	8	2,318,254	10,176,174	4.390	3	*	*	*
1998	10	22,273,954	32,050,212	1.439	9	3,911,096	13,015,721	3.328	7	42,094	41,908	0.996
1999	6	33,261,085	44,396,203	1.335	6	1,577,611	5,538,332	3.511	4	54,296	37,528	0.691
2000	7	21,639,026	32,088,270	1.483	6	1,383,571	5,760,370	4.163	5	26,071	29,333	1.125
2001	9	22,665,303	30,077,297	1.327	8	1,924,852	6,957,882	3.615	6	24,636	27,279	1.107
2002	7	20,297,463	30,733,856	1.514	6	1,637,641	6,539,977	3.994	5	36,185	48,507	1.341
Total	15	172,233,767	237,045,585	1.376	13	14,233,566	53,845,549	3.783	10	228,932	242,560	1.060

	Shortraker				Thornyheads			
Year	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)	Number of processors	Pounds of product	First wholesale revenues ($)	Average price ($/lb)
1996	2	*	*	*	5	142,004	434,826	3.062
1997	3	*	*	*	8	234,333	560,596	2.392
1998	5	35,680	35,099	0.984	9	307,798	685,299	2.226
1999	3	*	*	*	6	132,628	267,845	2.020
2000	4	40,005	29,640	0.741	6	122,678	258,373	2.106
2001	5	9,123	7,778	0.853	8	99,613	177,713	1.784
2002	3	*	*	*	6	91,101	165,012	1.811
Total	10	144,119	134,192	0.931	12	1,130,155	2,549,664	2.256

* Withheld for confidentiality

Table 17 shows products, product revenues, and average produce prices for the catcher processor sector in the CGOA rockfish fisheries. The table shows that, for all species, most production is eastern cut head and gut, but that some whole fish, and some western cut head and gut, were also produced. Although prices of the species vary relative to one another, in most years Pacific Ocean perch brought the highest prices, while pelagic shelf rockfish sold for a higher price than northern rockfish.[28] Prices also varied year to year, with prices at their highest in 1996 and 1997, the first two years of the period. No information concerning western cut could be released, because too few vessels processed that product form.

The production of secondary and other (non-allocated) species is also important to rockfish catcher processor participants. Table 18 shows the product weights, product revenues, and average product prices for secondary and non-allocated species. As the table shows, catcher processors generate substantial revenues from sablefish, greater than from northern rockfish and pelagic shelf rockfish combined in the years shown. Shortraker/rougheye revenues also exceed those from pelagic shelf rockfish during the years shown. In addition, prices for each of the

[28] Note that for catcher processors, Pacific Ocean perch generate the highest product prices, while for shore-based processors, the highest product prices are for pelagic shelf rockfish. The relatively high price of pelagic shelf rockfish in the shore-based sector likely results from the non-trawl catcher vessel harvest of those species.

allocated secondary species exceed those of all of the target CGOA rockfish. Although not shown in the table, most production of secondary species is head and gut fish.

Table 17. Target Rockfish Products, Product Weights, Product Revenues, and Average Product Prices of the Catcher Processor Sector in the Central Gulf of Alaska Rockfish Fishery (1996-2002).

		Pacific Ocean perch				Northern rockfish				Pelagic shelf rockfish			
Year	Product	Number of vessels	Product weight (MT)	Product revenues ($)	Average product price ($)	Number of vessels	Product weight (MT)	Product revenues ($)	Average product price ($)	Number of vessels	Product weight (MT)	Product revenues ($)	Average product price ($)
1996	whole	1	*	*	*	1	*	*	*	1	*	*	*
	eastern cut	11	610.0	980,244.00	0.729	10	847.9	560,418.00	0.300	9	615.8	919,308.00	0.677
1997	whole					3	207.6	21,517.00	0.047				
	western cut	2	*	*	*					1	*	*	*
	eastern cut	15	1,634.7	2,444,338.00	0.678	14	622.6	447,497.00	0.326	13	735.5	996,951.00	0.615
1998	whole	2	*	*	*	3	330.7	221,508.00	0.304				
	western cut	2	*	*	*								
	eastern cut	10	1,755.6	1,740,588.00	0.450	8	282.7	216,254.00	0.347	9	869.9	704,313.00	0.367
1999	whole	9	1,132.0	975,367.00	0.391	7	901.5	726,689.00	0.366	2	*	*	*
	western cut					1	*	*	*	1	*	*	*
	eastern cut	11	1,500.0	1,557,724.00	0.471	9	371.9	319,719.00	0.390	8	891.2	766,242.00	0.390
2000	whole	1	*	*	*	3	249.0	78,302.00	0.143	2	*	*	*
	western cut	1	*	*	*								
	eastern cut	5	1,545.5	1,785,118.00	0.524	4	100.7	68,960.00	0.311	5	171.3	180,738.00	0.479
2001	whole	3	53.9	34,226.00	0.288	2	*	*	*				
	western cut	2	*	*	*								
	eastern cut	7	2,174.3	1,690,796.00	0.353	7	395.1	245,879.00	0.282	7	451.0	358,333.00	0.360
2002	whole	1	*	*	*								
	western cut	1	*	*	*								
	eastern cut	6	1,443.3	1,765,196.00	0.555	6	292.2	262,836.00	0.408	6	576.1	543,668.00	0.428
All	whole	7	1,817.9	1,476,859.00	0.368	7	2,004.4	1,227,760.00	0.278	4	434.3	399,409.00	0.417
	western cut	2	*	*	*	1	*	*	*	1	*	*	*
	eastern cut	20	10,663.4	11,964,004.00	0.509	18	2,913.0	2,121,563.00	0.330	18	4,310.9	4,469,553.00	0.470

* Withheld for confidentiality.
Source: NPFMC Rockfish Database, Version 1.

Table 18. Secondary and Non-Allocated Species Product Weights, Product Revenues, and Average Product Prices of the Catcher Processor Sector in the Central Gulf of Alaska Rockfish Fishery (1996-2002).

	Pacific cod				Sablefish				Shortraker/rougheye			
Year	Vessels	Product weight (mt)	Product revenues ($)	Average product price ($)	Vessels	Product weight (mt)	Product revenues ($)	Average product price ($)	Vessels	Product weight (mt)	Product revenues ($)	Average product price ($)
1996	1	*	*	*	11	208.5	1,752,348	3.812	10	190.3	820,551	1.956
1997	12	30.1**	51,270**	0.774**	15	199.2	1,644,940	3.746	15	170.7	487,949	1.297
1998	9	61.7	108,733	0.799	9	228.4	1,446,786	2.874	8	238.2	464,478	0.885
1999	11	139.5	361,681	1.176	11	190.0	1,481,616	3.537	10	115.3	288,609	1.135
2000	5	27.3	72,843	1.210	5	140.4	1,285,190	4.152	5	211.9	747,070	1.599
2001	7	21.6	49,687	1.043	7	131.7	992,064	3.418	7	231.6	827,789	1.621
2002	6	26.5	61,858	1.059	6	141.4	1,099,037	3.527	6	182.0	545,592	1.360
All	18	306.7	706,072	1.044	21	1239.5	9,701,981	3.550	19	1340.0	4,182,038	1.416

	Thornyheads				Other			
Year	Vessels	Product weight (mt)	Product revenues ($)	Average product price ($)	Vessels	Product weight (mt)	Product revenues ($)	Average product price ($)
1996	11	42.2	283,229	3.044	11	85.0	129,793	0.693
1997	15	76.2	250,310	1.489	14	111.8	93,415	0.379
1998	8	80.6	297,737	1.676	10	144.6	144,656	0.454
1999	11	66.7	271,259	1.844	11	207.2	193,964	0.425
2000	5	94.0	371,515	1.792	5	206.1	227,632	0.501
2001	7	97.8	107,844	0.500	7	108.6	102,539	0.428
2002	6	98.3	276,398	1.276	5	70.2	76,927	0.497
All	21	555.8	1,858,292	1.517	21	933.4	968,926	0.471

* Withheld for confidentiality

** Includes amount from adjacent cell.

Source: NPFMC rockfish database, Version 1

2.4.7. Community and social conditions

Fisheries impact communities through the economic and social activities generated by participants in the different industry sectors, and through supporting industry and business. Some information concerning these impacts can be gleaned from examining the residence of participants in the fisheries. Participation by residence estimates can be generated for each of the primary participating sectors (i.e., catcher vessels, catcher processors, 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 larger communities.

Catcher vessel sector participation by community

Participants in the CGOA rockfish fisheries hail from several different communities. CFEC vessel license files were used to estimate the participation by residency., below, shows catcher vessel landings, by residency of the vessel owner, during the years 1996 through 2002. In addition, a complete list of vessels that are estimated to qualify for the program appears in Appendix 4.

The table shows that Kodiak residents dominate the catcher vessel sector in the fishery. Substantial catches are made by residents of Washington, and states other than Washington and Alaska. Non-trawl participants are primarily from Alaska, as only one person from outside the State reportedly participated in any of the fisheries in the years shown.

Table 19. Central Gulf of Alaska Rockfish Landings of Catcher Vessels by Place of Residence (1996-2002).

Year	Gear	Community	Pacific Ocean perch		Northern rockfish		Pelagic shelf rockfish	
			Number of Participants	Catch (in metric tons)	Number of Participants	Catch (in metric tons)	Number of Participants	Catch (in metric tons)
1996	Non-trawl	Other Alaska					2	*
	Trawl	Kodiak	17	1,241.6	16	592.2**	17	182.7
		Other Alaska	1	*	1	*		
		Washington	3	*	2	*	3	*
		Other State	7	759.6	7	298.6	7	115.6
	Total		28	2,223.5	26	890.8	29	343.1
1997	Non-trawl	Kodiak			1	*	2	*
		Other Alaska					1	*
	Trawl	Kodiak	16	1,410.2	10	335.8	14	96.7
		Other Alaska	1	*				
		Washington	3	*	3	*	3	*
		Other State	6	615.3	5	346.4	6	83.7
	Total		26	2,264.8	19	811.6	26	210.3
1998	Non-trawl	Kodiak					1	*
		Other Alaska					1	*
	Trawl	Kodiak	13	1256.2**	13	779.4**	13	281.6**
		Other Alaska	2	*	2	*	1	*
		Washington	6	322.8	6	212.2	6	64.6
		Other State	9	779.5	9	763.5	9	273.1
	Total		30	2,358.4	30	1,755.1	31	619.2
1999	Non-trawl	Kodiak					2	*
	Trawl	Kodiak	13	968.2**	14	882.7**	14	504.8**
		Other Alaska	1	*	1	*	1	*
		Washington	8	806.6	8	457.0	8	471.3
		Other State	9	655.4	9	542.7	9	317.5
	Total		31	2,430.2	32	1,882.3	34	1,293.7
2000	Non-trawl	Kodiak					1	*
		Other Alaska					1	*
	Trawl	Kodiak	16	2183.3**	16	856.6**	16	1279.1**
		Other Alaska	1	*	1	*	1	*
		Washington	5	694.0	5	273.5	5	396.0
		Other State	9	1,135.3	9	578.2	9	576.8
	Total		31	4,012.6	31	1,708.3	33	2,251.9
2001	Non-trawl	Kodiak					3	6.4***
		Other Alaska					3	*
	Trawl	Kodiak	14	1437.5**	14	573.2**	14	411.3***
		Other Alaska	1	*	1	*	1	*
		Washington	6	535.9	5	184.2	6	359.3
		Other State	12	1,701.7	11	510.9	12	479.4
	Total		33	3,675.1	31	1,268.3	39	1,256.3
2002	Non-trawl	Kodiak					6	10.6***
		Other Alaska					1	*
		Other State					1	*
	Trawl	Kodiak	13	2011.3**	12	908.1**	13	554.4***
		Other Alaska	1	*	1	*	1	*
		Washington	8	1,004.5	7	522.6	8	321.7
		Other State	11	1,407.4	10	689.0	11	417.8
	Total		33	4,423.1	30	2,119.7	41	1,304.5

* Withheld for confidentiality

** Includes values for all cells for the same species and in same year with data suppressed for confidentiality

*** Includes values for cells immediately below with data suppressed for confidentiality

Note: Total tonnages may not agree with totals in other tables because of rounding errors.

Source: NPFMC Rockfish Database, Version 1 (2004).

As one of the largest ports in Alaska, vessels home ported in Kodiak participate in many of the State's largest fisheries. Over 1,500 fishing permit holders, and over 150 owners of Federally permitted vessels, resided in Kodiak, as of 2000. In excess of 100,000 metric tons of groundfish were delivered into Kodiak in 2000. Landings of non-groundfish species (such as salmon and crab) by Kodiak based vessels are also substantial; in 2000, vessels from the port landed over 200,000 metric tons of all species combined (NMFS/NPFMC, 2004). Landings by Kodiak-based vessels that participate in the Central Gulf of Alaska

targeted rockfish catch typically averaged approximately 12,000 metric tons in the qualifying years (1996 to 2002, inclusive), slightly more than 5 percent of the total 2000 harvest of Kodiak-based vessels. Similarly, fewer than 50 of the over 450 Kodiak-based catcher vessels participate in the CGOA rockfish fisheries. In general, one may conclude that the CGOA rockfish fisheries are of relatively minor importance to the Kodiak-based fleet.

Table 20 shows total landings by Kodiak-based vessels, from 1995 through 2002. Table 21 shows total ex-vessel gross revenues of Kodiak-based vessels, from 1995 through 2002. Comparing the total catch and ex-vessel revenues with catch and revenue from the rockfish fisheries, it is apparent that rockfish harvests are a relatively small portion of the total fishing activity in Kodiak. Notwithstanding this apparently small contribution to overall catch of Kodiak catcher vessels, some participants report that the fishery is important to their operations. These participants suggest that the marginal income from the fishery is important to their overall returns. As such, the fishery could also be of some importance to the trawl catcher vessel contribution to the Kodiak economy to the extent that it is important to the operations of these Kodiak groundfish vessels.

A brief profile of the Kodiak economy is included as Appendix 5 to this document.

Table 20. Landings by Kodiak vessel owners (in metric tons) (1995-2002).

	1995	1996	1997	1998	1999	2000	2001	2002
Groundfish (fixed gear, inc. jig)	16,949	17,903	18,887	17,236	20,115	15,795	11,541	13,375
Groundfish (trawl)	65,821	84,963	83,340	75,018	65,627	56,712	51,770	50,670
Halibut and sablefish (all gear)	3,845	4,591	6,340	6,628	7,073	6,569	6,646	6,376
Herring	5,253	6,073	7,188	6,057	5,276	3,998	4,142	4,650
Crab and other shellfish	16,275	15,527	19,101	19,617	15,482	4,021	3,852	3,419
Salmon	39,729	10,935	12,881	25,471	19,367	15,456	24,572	21,089
Total	147,872	139,992	147,737	150,027	132,940	102,551	102,523	99,579

Source: NPRB/NPFMC Fishing Community Profiles (2004)

Table 21. Ex-vessel gross revenues of Kodiak vessels (in $1,000) (1995-2002).

	1995	1996	1997	1998	1999	2000	2001	2002
Groundfish - fixed gear (inc. jig)	7,961	7,620	8,564	6,857	12,332	10,998	6,135	6,480
Groundfish - trawl	17,110	20,806	22,495	12,104	16,894	14,623	11,440	10,695
Halibut and sablefish (all gear)	14,494	19,128	25,289	16,772	27,869	31,312	25,365	26,747
Herring	5,256	6,615	2,127	2,016	2,322	987	1,462	1,329
Crab and other shellfish	31,535	26,053	26,397	30,440	42,558	20,220	18,944	19,530
Salmon	23,593	12,318	9,432	14,955	16,542	11,321	10,515	6,230
Total	99,949	92,540	94,304	83,144	118,517	89,461	73,861	71,011

Source: NPRB/NPFMC Fishing Community Profiles (2004)

Catcher processor participation by community

Since few catcher processors participated in the rockfish fishery, disaggregation of data showing rockfish harvest by catcher processors on a community basis is not possible. Table 22 shows the number of catcher vessels participating in the CGOA rockfish fisheries by year and residence of owner from 1996 through 2002. The table shows that most participants are Seattle-based. Two participants are based in other Washington State communities, while the remainder are from Kodiak, Alaska.

Table 22. Catcher processor participation by year and residence of vessel owner (1996-2002).

Year	Kodiak	Seattle	Other Washington	Total
1996	1	8	2	11
1997	3	12		15
1998	2	8		10
1999	1	10		11
2000		5		5
2001		5	2	7
2002	1	5		6
Total	3	16	2	21

The CGOA rockfish catcher processor fleet is mostly Seattle-based. This fleet, however, is a relatively small part of the large and diverse economy of Seattle. In addition, the CGOA rockfish fisheries are a relatively small contributor to the large fishery interests in Seattle. Although CGOA rockfish fisheries may be important to the Seattle-based participants in these fisheries, the effects of these fisheries are largely overshadowed by both the large fishing and processing industry in Seattle and the general Seattle economy as a whole. A brief profile of the Seattle economy is attached as Appendix 6.

Processor participation by community

Information concerning participation in the processing sector appears in Table 9, Table 10, and Table 11 above. As noted, all qualified processors are Kodiak-based. Processing from other communities cannot be reported, with the exception of the processing of less than 40 metric tons by processors in Seward. Since the only consistent processing history in the CGOA rockfish fishery is based in Kodiak, the remainder of this section addresses Kodiak processing. In addition, a profile of Kodiak is provided in Appendix 5.

Table 23 shows first wholesale revenues of Kodiak processors by species from 1995 through 2002. Revenues from CGOA rockfish species are less than 5 percent of the annual first wholesale revenues of Kodiak processors. Additional revenues are realized through the processing of secondary species harvested in the rockfish fisheries, which add substantially to the revenues of the rockfish fisheries. Processing of catch from the CGOA rockfish fishery is a relatively small portion of processing in the Kodiak (less than 15 percent of total first wholesale revenues when secondary species revenues are included), the fishery does contribute to the overall stability of processing in the community. This role is currently relatively minor, as the fishery is prosecuted for a very short time in the first few weeks of July. The timing of the rockfish fishery, however, currently conflicts with the pink salmon fishery. Most of the rockfish processors also participate in the salmon fisheries and struggle to meet demands arising from the rockfish fisheries and salmon fisheries. These conflicting seasons are challenging for processors that wish to compete in both fisheries as they attempt to simultaneously maintain space and crews for both fisheries.

Table 23. First wholesale revenues of Kodiak processors by species (in dollars) (1995-2002).

	1995	1996	1997	1998	1999	2000	2001	2002
Pollock and Pacific cod	57,676,104	74,447,330	52,606,288	62,626,309	73,412,002	65,668,095	61,323,482	48,575,665
Halibut and sablefish	22,534,581	28,599,072	38,441,173	23,860,232	28,866,143	27,739,523	28,616,318	27,446,192
King and Tanner crab	2,654,974*	704,546*	*	*	4,203,092*	4,584,558*	5,967,458	1,089,537*
Salmon	66,763,214	43,060,335	35,888,729	50,271,584	43,650,579	38,110,324	37,396,170	30,106,365
Herring	-	*	*	-	*	*	1,853,842	1,404,470
Other species	24,767,659	28,047,928	23,114,831	17,821,898	13,993,704	22,521,273	17,958,508	19,388,585
Total	174,396,532	174,859,211	150,051,021	154,580,023	164,125,520	158,623,773	153,115,778	128,010,814

* Excludes some or all of value, withheld for confidentiality.

Source: NPRB/NPFMC Fishing Community Profiles (2004)

2.5. Analysis of the alternatives

This section analyzes each of the alternatives, comparing the alternatives to each other and to the baseline condition in the fishery. Assessing the effects of the alternatives involves some degree of speculation. In general, the effects arise from the actions of individual participants in the fisheries under the incentives created by the different alternatives. Predictability of these individual actions and their effects is constrained by the novelty of the programs under consideration and incompleteness of information concerning the fisheries, including the absence of complete economic information and well-tested models that predict behavior under different institutional structures. In addition, unpredictable factors, such as conditions in different fisheries and of the different stocks and condition of the overall economy, could influence the responses of participants under the alternatives.

To examine the impacts of the alternatives, the analysis begins by considering practices and participation in fishing and processing that are likely to arise under the various management systems proposed by the alternatives. These differences in fishing and processing practices, together with the management changes, drive environmental, economic, and socioeconomic impacts. Through this methodology, all of the different impacts are brought to light, allowing the reader to evaluate the potential significance of impacts of the different alternatives.

In addition to the main pilot program fishery, all of the pilot program alternatives provide for an entry level fishery that is allocated 5 percent of the TAC of the CGOA target rockfish species. Since the entry level fishery will be conducted subject to the same regulations under all of the pilot program alternatives, the entry level fishery is analyzed independently after the other pilot program alternatives, to provide a more coherent analysis.

2.5.1. Effects on management, monitoring, and enforcement

The current rockfish fisheries are managed at the fleet level. Managers monitor fleet harvests, attempting to time their closure announcement with full harvest of the TAC, while reserving a relatively minor amount of rockfish to support incidental catches later in the year. The allocations under most of the pilot program alternatives would require substantial change in this management.[29] Season timing and length will change to allow recipients to slow the rate of fishing and fish at different times than the traditional July season. Monitoring will need to be modified so that these allocations are monitored at the individual or cooperative level. In addition, observer requirements will also need to be modified to suit the new system of allocations.

In addition to the management of the various allocations in the primary fishery, a monitoring program will need to be developed for the entry level fishery.

Lastly, under all of the pilot program alternatives, an incidental catch allowance (ICA) of target CGOA rockfish would be set aside prior to the allocations to the pilot program and the entry level fishery, to support incidental rockfish catch in other CGOA fisheries. The determination of the ICA is also discussed below at the end of this section.

This section briefly summarizes management, monitoring, and enforcement requirements under the program. A more detailed description appears in the Environmental Assessment in 3.4.1, below.

[29] The catcher processor sector allocation would be managed at a fleet level in a manner similar to the offshore sector allocation under the AFA.

Status quo

Under its current management, the rockfish fisheries are conducted as a limited access race for fish. Managers must first manage the LLP, under which license holders must declare their intention to use a license on a vessel, with the NOAA Fisheries.

Non-trawl fishing in the rockfish fisheries begins on January 1st. The trawl season typically opens in early July, and ongoing catch is monitored by managers, with the closing timed to coincide with harvest of the TAC.[30]

Under the current management, observer coverage varies with vessel size. In general, vessels that are 125 feet or longer LOA are required to have 100 percent observer coverage. Vessels under 125 feet but 60 feet or greater in length, are required to have 30 percent observer coverage. Vessels under 60 feet have no observer requirement. Shoreside and floating processors that process in excess of 1,000 metric tons of groundfish in a calendar month are required to maintain 100 percent coverage to observe landings. Shoreside and floating processors that process less than 1,000 metric tons and more than 500 metric tons of groundfish in a calendar month are required to maintain 30 percent observer coverage (CFR §679.50).

Catcher processor sector allocation with cooperatives

Under this alternative, the catcher processor sector would receive allocations of target rockfish, secondary species, and halibut PSC. Eligible catcher processors would then have the option of joining a cooperative, which would fish an allocation (target rockfish, secondary species, and halibut PSC) based on the collective histories of its members, in accordance with a cooperative agreement, or fishing in a limited access fishery, which would receive an allocation based on the collective histories of non-members of cooperatives. Since these two different types of allocations would be managed differently, the discussions of management of cooperatives and the limited access fishery are separated.

The implementation of the program will require that NOAA Fisheries determine the pool of eligible persons for the catcher processor sector, the sector allocation, and the individual histories of eligible persons. Cooperative agreements will be filed with NOAA Fisheries every two years, which must be reviewed for adequacy (including monitoring plan). NOAA Fisheries will be required to make annual catch allocations to cooperatives (based on each member's history), and to the limited access fishery.

NOAA Fisheries would require that all participants in the pilot program to submit an annual registration in the fall, prior to the year in which the fishing occurs. This requirement provides NOAA Fisheries with the time necessary to incorporate any allocations to participants in the program in the annual TAC specifications process.

Under all of the pilot program alternatives, cooperatives would be permitted to fish their allocations during an extended season. The length of the season, however, will be set to balance the interests of participants in distributing landings over a longer period of time each year, and the conservation interest in managing stocks and catch in the fishery. Depending on the season opening and closing dates, harvests in the fishery could take place prior to completion of rockfish reproduction. A discussion of the issue of having the season open during rockfish reproduction is contained in 3.4.3.

Any fishing under the pilot program, including fishing for primary and secondary species, and the entry level trawl fishery, would need to be conducted during this time period. This limitation is necessary to

[30] Additional information concerning current management appears in the description of the affected environment above.

accommodate the additional management responsibilities from expanded observer requirements and to ensure adequate ability to manage catch, including halibut PSC.

The current July season start date for the rockfish fishery is intended to reduce halibut PSC. While the pilot program is intended to increase the industry's ability to respond to the changing market needs, NOAA Fisheries has some concern that expanding the fishery into new time periods could affect halibut PSC and incidental catch of species not allocated under the program. Additionally, the July start date was established to reduce potential conflicts with the NOAA Fisheries' sablefish trawl survey, which typically occurs in early summer. Season dates will be set to provide a reasonable degree of additional flexibility.

This season extension and the exclusive allocations could require substantial monitoring increases on vessels that fish cooperative allocations. Management of allocations will require that all catch under the program be monitored. To meet this end, a protocol will need to be developed for the participants in the program to ensure that NOAA Fisheries adequately accounts for all catch. For catcher processors, NOAA Fisheries would require that all catch harvested by vessels using LLP licenses would need to have adequate observer coverage and monitoring and enforcement while the cooperative has an available allocation. NOAA Fisheries would require observer coverage to be extended to all fishing activities during this time to ensure adequate compliance with the allocations and sideboards applicable. All fishing during the trip would be presumed to be conducted under the program. NOAA Fisheries would establish minimum standards for the catcher processor fleet, specifically two observers (with each haul observed), flow scales, a sampling station with a motion-compensated platform scale (to verify accuracy of the flow scale), and standards to ensure no sorting could occur before the observer has the opportunity to collect their samples. Information gathered onboard vessels would be used to validate catch accounting by NOAA Fisheries inseason management staff.

Management of the limited access fishery would differ substantially from the management of cooperatives. This fishery would continue to be prosecuted early in July, with managers monitoring harvests and timing the closing of the fishery to coincide with harvest of the sector TAC. Observer coverage would be the same as that required during a cooperative fishery to adequately manage rockfish harvests. In addition to managing aspects of the rockfish target fishery, NOAA Fisheries would need to approve and monitor and manage sideboards. Any participant who intends to, or does, participate in any of the fisheries governed by the sideboards during the July sideboard period must have adequate observer coverage onboard the vessel so that all catch taken under sideboards will be assessed against the overall sector harvest limit. Observer coverage would be the same as that required during a cooperative fishery to adequately manage rockfish harvests. NOAA Fisheries must also monitor any applicable stand-downs in the BSAI and Gulf of Alaska non-pollock groundfish fisheries. NOAA Fisheries also must oversee cooperative sideboards, which could be used to limit each cooperative to its historic catch in each of the July Gulf of Alaska groundfish fisheries, other than target rockfish, in place of the stand-downs. NOAA Fisheries would require that all cooperatives meet specific monitoring standards. These monitoring standards are sufficient to allow cooperatives to fish under sideboard restrictions , in lieu of stand-downs. If most catcher processors choose to join cooperatives, however, it is possible that the allocation could be so small that the fishery would be opened for a very limited time, the length of which would be announced prior to the opening (e.g., a 12-hour opening announced prior to fishing). The length of any such opening would be based on estimates of harvest rates from previous seasons or openings and the estimated effort of participating vessels. If the amount of fish remaining after the closure is adequate to support an additional opening (without excessive risk of overages), an additional opening could be scheduled.

In addition to managing target rockfish harvests, NOAA Fisheries would also be required to manage secondary species allocations to the limited access fishery. Catcher processors will receive secondary

species allocations of sablefish, thornyheads, shortraker, and rougheye. These secondary species allocations are based on historic harvests when targeting rockfish, and are intended to operate as hard caps on total harvests of each species. NOAA Fisheries will track allocated and non-allocated species harvests using a combination of flow scales, observer sampling for species composition, and existing protocols to account for halibut mortality. In a limited access fishery, management of non-target species has historically been accomplished with an MRA. NOAA Fisheries would continue to use MRAs to manage non-allocated secondary species. The levels of the MRAs, however, will be adjusted to a level that is likely to maintain catch levels of secondary species in the limited access fishery below the allocated amount.

To maintain catch below the allocated amount, MRA levels will need to be adjusted downward substantially. Since the allocated secondary species are valuable, and NOAA Fisheries has historically managed their catch using the MRAs, historical catch of these secondary species (on which the allocations are based) has been below the current MRA levels.[31] As a result, the allocations of secondary species are substantially less than would be available for harvest, if the current MRAs are maintained. Adjustment of the MRAs downward will be used to limit the incentive to target secondary species and maintain catch to a level below historic levels. Specific MRA levels for the catcher/processor fleet will be set based on the relative historic harvests in the target rockfish and secondary species with adjustments to minimize the incentive for harvests in excess of historic levels.

Non-allocated species will also need to be managed in the limited access fishery. These species will be managed under existing MRAs, with the exception of Pacific cod, which will be managed with a revised MRA of 4 percent of the target rockfish. Initially, the Council considered allocating Pacific cod to catcher processors in a manner similar to allocated secondary species. This could result in an allocation that is not adequate to support prosecution of the targeted rockfish allocation by catcher processors, as catcher processors have relatively low historic levels of harvest of Pacific cod (see Table 5). The revised MRA is intended to restrict Pacific cod harvests to a level similar to historic levels.

In addition to managing aspects of the rockfish target fishery, NOAA Fisheries would need to approve, monitor, and manage sideboards. Catcher processor sideboards have a few aspects that must be considered.

First, an overall sector sideboard would limit harvest by eligible catcher processors in July in the Bering Sea, Aleutian Islands, and Gulf of Alaska fisheries, excluding the CGOA rockfish fisheries. To manage and monitor this sideboard, NOAA Fisheries would require that vessels that are subject to the sideboard make a declaration prior to fishing in any sideboarded fishery during July.

Any participant who intends to, or does, participate in any of these fisheries prior to commencing fishing in July must have adequate observer coverage on board the vessel, so that all catch harvested during a sideboarded fishery will be assessed against the overall sector harvest limit. NOAA Fisheries would not provide an individual apportionment for sideboard fisheries, but will establish a sector limit.

Second, NOAA Fisheries must monitor any applicable stand-downs in the BSAI and Gulf of Alaska non-pollock groundfish fisheries. These stand-downs are intended to operate as sideboards, preventing rockfish participants from encroaching on other fisheries. Stand-downs have a maximum length of two weeks, but could be shorter. If a participant joins a cooperative and that cooperative begins fishing the person's allocation prior to July 1, the traditional start date for the fishery, a two week stand-down will apply to that participant during July. If the cooperative to which a participant belongs chooses to begin

[31] Table 5 above shows that historic harvests of secondary species are substantially below the current MRAs.

fishing the person's allocation on the traditional July opening, then the stand-down would last either 2 weeks, or until 90 percent of any annual allocations stacked with the participant's allocation are fished. NOAA Fisheries will require participants subject to stand-downs to report fishing activities during the period of the stand-down and announce trips. Monitoring the 90-percent harvest requirement will be simplified, because of the requirement of complete observer coverage and weighing of harvests.

Third, NOAA Fisheries must manage and monitor cooperative sideboards, which could be used to limit each cooperative to its historic catch in each of the July Gulf of Alaska groundfish fisheries other than target rockfish, in place of the stand-downs. Cooperatives that meet monitoring and enforcement standards proposed under the alternatives would be subject to a sideboard, in lieu of stand-down.

Catcher processor cooperative with individual allocations

Under the catcher processor cooperative program, catcher processors would have the option of fishing an individual allocation or joining a cooperative, which would fish the collective allocations of its members in accordance with a cooperative agreement. Management (including implementation) and monitoring of fishing of these allocations will be accomplished in the manner that cooperative allocations are managed under the catcher processor sector allocation with cooperatives alternative described above. No limited access fishery for eligible catcher processors would be created under this alternative.

Catcher Vessel Cooperative with Limited Processor Entry

Under the catcher vessel cooperative with limited processor entry program, catcher vessels would have the option of joining a cooperative (which would fish an allocation based on the cumulative history of its members) or fishing in a limited access fishery (which would receive an allocation based on the history of all who opted not to join a cooperative). The two types of allocation would require two different management approaches.

As under the catcher processor alternatives, implementation of the program will require that NOAA Fisheries determine the pool of eligible persons for the catcher vessel sector, the sector allocation, and the individual histories of eligible persons. In addition, processor eligibility would be determined, based on processing histories. Cooperative agreements will be filed with NOAA Fisheries every year, which must be reviewed for adequacy (including monitoring plan). NOAA Fisheries will be required to make annual catch allocations to cooperatives (based on member histories) and to the limited access fishery.

As under the catcher processor alternatives, NOAA Fisheries would require that all participants in the pilot program in this sector submit an annual registration in the fall, prior to the year in which the fishing occurs, to facilitate the incorporation of allocations in the annual TAC specifications process.

Cooperative allocations would be fished during the extended season described under the catcher processor alternatives. Fishing of exclusive allocations during an extended season will require a substantial increase in monitoring, above the current levels, but, because catch is processed onshore, management changes would differ from those for catcher processors. Management of allocations will require that all catch under the program be monitored. As a precursor to this monitoring, participants will need to make announced rockfish pilot program trips, to distinguish rockfish pilot program fishing from participation in other fisheries and allow deployment of adequate observer coverage. All catch in a designated rockfish trip would be accounted against the applicable cooperative allocation under the program. Using this system of exclusive rockfish trips would also facilitate shoreside monitoring of offloads, and accounting of catch against allocations.

NOAA Fisheries intends to develop monitoring appropriate to the fishing activities of the participants. While NMFS expects that most catcher vessel catch accounting will take place shoreside, monitoring for

compliance with discard and retention requirements, and sampling to determine the quantity and composition of discards will be necessary components of this program. NOAA Fisheries is investigating the potential for use of video observation to address some of these information needs, but some level of at-sea observer coverage will be necessary for both monitoring purposes and collection of scientific data. In addition, the use of video monitoring is questionable for enforcement purposes. Resolution of issues involving chain of evidence, reliability, and admissibility in court remain to be addressed, prior to use of video monitoring for some enforcement purposes. NOAA Fisheries is currently engaged in a process to define monitoring information needs and evaluate alternative monitoring strategies for this program.[32]

Monitoring allocations of halibut PSC will be problematic, because NMFS would not be able to use a vessel specific rate for unobserved trips or for unobserved hauls on observed trips. It is possible that some form of fleet-wide rate would have to be developed.

An added advantage of experimentation with novel observer and monitoring practices in the rockfish pilot program is that the experimentation could provide evidence of the utility of this approach to the Council and NOAA Fisheries in the development of methods for implementing efficiencies in observer coverage and monitoring on a larger scale in forthcoming management actions, such as the comprehensive Gulf groundfish rationalization program. The development of observer and monitoring alternatives on a small scale could reduce the potential risks and provide useful lessons concerning their application in broader management settings.

In addition to the management of the exclusive cooperative allocations, NOAA Fisheries would need to manage the limited access fishery for participants that choose not to join cooperatives. The management of the limited access fishery would be the same as described under the catcher processor sector allocation with cooperatives alternative above.

In addition to the monitoring described above, all offloads will be monitored. This monitoring will ensure compliance with the harvest limitations of the various allocations under the program, as well as serving general management purposes.

Sideboards will also be managed and monitored by NOAA Fisheries for the catcher vessel sector under this alternative. Participants eligible for the catcher vessel sector will be limited to their aggregate historic total catch of target species for Gulf fisheries that close because of harvest of the TAC (generally rockfish fisheries). In addition, participants in the sector will be limited to their aggregate historic catch of halibut in fisheries in the Gulf that close because of halibut bycatch (generally flatfish fisheries). Also, eligible catcher vessels will be limited to their historic catch of Pacific cod in the Bering Sea and Aleutian Islands Pacific cod fisheries. Lastly, eligible catcher vessels will be prohibited from participating in the directed yellowfin sole, 'other' flatfish, and Pacific Ocean perch fisheries in the Bering Sea and Aleutian Islands during the month of July.

To manage and monitor this sideboard, NOAA Fisheries would require that vessels fishing in July that are subject to the sideboard must have adequate observer coverage on board the vessel so that all catch harvested during a sideboarded fishery will be assessed against the overall sector harvest limit. NOAA Fisheries would not provide an individual allocation of sideboard fisheries, but will establish a sector allocation.

[32] As part of a larger ongoing alternative observer deployment project conducted in Kodiak during the summer of 2005, NOAA Fisheries, in cooperation with Pacific States Marine Fisheries Commission, sought to assess the feasibility of video monitoring of illegal discards in an environment where some discarding is required. Results from this project could affect some decisions concerning appropriate monitoring.

Catcher Vessel Cooperative with Processor Association

As under the other catcher vessel alternative, participants in the catcher vessel cooperative with processor association program would also have the option of joining a cooperative (which would fish an allocation based on the cumulative history of its members), or fishing in a limited access fishery (which would receive an allocation based on the history of all those eligible catcher vessels not opting to join a cooperative). As noted in the description of management under the catcher vessel cooperative with limited processor entry program, these two types of allocations require different management approaches. Since the allocations and fishing activity under the two alternatives are similar, implementation and management of the fishery under this alternative is also very similar to that described under the catcher cooperative with limited processor entry program above. NOAA Fisheries determine a harvester's eligibility to join a specific cooperative in association with a specific processor. Sideboards under this alternative are also the same as those described under the other catcher vessel alternative, and will be managed as described under that alternative above.

Entry Level Fishery

Entry level fishery allocations, totaling five percent of the TAC of CGOA rockfish (approximately 750 metric tons at current TACs), will be made to trawl and non-trawl catcher vessel sectors.

As under the main pilot program alternatives, NOAA Fisheries would require all participants in an entry level fishery to submit an annual registration in the fall, prior to the year in which the fishing is to occur, to facilitate the incorporation of the entry level fishery allocations in the annual TAC specifications process.

The entry level trawl sector will be allocated 2.5 percent of the TAC of GOA rockfish in the aggregate. This allocation is to be first made from the TAC of Pacific Ocean perch. Using this approach, the entry level trawl sector would likely be allocated only Pacific Ocean perch, as that species has accounted for in excess of half of the TAC of target CGOA rockfish in recent years. If the Pacific Ocean perch TAC declined, relative to the TACs of northern rockfish and pelagic shelf rockfish, it is possible that some northern rockfish and pelagic shelf rockfish could be allocated to the entry level trawl sector. The rationale for allocating Pacific Ocean perch first to the entry level trawl sector is that the entry level non-trawl sector has no harvest history of the species. A relatively small allocation of Pacific Ocean perch would be available for entry level non-trawl participants at the current TACs.

The entry level trawl allocation would be fished in a limited access fishery[33] that would open on May 1st, if halibut PSC is available to support that opening. If halibut PSC is unavailable at that time, the opening would occur at the time of the next halibut release. Although the number of participants in this entry level sector cannot be predicted, 208 LLP licenses are endorsed to use trawl gear in the CGOA. Any vessels with target participation in the rockfish fishery between 1996 and 2002, are eligible for the main program, preventing their participation in the entry level program. This leaves in excess of 150 license holders that could participate in the entry level fishery. Despite the large number of persons eligible for the fishery, the trawl fishery could draw few applicants as the allocation is relatively small and potential participants have no experience in the fishery.

The entry level trawl fishery would be managed similarly to the limited access fishery in the main program. Participants would need to declare any trip in the fishery as a rockfish trip. All harvests on the trip would be subject to the rules of the rockfish program and would count against the rockfish allocation.

[33] The Council considered an option to divide the trawl catcher vessel entry level allocation equally among all applicants for the program. The Council chose a limited access option, because that management seemed more practicable (and less likely to close the fishery because of oversubscription) than the individual allocation option.

The participant would be required to comply with monitoring requirements defined for the rockfish program on that trip. The management of the entry level allocations would differ from management under the main program, because secondary species would be managed under the current MRAs in the entry level fishery (see Table 5 above for current MRAs). Entry level trawl participation will require adequate and reliable monitoring of catch.

The allocation of rockfish to the entry level trawl fishery would be approximately 375 metric tons, under current TACs. Management will require that the agency estimate the catching power of the fleet and either monitor harvests to ensure that the fishery does not overharvest the allocation, or use timed openings (e.g., 12 or 24 hour openings) to limit catch of the fleet. The specific management will depend on the number of participants in the fishery and the amount of fish to be harvested. Given this estimated allocation, the ability of NOAA Fisheries to effectively manage the trawl portion of the entry level fishery could be limited if a substantial number of applications for the entry level trawl fishery are received. If the allocation to the trawl portion of the entry level fishery is unlikely to result in a fishery that can be effectively managed by NOAA Fisheries, the agency may choose not to open the fishery to avoid exceeding the allocation to this entry level component and the overall TAC.

The non-trawl entry level sector will be allocated 2.5 percent of the TAC of CGOA rockfish in the aggregate. The non-trawl sector entry level fishery would be conducted on a limited entry basis, which would result in the management of that fishery in a manner similar to current management. The season for the entry level non-trawl sector will open January 1st, and remain open until the TAC is fully harvested. The ability of the entry level non-trawl sector to harvest the TAC cannot be predicted. In the past, the non-trawl sector has had limited harvests of CGOA target rockfish, harvesting less than 20 metric tons in any year (see Table 3 and Table 4 above). The allocation of rockfish under this program will be approximately 375 metric tons. Since it is possible that the entry level non-trawl sector may be unable to harvest this allocation, a provision is included to make the unharvested portion of the allocation available to all participants in the entry level fishery (including trawl participants) at the start of the 4th quarter.

To manage trawl harvest of the remaining entry level portion at the start of the 4th quarter will require that the agency conduct a second limited access fishery, similar to the initial entry level trawl limited access fishery, that would open in May. To have a reasonable estimate of the number of vessels participating in the fishery, NOAA Fisheries will require an additional application for participation in this late season fishery. The fishery will only be open to persons that participated in the earlier entry level fishery and who also apply for the late season opening. Non-trawl entry level participants may also participate in this fishery and would likely have their catch limited by the harvest of the entry level TAC by trawlers. Given the small allocations, and the likelihood that trawl vessels could rapidly harvest any allocation, it is unlikely that the unharvested portion of the entry level non-trawl allocation would be opened to the trawl sector.

Incidental Catch Allowance

To ensure that other fisheries are not affected by the rockfish pilot program, an ICA will be implemented to support rockfish incidental catch in other groundfish fisheries. In other directed groundfish fisheries, harvest of CGOA rockfish is limited by MRA (§679.20(e) and Table 10 to Part 679). The ICA would be set based on historic incidental harvest of CGOA rockfish in other directed fisheries in recent years. NOAA Fisheries will likely set the ICA liberally (i.e., relatively high) to ensure that incidental catch of CGOA rockfish does not result in a closure of other directed fisheries. Setting a liberal ICA would be consistent with existing fishing practices, since CGOA rockfish incidental catch has not historically resulted in closures of other directed groundfish fisheries.

Table 24 shows the annual total catch of Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish in the CGOA, by trawl gear, in the non-rockfish target.[34] Catch of all three rockfish species has fluctuated greatly during this time period. For example, the lowest incidental catch of pelagic shelf rockfish was in 2003, when only 41 metric tons were harvested. In the previous year, more than 5 times that amount was caught incidentally. Similar disparities occur in the incidental harvest of both Pacific Ocean perch and northern rockfish. Based on the wide range of incidental catch, NOAA Fisheries believes that its first year ICAs would be approximately 600 metric tons for Pacific Ocean perch, 300 metric tons for northern rockfish, and 200 metric tons for pelagic shelf rockfish. These liberal allowances should be adequate to support incidental catch of rockfish in directed fisheries for other groundfish. Using these ICAs, the agency would initially manage harvests of CGOA rockfish using the MRA. If catch rates indicated that an allocation was adequate to support incidental catch through the year, NOAA Fisheries would employ its usual management measure of putting a species on prohibited species status, to remove any incentive to harvest rockfish incidentally and prevent rockfish bycatch from resulting in a premature closure of other directed fisheries.

Table 24. Incidental catch of Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish in CGOA trawl non-rockfish directed groundfish fisheries (1995-2004).

	Year										Average
Species	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004**	
Pacific Ocean perch	573	635	384	226	352	592	323	373	557	168	418
Northern rockfish	397	267	102	173	128	235	187	255	57	114	192
Pelagic shelf rockfish*	192	169	129	146	79	171	104	222	41	36	129
Total	1,162	1,071	614	545	560	999	614	850	655	319	739

*Pelagic shelf rockfish includes dusky, widow, and yellowtail.

** 2004 data are through 10/09/04.

Source: NMFS, Alaska Region, blend databases.

2.5.2. Effects on harvest participation and fishing practices

Patterns and levels of harvester participation in the CGOA rockfish fisheries are likely to vary under the different alternatives. Under the status quo alternative, participation is likely to be similar to current participation. Under the cooperative program alternatives, however, participation could change substantially, as cooperative members coordinate and consolidate fishing effort and distribute their harvests over a greater portion of the year. This section discusses the specific impacts on harvester participation and patterns.

Status quo

Under the status quo, the CGOA rockfish fishery would remain under its current management. Table 2 shows the number of LLP licenses with CGOA endorsements by vessel and gear type. Table 3 above shows historic participation from 1996 to 2002, by sector. Maintaining current management is likely to result in the continuation of existing fishing practices and patterns. In the current fishery, the non-trawl fishermen take very little of the TAC between the opening of the non-trawl fishery in January and the opening of the trawl fishery in July. Trawl fishermen race for catch of rockfish when the trawl season opens in July. Typically, Pacific Ocean perch are caught first, followed by northern rockfish and pelagic shelf rockfish. In the past, catcher processors have caught more rockfish than catcher vessels. In recent years, however, the portion of the TACs caught by catcher vessels has increased and surpassed that of catcher processors.

[34] Since non-trawl catch of rockfish is very limited, incidental catch of rockfish by trawl gear in directed fisheries for other groundfish is adequate for determining the ICA (see Table 3 above).

The quality of fish harvested likely suffers from the race for fish. Rockfish are considered relatively difficult to handle, because of their spines and scales. These characteristics are said to make it more difficult to maintain quality when racing to maximize catch. In addition, harvesters that try to maximize catch on a tow are likely to overfill their nets, which also can affect fish quality. Catcher vessel holds typically use refrigerated sea water to maintain quality.

Secondary species (such as Pacific cod, sablefish, thornyhead, shortraker, and rougheye) are often harvested on separate tows from the target rockfish.[35] Rockfish fishermen typically receive a higher price for these fish, but processors demand better handling, to preserve quality. To meet these demands, catcher vessels often separate their secondary species harvests, carrying them in iced totes, rather than in the refrigerated sea water of their holds.

Trawl catcher processors must not only harvest fish rapidly, but also must process that fish rapidly, to maintain quality and accommodate additional catch. Discards can occur if the fish are not processed quickly enough to maintain quality. Rockfish characteristics complicate efforts to rapidly process the fish for catcher processors. Larger vessels that can process catch more quickly and have larger holds likely have some advantage over smaller vessels that cannot move fish through their plants as quickly.

Given that the number of endorsed LLP licenses substantially exceeds the number of vessels historically participating, substantial growth in participation could occur. Whether new entry would occur depends largely on whether potential entrants perceive a gain from entry. With the current short seasons, most LLP holders are unlikely to perceive substantial gain from entering the fisheries. As a result, modest (if any) increase in participation should be expected if current management is maintained.

Entry by non-trawl participants depends on whether participants in that sector are able to realize significant returns for harvests. Potential for success of non-trawl entrants is not apparent, given the historical participation of these vessels. Between 1996 and 2002, 22 vessels collectively harvested less than 17 metric tons of over 16,000 metric tons harvested from the pelagic shelf rockfish fishery. Only one non-trawl vessel participated in the northern rockfish fishery, so no information on catch can be released. No non-trawl vessels participated in the Pacific Ocean perch fishery. Whether future non-trawl participants will be able to succeed in the fishery cannot be determined. Growth is most likely to occur in the pelagic shelf rockfish fishery, the only fishery in which non-trawl participants have shown any consistency in participation. Jig participants have expressed the most interest in entry to the fisheries among non-trawl fishermen. Since small vessels (vessels that do not exceed 26 feet) can enter without an LLP license, it is possible that jig participation could rise if the current management is continued. Whether entry of jig vessels could substantially increase the take by non-trawl vessels cannot be predicted.

Trawl entry is only likely to occur if new entrants believe that they can make substantial harvests in the short duration fishery. To enter, participants would have to forego opportunities in other fisheries and would need to compete for landings with current participants. Currently, the opening of the Aleutian Islands Pacific Ocean perch, Bering Sea flathead sole, the rex sole and deep-water flatfish fisheries in the Gulf of Alaska, and the Western Gulf of Alaska rockfish fisheries coincide with the opening of the CGOA rockfish fisheries. These simultaneous openings distribute effort across fisheries and areas, and are likely to help curtail entry by fishermen eligible for the CGOA rockfish fisheries that perceive these other

[35] Table 29 includes observer data that show the incidental catch of Pacific cod, sablefish, shortraker, rougheye, and thornyheads by trawl tows targeting CGOA rockfish. These data show that incidental catch rates of these species are relatively low in tows targeting rockfish, suggesting that the catch of these species in the rockfish fishery is made in tows that target the secondary species (i.e., topping off).

opportunities. In addition, the trawl rockfish seasons are likely to remain relatively short (i.e., a few weeks at most) which will limit the learning time for new entrants.

One factor in the current management of the rockfish fisheries arises from the division of the TAC for shortraker and rougheye rockfish, which have historically been managed using a combined TAC. Under the new division, the 2005 Central Gulf shortraker TAC is 324 metric tons, while the 2005 Central Gulf rougheye TAC is 557 metric tons. NOAA Fisheries estimates that shortraker catch accounts for 57 percent of the combined catch of shortraker and rougheye. Based on this estimation, it is possible that the shortraker TAC will be inadequate to support historic catch levels of that species in all fisheries, including the CGOA target rockfish fisheries. Whether the catch of shortraker, by rockfish participants and participants in other fisheries, would result in that species being put on PSC status or other limitations on catch or retention cannot be determined with certainty. Additional information on catch of these species and the effects of the TAC division are presented in Appendix 7.

Catcher processor sector allocation with cooperatives

Under this alternative, the catcher processor sector would receive a sector allocation based on historic catcher processor participation in the fisheries. The sector allocation would be divided among eligible catcher processors (holders of interim or permanent LLP licenses) based on their historic harvests. Participants could either join a cooperative, which would fish the allocation of its members in accordance with a cooperative agreement, or fish in a limited access fishery, which would fish the combined allocations of eligible operators who choose not to join a cooperative. Cooperatives would be permitted to fish during an extended season. The extent to which cooperatives are likely to take advantage of that extended season is described below. The limited entry fishery would be prosecuted in early July, the same time as the existing rockfish target fishery occurs.

Under this alternative, the catcher processor sector would receive allocations of target rockfish, secondary species, and halibut prohibited species catch. These three types of allocations are described first, followed by the fishing and participation patterns that are likely to emerge under the program.

The allocation to a sector would be based on retained CGOA rockfish in the directed fishing season by vessels in the sector from 1996 to 2002, with each vessel dropping its lowest 2 years of harvests. The history of all holders of permanent and interim LLPs would be counted toward a sector's allocation. Only the catch of vessels that have a targeted rockfish landing in the qualifying years would be considered in determining the sector allocation. The inclusion of the histories of participants with valid interim licenses at the time of implementation could be justified, since holders of interim permits are allowed to participate in the current fisheries. All interim licenses are currently under appeal. Since LLP licenses can carry several area endorsements, and those endorsements are not separable, the license could be interim because of a dispute unrelated to the CGOA endorsement.

Table 25 shows the allocations to the trawl catcher processor sector and the trawl catcher vessel sector. Since the table was prepared prior to the Council deciding whether to include catch of holders of interim LLP licenses, or participants without LLP licenses, the table includes information on the allocations that would be made if interim license holders were excluded from the sector history, or if participants without any license were included in the sector history. Several values in the table cannot be revealed because of confidentiality restrictions that require all decipherable information to be aggregated to a minimum of 4 participants. As a result, the table shows the best available information concerning eligibility and allocations to the sectors in the program, consistent with confidentiality limitations.

Table 25. Sector participation, qualified history, and allocations of Central Gulf of Alaska rockfish.

Species	Qualified history	Sector	Number of participants	Qualified tons	Sector allocation (percent of qualified tons)
Pacific Ocean perch	Permanent LLP license holders	Trawl catcher vessel	47	19,773.0	50.0
		Trawl catcher processor	13	19,796.0	50.0
		Total	60	39,569.0	
	Permanent and interim LLP license holders	Trawl catcher vessel	49	*	*
		Trawl catcher processor	15	*	*
		Total	64	39,913.2	
	All historic participants	Trawl catcher vessel	50	*	*
		Trawl catcher processor	20	*	*
		Total	70	42,695.1	
Northern rockfish	Permanent LLP license holders	Trawl catcher vessel	46	9,781.8	61.1
		Trawl catcher processor	12	6,234.9	38.9
		Total	58	16,016.6	
	Permanent and interim LLP license holders	Trawl catcher vessel	48	*	*
		Trawl catcher processor	13	*	*
		Total	61	*	
	All historic participants	Trawl catcher vessel	49	*	*
		Trawl catcher processor	18	*	*
		Total	67	17,530.5	
Pelagic shelf rockfish	Permanent LLP license holders	Trawl catcher vessel	46	6,855.0	46.0
		Trawl catcher processor	12	8,043.2	54.0
		Total	58	14,898.1	
	Permanent and interim LLP license holders	Trawl catcher vessel	48	*	*
		Trawl catcher processor	13	*	*
		Total	61	*	
	All historic participants	Trawl catcher vessel	49	*	*
		Trawl catcher processor	18	*	*
		Total	67	16,090.7	

* Withheld for confidentiality

Source:NPFMC Rockfish Database 2004, Version 1

Counting only the catch of permanent LLP holders, the trawl catcher vessel sector would be allocated 50 percent of the Pacific Ocean perch fishery, 61.1 percent of the northern rockfish fishery, and 46 percent of the pelagic shelf rockfish fishery (in each case, after the allocation to the entry level fishery and the ICA). The trawl catcher processor sector would be allocated the remainder, 50 percent of the Pacific Ocean perch fishery, 38.9 percent of the northern rockfish fishery, and 54 percent of the pelagic shelf rockfish fishery.

Since total tonnages can be revealed in some instances for all participants, one can determine the percent of qualified tons that are from participants that do not hold permanent LLPs to assess the maximum possible effect of including interim LLP holders in a sector's history. Using this approach it can be concluded that catch by vessels that hold interim licenses is less than 1 percent of total qualified catch in the Pacific Ocean perch fishery. Affects on the other two fisheries cannot be predicted. Although not determinative of the distributions, the two trawl catcher vessels with interim LLP licenses have participated in the other two fisheries, while only one trawl catcher processor with an interim license has participated.

The sector allocation would be divided among cooperatives, and the limited access fishery. Each person eligible for the catcher processor sector could choose to either join a cooperative that would receive an annual allocation based on the histories of its members, or enter a limited access fishery that would receive an allocation based on the histories of all catcher processor participants that chose not to join a cooperative. The allocation of each rockfish species to each cooperative would be the percent of total qualified pounds of the species harvested by its members from 1996 to 2002, with each qualified participant dropping its lowest two years of harvests of the species.

The numbers of participants in the catcher processor sector in the different fisheries and simple statistics concerning their allocations are shown in Table 26.[36] The table also shows simple statistics, using 2002 as a base year, for standardizing the allocations across species. The 2002 base year will be used for applying caps to cooperatives and individuals under the program. Fifteen catcher processor licenses are estimated to be eligible to receive an allocation in the CGOA rockfish fisheries.

Table 26. Mean, median, and four largest allocations by Central Gulf of Alaska rockfish species and total allocation, using 2002 as a base year.

Species	Sector	Characteristics of allocations to permanent and interim license holders			Eligible permanent and interim license holders	Eligible permanent license holders
		Mean allocation	Median allocation	Average of four largest allocations		
Northern rockfish	Catcher vessels	2.1	1.4	7.1	48	46
	Catcher processors	7.7	4.5	15.6	13	12
Pacific Ocean perch	Catcher vessels	2.0	1.6	4.5	49	47
	Catcher processors	6.7	4.5	15.6	15	13
Pelagic shelf rockfish	Catcher vessels	2.1	1.5	6.5	48	46
	Catcher processors	7.7	5.6	16.7	13	12
All - 2002 base	Catcher vessels	2.0	1.8	5.3	49	47
	Catcher processors	6.7	4.8	14.1	15	13

Source: NPFMC Rockfish Database 2004, Version 1

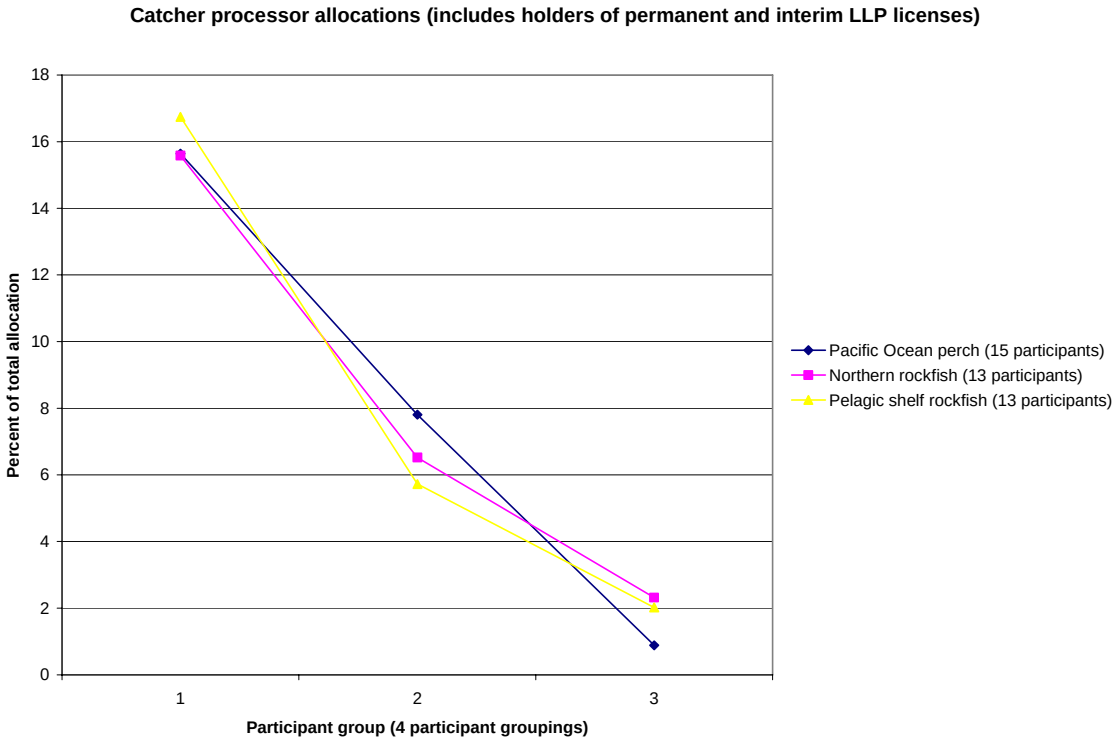
The distribution of catcher processor share allocations in the different target fisheries are shown in Figure 1. Allocations are aggregated into groups of four to maintain confidentiality, with vessel groupings made in descending order from the largest estimated allocation to the smallest allocation. The last and smallest grouping contains between 4 and 7 estimated allocations, since at least 4 persons' activities must be included under confidentiality rules. The estimated allocation shown for each 4-vessel group is the average allocation to members of that group. Allocations are shown as shares of the total harvest allocation. Each legend shows the total number of vessels that would receive an allocation in each fishery. Because these reported allocations are averages, it is possible, particularly in the grouping with the largest allocation, that the largest allocation to a single vessel is significantly different from the average of those four vessels.

The table and figure show that the four largest allocations for each species are approximately 60 percent of total sector allocation for the species. In addition, the four largest allocations in the aggregate are slightly less than 60 percent of the total allocation of CGOA rockfish to the sector, using 2002 as a basis. Notwithstanding the concentration of large allocations, since the catcher processor sector has relatively few participants, the mean allocations are all approximately 5 percent. The figure shows that, on average, approximately 5 participants in the sector will receive allocations of less than 3 percent of the sector's

[36] Appendix 4 lists vessels that appear to be eligible for the different sectors, based on the requirement of one targeted rockfish landing during the qualifying years.

northern rockfish and pelagic shelf rockfish, while approximately 7 participants will receive, on average, allocations of less than 2 percent of the sector's Pacific Ocean perch.

Figure 1. Allocations to catcher processors by Central Gulf of Alaska rockfish species



Under the program, no vessel will be permitted to harvest in excess of 60 percent of the target rockfish, allocated to the catcher processor sector, using 2002 as a basis (with any vessel originally receiving an allocation exceeding that level of participation 'grandfathered'). Since the four largest allocations in the sector are each less than 60 percent of the sector's allocation, it is clear that no vessel approaches that level of harvests. Further information cannot be released, because of confidentiality limitations. In addition to the vessel caps, catcher processor sector participants are limited to holding and using no more than 20 percent of the annual allocation of all species combined, using 2002 as a basis for aggregation (unless grandfathered).[37] This cap would be imposed on an individual and collective basis (similar to the halibut and sablefish IFQ caps). Using this approach, a person is credited with full ownership of direct share holdings, and ownership in proportion to corporate ownership for all holdings indirectly held by the cooperative to which that person is a member. Because of limited information concerning ownership of licenses and confidentiality, aggregation of holdings based on named LLP license holders provides no additional information concerning consolidation of share holdings beyond that shown and described above.

[37] As described in deliberations, this 20 percent individual cap is intended to limit only the holdings of an individual and the shares that an individual can bring to a cooperative. Once an annual allocation is made to a cooperative, the allocation could be fished in accordance with the cooperative agreement, even if more than the individual cap amount were fished on a single vessel. Harvest from a single vessel, however, would be subject to the 60 percent vessel cap.

In addition to the rockfish allocations, allocations would be made to the catcher processor sector for four secondary species (sablefish, shortraker, rougheye, and thornyhead) that are typically harvested when harvesting rockfish.[38] The allocations of secondary species under this alternative would generally be based on catch of the secondary species while targeting rockfish. Specifically, the allocation would be a portion of the TAC equal to the average annual percentage of the all retained catch of the secondary species made by the sector. In other words, the average annual percentage of retained catch of the sector, divided by total retained catch from the CGOA, multiplied by the TAC for the year. The annual allocation to the sector would be the share of retained catch of the secondary species taken by the sector in the CGOA rockfish fisheries, times the annual TAC for that secondary species. Table 27 shows the portion of each secondary species TAC that would be allocated to the different sectors. Although the table includes estimated allocations for shortraker and rougheye rockfish, the Council has elected to allocate fixed percents of the TACs of these two species to the catcher processor sector.

The sector will be allocated 30.03 percent of the shortraker TAC, and 58.87 percent of the rougheye TAC, under the preferred alternative. Historically, these two species had been managed using a single, combined TAC.[39] In 2005, for the first time, these two species were managed under separate TACs. The rockfish catcher processors sector has been the primary user of these species in the past. The Council had some concern that fully allocating the sector its historic usage of shortraker could leave a portion of the TAC that is insufficient to support incidental catch by other fisheries. As a result, the Council chose to reduce the allocation from 58.87 percent of the TAC (the historic share of the combined shortraker/rougheye TAC harvested by rockfish catcher processor sector) to 30.03 percent of the TAC (the portion of the TAC remaining after removal of catch of 9.72 percent by the rockfish catcher vessel fleet[40] and catch of 60.32 percent by fisheries other than the rockfish fishery[41]). A comprehensive analysis of the shortraker allocations under the program is contained in Appendix 7.

Using the standard method of computing allocations, the Pacific cod allocation to the catcher processor sector would be smaller than average historic harvests for the sector. The relatively small allocation to the catcher processor fleet has led the Council to include different provision for Pacific cod catch by catcher processors in the rockfish program. For catcher processors, Pacific cod would be managed under a revised MRA of 4 percent. Historic harvest of Pacific cod by the catcher processor sector in the rockfish fishery has averaged less than 3 percent of the Pacific cod TAC. To avoid constraining participants with this relatively small allocation of Pacific cod, a revised MRA will be used to limit Pacific cod harvests by catcher processors. The MRA would be reduced from its current level of 20 percent to 4 percent.

The occasionally large variation in retained catch rates, for secondary species across the two sectors, are, to some extent, a reflection of intentional catch of these species. Comparison of target rockfish ex-vessel and wholesale prices, with ex-vessel and wholesale prices for the secondary species, show that these species typically sell for substantially higher prices than target rockfish. As a result, participants in the

[38] Pacific cod is also considered a secondary species under the program. For catcher processors, however, Pacific cod would be managed under a revised MRA. For catcher vessels, Pacific cod would be managed using a secondary species allocation, similar to those described for other secondary species here.

[39] In addition to the allocation options described here, the Council is considering an option to reduce the allocation of shortraker and rougheye to the catcher processor sector, to as little as 75 percent of estimated historic usage described here. That option, together with options for management of shortraker and rougheye catch by the catcher vessel sector, is examined in Appendix 7.

[40] The Council developed the estimate of 9.72 percent by applying a 0.7 percent MRA to the catch of shortraker, assuming catch of the target rockfish allocations using the 2005 TAC. An MRA of 0.7 percent reflects the average historic catch of the shortraker/rougheye by the sector, during the qualifying years.

[41] The estimated usage by fisheries other than the rockfish fishery is based on historic average annual catch of 195.2 metric tons, which is 60.24 percent of the 2005 TAC.

rockfish fisheries typically boost revenues by intentionally catching secondary species (as permitted by MRAs).

Table 27. Rockfish Pilot Program: Secondary Species Allocation by Sector - Retained over Retained - retained harvest by species in targeted rockfish fishery divided by retained CGOA harvest

Secondary Species/Sector [1]	2005 TAC (mt)	Allocation Proportion	Allocation (mt)	Average Harvest 1996-2002
Pacific cod CV	25,086	2.09%	525.2	613.4
Pacific cod CP[2]	25,086	0.20%	50.9	72.9
Sablefish CV	7,250	6.31%	457.5	350.8
Sablefish CP	7,250	4.30%	311.9	239.9
Shortraker/Rougheye CV		5.91%		33.1
Shortraker	324		19.1	
Rougheye	557		32.9	
Shortraker/Rougheye CP		59.87%		327.9
Shortraker	324		194.0	
Rougheye	557		333.5	
Thornyhead CV	1,010	10.85%	109.6	41.5
Thornyhead CP	1,010	22.94%	231.7	83.6

Source: 1996-2002 NMFS WPR data for CP vessel harvests. 1996-2002 ADF&G Fish Tickets for CV vessel harvests.

1 The average harvest/year for the 1996-2002 period includes retained harvest by vessels with permanent LLP license status.

2 Note that Pacific cod will not be allocated to the catcher processor sector.

Halibut PSC will also be allocated to the catcher processors through a two-step process. In the first stage, an allocation would be made to the pilot program, as a whole, based on historic average annual usage of halibut PSC by the rockfish fisheries. This allocation would then be divided between the sectors, based on qualified rockfish catch. Table 6 shows the historic halibut PSC usage in the rockfish fishery during the qualifying years. Halibut mortality usage averaged slightly more than 110 metric tons for both sectors during the qualifying years. The division of the allocation between the two sectors (based on qualified rockfish harvests) is shown in Table 28. By dividing the allocation based on qualifying rockfish catch, the catcher vessel sector would receive slightly more than 115 metric tons of halibut PSC, while the catcher processor sector would receive slightly less than 110 metric tons of halibut PSC. The allocation of halibut PSC would be allocated by determining the percentage of the PSC allocation for each sector (roughly 115 and 110 tons, respectively, for the CV and CP sector) relative to the overall allocation of PSC in the GOA for that year.

Table 28. Division of Halibut PSC Allocation between the Catcher Vessel Sector and the Catcher Processor Sector.

Estimated total halibut mortality 1996-2002 in aggregate for catcher processors and catcher vessels Allocate halibut according to relative share of targeted rockfish	
Total CP targeted rockfish 1996-2002 (permanent LLPs)	34,074.10
Total CV targeted rockfish 1996-2002 (permanent LLPs)	36,409.80
total trawl CGOA rockfish harvest	70,483.90

proportional share of targeted CGOA rockfish by CPs	48.34%
proportional share of targeted CGOA rockfish by CVs	51.66%
average annual halibut mortality for CPs & CVs 1996-2002	224.35
annual halibut allocation to CP sector	**108.46**
annual halibut allocation to CV sector	**115.89**

Description of participation and fishing patterns

Since fishing patterns in the cooperative and the limited access fisheries will likely differ, these fisheries are described separately. In addition, under provisions of this alternative, catcher processors may transfer their annual allocations to catcher vessel cooperatives (although the reverse is not permitted). The potential for allocations to be transferred to catcher vessels is also discussed in this section.

Historic harvests of CGOA rockfish are used to make allocations, so distribution of CGOA rockfish allocations, both to and within the catcher processor sector, will be similar to the historic distribution of harvests during the qualifying years. The number of persons receiving allocations is approximately twice the average annual participation in the fisheries, showing that some participants have moved in and out of the fisheries over time.

Within each cooperative, it may be anticipated that each member would receive revenues based on the allocation that the person brings to the cooperative, with participants that fish shares of others receiving compensation for their fishing expenses (including normal profits). Fishing within a cooperative, however, could be far more concentrated than the underlying allocations. The three most likely scenarios that would lead to consolidation of rockfish fishing on fewer vessels than receive allocations arise out of the choices of persons that receive relatively small rockfish allocations under the program.[42] First, persons eligible for the program that receive relatively small allocations could choose to join a cooperative, allowing other members of the cooperative to fish their allocations. Using this approach would allow some of these participants to avoid potential added costs of observers and monitoring equipment (at least in the short term). In addition, the participants' fishing activity would be simplified by not moving from fisheries for other species to fish a relatively small rockfish allocation.[43] A second possibility is that persons eligible for the sector, with small allocations, could choose to remain outside of the cooperatives, allowing their allocations to be redistributed to the limited access fishery. Participants that choose not to enter a cooperative would not be required to stand-down in Gulf of Alaska fisheries in which they have met a minimum participation threshold (i.e., two years of the seven qualifying years). Consolidation of small allocations (i.e., less than 3 percent of the sector's total allocation) in the limited access fishery would result in approximately 5 to 7 vessels participating in the cooperative portion of the sector each year. Whether some or all of these vessels would choose to remain outside of cooperatives cannot be predicted. Cooperative members will have some incentive to reach agreement with these recipients of small allocations, since the small allocations would be inaccessible to cooperatives, once allocated to a limited access fishery. The third possibility is that some eligible catcher processors may choose to opt-out of the program, allowing them to enter the Bering Sea and Aleutian Islands fisheries without a stand-down. Vessels with greater than 5 percent of the qualified Pacific Ocean perch catch of the sector could

[42] Based on 2002 TACs, 4 participants in the catcher processor sector would receive target rockfish allocations of less than 50 metric tons.

[43] These cooperative participants would then be limited in other fisheries in July by both a sector sideboard and either a cooperative sideboard, managed by the cooperative, or a stand-down, if the cooperative does not develop a plan for managing its sideboard that is acceptable to NOAA Fisheries.

only enter the Bering Sea and Aleutian Islands fisheries without a July stand-down by choosing this option. Rockfish allocations to vessels that opt-out would be redistributed within the sector based on qualified catch of remaining participants. The number of vessels over the 5 percent threshold that might opt-out of the program cannot be predicted with any certainty, although some interest has been expressed in exercising the opt-out privilege.

In addition to the consolidation of relatively small rockfish allocations, other members of the sector could decide to consolidate their rockfish allocations to realize efficiencies in the rockfish fisheries and other fisheries. A cooperative that uses relatively few members to harvest its annual allocation could potentially minimize observer and monitoring equipment costs. Cooperatives that are able to manage their own sideboards would be permitted to harvest their allocation over the longer season, freeing members to enter other Gulf of Alaska fisheries in the beginning of July (without a stand-down). This ability to enter other fisheries should lead to cooperatives harvesting their allocations either earlier or later than the traditional July opening, to free their members to compete in other fisheries that open early in July. The cooperative, however, would only be permitted to harvest its historic share from those other fisheries, limiting any potential impact on others. Because of this flexibility, rockfish catcher processor cooperative participants should be expected to fully harvest their historic share (sideboard amount) from these other fisheries, provided that cooperatives are able to develop sideboard monitoring plans that are satisfactory to NOAA Fisheries.

Although cooperatives that manage their own sideboards can be expected to harvest their allocations outside of the traditional early July season, the exact timing of their CGOA rockfish fishing will likely depend on the operational needs of cooperative members, their fishing success, and exogenous market conditions. For example, a cooperative may select fishing time to facilitate maintenance, or other individual needs of its members. Low catch rates of rockfish or high rates of incidental catch of secondary species or halibut could also lead a cooperative to change its timing of rockfish targeting. Some longtime participants in the fishery suggest that rockfish aggregations are at their greatest in the summer months. If participants observe relatively high aggregations (and catch rates) in summer months, it is likely that their harvests will be concentrated in the summer, regardless of whether the season is extended into the spring and fall. Catcher processors may have less incentive to fish outside of the summer months than catcher vessels, as most produce only frozen head and gut, and whole products, and are less likely to attempt to serve fresh fish markets that may be more accessible to the shore-based fleet.

The allocations of secondary species are based on retained harvests made in the fisheries from 1996 to 2002. Since the allocation is the portion of the total retained catch made by the catcher processor sector in the rockfish fishery, the allocation is intended to credit harvesting at its historic rate. Secondary species are required to be retained, with all harvests counting against the allocation of the cooperative. The allocation of each secondary species to a cooperative will operate as a hard cap on the total harvests by the cooperative, so a cooperative that has fully harvested any one of its secondary species allocations would be prohibited from any additional harvest of CGOA rockfish, or related allocations under the program.

These secondary species allocations might appear to be constraining because of the rigid cap. Yet, in most cases (the exception being shortraker rockfish) the estimated allocations of secondary species at current TACs would exceed average harvests from 1996 to 2002. Observer data also suggest that in only rare instances would secondary species allocations constrain participants.

Table 29 shows incidental catch of secondary species[44] in observed trawl tows that targeted CGOA rockfish between 1996 and 2003. Because shortraker and rougheye were formerly managed as an aggregate, data for those species are combined for some observer data reported in the table. Separate allocations of those species will be made under this program, as management of those species has been separated. The table shows amounts of secondary species in hauls by percentile. For example, the rockfish targeting haul at the 85th percentile in terms of Pacific cod included approximately 6 pounds of cod for each one-hundred pounds of rockfish. For all species, over 50 percent of the hauls had no catch of secondary species. In addition, only sablefish and Pacific cod were observed in more than 25 percent of the tows. The total catch of each secondary species in all trawls combined is, in all cases, less than 3 percent of the total catch of targeted rockfish catch.

Although the secondary species allocations to the catcher processor sector are not expected to be constraining, in some instances, they could limit rockfish harvests.[45] If participants with relatively small rockfish allocations were to have tows with incidental catch of secondary species in the highest percentiles, it is possible that the harvest of secondary species could prevent their harvest of target rockfish. In addition, since the incidental catch allocations are based on fleet averages, relative to target rockfish, it is possible that some participants may either have high incidental catch rates in general, or a different distribution of incidental catch than the fleet average. These participants could be constrained by the secondary allocations if they are unable to reduce incidental catch rates of secondary species. Also, if participants attempt to extend fishing over a longer season, it is possible that higher incidental catch rates of secondary species could constrain their rockfish harvests. If high incidental catch in other parts of the year is perceived as limiting, it is likely that participants would choose to concentrate their fishing under the program closer to the traditional season. Cooperatives should prove useful for addressing any constraints arising from the secondary species allocations. By distributing secondary species allocations among the cooperative members to cover cases of higher than historic average incidental catch, the cooperatives should allow members to fully harvest their allocations of target rockfish. These redistributions of secondary species allocations, however, are likely to cost the participants that are constrained by those allocations. Since secondary species historically bring higher revenues per pound than the target rockfish, it is likely that the revenues generated by the harvest of secondary species allocations will accrue to the person that holds the license with the history leading to the allocation. On the whole, the allocations of secondary species should not constrain harvests of target rockfish substantially, unless the rates of incidental catch of secondary species in the rockfish fishery change substantially.

Although the program is intended to rationalize the rockfish fishery, it is important to recognize the value of secondary species harvests to the participants in the rockfish fishery. Historically, all of the secondary species have generated more revenues per pound for participants than the target rockfish. All of the alternatives permit persons to harvest secondary species allocations, independent of the harvest of rockfish allocations. Given the value of the secondary species allocations and the harvest flexibility, participants can be expected to harvest their entire allocations of secondary species. Depending on incidental catch rates, it is likely that some cooperatives will choose to reserve a portion of the allocation of each secondary species until all of the target rockfish is harvested, after which all remaining secondary species allocations would be harvested in a mop up operation.

[44] Pacific cod is also included in the table, since that species is allocated as a secondary species to catcher vessels under the catcher vessel pilot program alternatives.

[45] The potential for the allocation of shortraker to the catcher vessel sector to be constraining is examined in Appendix 7 below.

Table 29. Incidental catch of secondary species in observed trawl hauls targeting Central Gulf of Alaska rockfish (1996-2003).

Incidental catch species	Trawl hauls with Central Gulf rockfish targets	Hauls with bycatch species	Weight of incidental catch species	Weight of Central Gulf rockfish	25th Percentile	50th Percentile	75th Percentile	85th Percentile	95th Percentile	100th Percentile
CGOA rockfish	2756	2756	41,519,208	41,519,208	1	1	1	1	1	1
Pacific Cod	2756	1364	742,872	17,791,489	0	0	0.03227	0.063956	0.171188	0.985509
Sablefish	2756	1102	1,123,400	15,111,336	0	0	0.028388	0.082713	0.270718	0.954764
Thornyhead	2756	638	309,699	13,153,414	0	0	0	0.006582	0.05213	0.876952
Shortraker	2756	232	337,940	4,524,135	0	0	0	0	0.025923	0.92532
Rougheye	2756	371	389,981	7,698,578	0	0	0	0	0.031289	0.881127
Shortraker/Rougheye (1)	2756	14	33,008	527,828	0	0	0	0	0	0.167984
Source: 1996-2003 GOA Observer data, with data calculations by NPFMC.										
Central Gulf rockfish includes Pacific Ocean perch, northern rockfish and pelagic shelf rockfish.										
(1) where shortraker rockfish and rougheye rockfish were combined in the observer data										

As with secondary species allocations, halibut PSC allocations are based on historic halibut catch in the rockfish target fishery. Unlike current management, the specific allocations of halibut PSC could close the fishery for individual participants, in the event that bycatch of halibut PSC exceeds historic rates. Changes in the rates of halibut bycatch cannot be predicted, since the most significant change in fishing activity is likely to be a change in the timing of harvests under the extended season. If participants observe an increase in the bycatch of halibut outside of the historic season, they are likely to limit their fishing activity under the program to the historic season. On the other hand, if bycatch of halibut can be maintained at or below historic levels at other times of the year, it is possible that some participants would shift fishing to alternative periods. As with secondary species allocations, each cooperative is likely to pool halibut PSC allocations of its members to ensure that the cooperative's rockfish and secondary species allocations can be fully harvested.

Since any catcher processor limited access fishery will be managed in a manner similar to the current fishery, that fishery is likely to resemble the current fishery, with a few notable differences. Participants can be expected to race for catch during the limited time that the fisheries will remain open. First, the catch of secondary species will be limited by reduced MRAs that are intended to limit total catch of the secondary species to the allocated amount. These reduced MRAs are likely to act as a substantial deterrent to participation in the limited access fishery, since secondary species are considerably more valuable than target rockfish.

If the fishery receives a small allocation, it is possible that the fishery would be prosecuted in a timed opening (i.e., 12 or 24 hours) to keep total harvests under the allocation to the fishery. The constraints on fishing under the limited access management, together with the low membership threshold for cooperative formation (2 licenses), will likely lead all catcher processors that choose to fish under the program to join cooperatives.

Catcher processors may, under provisions of this alternative, also transfer their annual allocations to catcher vessel cooperatives, but would not be permitted to receive catcher vessel annual allocations. The extent of any transfers from catcher processors to catcher vessels cannot be predicted with any certainty. Transfers to the catcher vessel sector are most likely to occur between catcher processors that have affiliations with the shore-based sector. In addition, transfers to the shore-based sector could be made from catcher processors that will receive relatively small allocations. The potential for transfers to catcher vessels will increase if participants in the shore-based sector are able to develop markets for higher valued product forms, or more highly processed products that cannot be served by the offshore fleet.

Catcher processor cooperative with individual allocations

Under the catcher processor cooperative alternative, an allocation is made to the catcher processor sector using the same calculations as under the catcher processor sector allocation with cooperatives alternative. Allocations of secondary species and halibut PSC are also the same under this alternative. Allocations of target rockfish, secondary species, and halibut PSC within the sector are also quantitatively the same under this alternative. Table 25, Table 26, and Figure 1 describe the historic allocations of target rockfish to the sector and individuals. Secondary species and halibut PSC allocations are as described under the other catcher processor alternative. This alternative, however, differs from the sector allocation alternative in that eligible catcher processors that choose not to join a cooperative would receive an individual allocation instead of being eligible for a limited access fishery. No limited access fishery would exist under this alternative.

Description of participation and fishing patterns

Participation and fishing patterns under this alternative are likely to be very similar to those under the catcher processor sector allocation alternative. Cooperative members are likely to fish outside of the traditional season to ensure that they are able to participate in other fisheries that open early in July and harvest their historic share from these other fisheries. The distribution of fishing is likely to depend on the ability of the participants to successfully target rockfish, without exceeding allocations of secondary species and halibut PSC. Market considerations could also influence choices of fishing times. Allocations of secondary species are likely to be fully harvested, given the flexibility of participants to harvest those allocations independent of target rockfish.

Holders of small allocations are likely to consolidate their allocations with others to achieve harvest efficiencies or, in some cases, may opt out of the program to avoid potential restrictions from sideboards, if they are unable to come to terms with potential cooperative partners.

Although the opportunity exists for eligible catcher processors to fish individual allocations, the low threshold for cooperative formation (2 licenses) is likely to lead to all participants that choose to remain in the program to join cooperatives. Since only members of cooperatives that meet the minimum membership threshold will be permitted to transfer annual allocations, the potential benefits from cooperative membership create strong economic and operational incentives. The relatively low threshold, however, could lead to more cooperatives with fewer members resulting in relatively more vessels fishing rockfish.

The potential for transfer of allocations to catcher vessels are similar under this alternative as under the other catcher processor alternative. Transfers are likely to be made, if returns from relatively high valued rockfish products in the onshore sector exceed returns from the whole and head and gut products produced by the catcher processor sector.

Catcher vessel cooperative with limited processor entry

Under this alternative, an allocation to the catcher vessel sector would be made based on historic catch of the sector during the qualifying years, in the same manner as the allocations described and estimated under the catcher processor sector allocation alternative. In addition to the catcher processor sector allocation, Table 25 above shows the allocation to the catcher vessel sector under this alternative. Similarly, allocations of secondary species and halibut PSC to the catcher vessel sector would be made under the same terms as described in the catcher processor sector allocation alternative (with two exceptions). Estimates of those allocations are shown in Table 27 for secondary species and Table 6 and Table 28 for halibut PSC. One distinction between the catcher vessel sector and the catcher processor sector is that Pacific cod will be allocated as a secondary species to the catcher vessel sector (as shown in Table 27). In addition, shortraker and rougheye rockfish would be managed under an aggregate MRA of

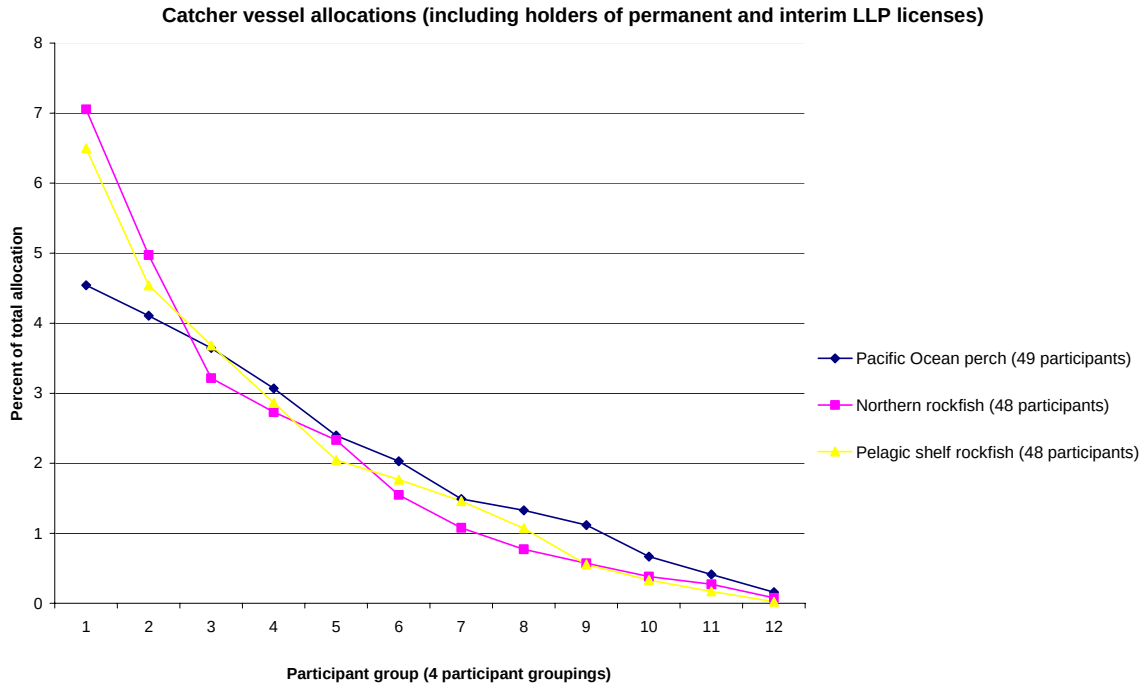
2.0 percent. This MRA amount is slightly greater than historic catch of the sector (based on current TACs), but is unlikely to create an incentive for targeting or excessive discards. In addition, shortraker would be subject to PSC status, if the catch of that species exceeds 9.72 percent of its TAC (representing average historic catch of shortraker, estimated by applying an MRA of 0.7). These provisions (together with various other options for revised allocations and MRA management) are analyzed in greater detail in Appendix 7.

After the catcher sector allocation is determined, allocations of histories would be made to eligible LLP license holders in the catcher vessel sector. To be eligible for an allocation, a person must hold either an interim or permanent LLP license at the time of the allocation and have at least one targeted landing of CGOA rockfish between 1996 and 2002. The allocation of history to a license would be based on the catch history of vessels associated with the license from 1996 to 2002, best 5 of 7 years. The allocation of each target species to a license holder will be equivalent to the license holder's proportion of the sector history. So, a vessel with one percent of the qualified pounds of CGOA Pacific Ocean perch of the catcher processor sector would receive 1 percent of the catcher processor sector allocation of that species.

The numbers of participants in the catcher vessel sector in the different fisheries and simple statistics concerning their allocations are shown in Table 26. The table also shows simple statistics, using 2002 as a base year, for standardizing the allocations across species. The 2002 base year will be used for applying caps to cooperatives and individuals under the program. Forty-nine licenses are estimated to be eligible to receive an allocation in the CGOA rockfish fisheries.

The distribution of catcher vessel share allocations in the different target fisheries are shown in Figure 2. Allocations are aggregated into groups of four to maintain confidentiality, with vessel groupings made in descending order from the largest estimated allocation to the smallest allocation. The last and smallest grouping contains between 4 and 7 estimated allocations, since at least 4 persons' activities must be included under confidentiality rules. The estimated allocation shown for each 4-vessel group is the average allocation to members of that group. Allocations are shown as shares of the total harvest allocation. Each legend shows the total number of vessels that would receive an allocation in each fishery. Because allocations are reported here as averages, it is possible, particularly in the grouping with the largest allocation, that the actual allocation to any single vessel is significantly different from the average of those four vessels.

Figure 2. Allocations to catcher vessels by Central Gulf of Alaska rockfish species.



The table and figure show that the four largest allocations to catcher vessels average approximately 5.3 percent of the total allocation of rockfish (using the 2002 index year). The average of the largest four allocations of northern rockfish is slightly larger, but still only approximately 7 percent of the total catcher vessel sector allocation. The median allocation is approximately 1.4 percent of the sector allocation (using the 2002 index year).

Under the program, no person will be permitted to hold or use in excess of 5 percent of the catcher vessel sector allocation.[46] Participants with historic harvests in excess of this cap would be grandfathered. Table 26 shows that the four largest allocations in the sector currently exceed this allocation. In addition, that table does not show specific ownership of licenses, but only the allocations to each license. LLP license ownership files show that some participants hold more than one license. Aggregation of allocations to holders of multiple licenses shows that five persons would exceed the cap (based on the limited available information). The limited data available, and confidentiality limitations, prevent disclosure of additional information concerning the number of persons over the ownership cap. These persons would be prevented from acquiring any additional interest in the fishery, but would be permitted to retain their existing interests.

[46] As described in deliberations, this cap is intended to limit only the holdings of an individual and the shares that an individual can bring to a cooperative. Once an annual allocation is made to a cooperative, the allocation could be fished in accordance with the cooperative agreement, even if more than the individual cap amount were fished on a single vessel. A cooperative, however, could not receive in excess of 30 percent of the aggregate cap in any instance.

In addition, no cooperative may control or hold more than 30 percent of the catcher vessel sector allocation. Since catcher vessel cooperatives are free to form among catcher vessel participants that are able to come to terms, this provision could prevent the sector from forming fewer than four cooperatives. Whether the limitation would actually prevent any consolidation of allocations within the sector cannot be predicted.

Allocations of both secondary species and halibut PSC within the catcher vessel sector would be in proportion to target rockfish history. Using this approach, total qualified pounds of rockfish history (i.e., all three rockfish allocations) would determine the allocation of secondary species.

Catcher vessel sector participants would be permitted to join cooperatives with each cooperative receiving an annual allocation based on the qualified history of its members. A cooperative would be required to have at least 4 members. Non-members of cooperatives would be permitted to fish in a limited access, competitive fishery open to catcher vessel participants eligible for the program that do not join a cooperative. The allocation to the competitive fishery will be based on the histories of participants eligible for the program who choose not to join a cooperative. The annual allocation to the limited access fishery would be reduced by 20 percent. This reduction would be redistributed to catcher vessel cooperatives in proportion to the histories of their members.

Description of participation and fishing patterns

Participation and fishing practices of the catcher vessel sector are likely to change substantially from the status quo. Because fishing patterns in the cooperative and the limited access fisheries will likely differ, these fisheries are described separately.

As with catcher processors, historic harvests of target rockfish species are used to make allocations, so distribution of allocations both to and within the catcher vessel sector are similar to the historic distribution of harvests during the qualifying years. Annual participation records show that between 30 and 35 catcher vessels participated in the fisheries each of the qualifying years. The number of persons receiving allocations is estimated at 47, more than 10 persons greater than average annual participation. The number of persons fishing under this alternative is likely to be fewer than the number of allocations and could be fewer than the participation levels of recent years. Consolidation within cooperatives will be the greatest contributor to the reduction in participation.

Since cooperative formation requirements are relatively minimal under this alternative (four qualified participants), it is likely that most persons eligible for the catcher vessel sector will join cooperatives. To save on observer coverage and operational costs, it is likely that most cooperatives will consolidate harvests to some extent. Cooperatives are likely to distribute revenues based on the allocation that the person brings to the cooperative, with fishing vessels compensated for their expenses (including normal profits).

Under an extended season, cooperative fishing is likely to take place outside of the traditional early July season. As with the catcher processor cooperatives, timing of fishing CGOA rockfish allocations will depend on the particular operational needs of members, market opportunities, and fishing success. While success in the fishery cannot be predicted, rockfish targeting should be expected to be concentrated during periods of the year when high catch rates of rockfish and low catch rates of secondary species and halibut occur. As noted earlier, some participants in the fishery suggest that rockfish aggregations are at their greatest in the summer months.

Fishing outside the traditional season could provide an opportunity for some participants to try to serve markets (including a possible fresh market) that have been historically impossible to access because of the

timing of the season. In addition, slowing of the race for fish will allow harvesters to focus more on improving quality of their landings. If higher quality production generates higher revenues, participants can be expected to adopt fishing techniques that improve quality, such as reducing total catch in each tow and improved icing of catch. Fishing costs could rise, but not as much as revenues.

Under this alternative, fishermen will have the flexibility to make deliveries to any qualified processor. Since five processors qualify (see below), cooperatives are likely to solicit competitive bids for landings during the extended season. Patterns of deliveries cannot be predicted, but it is likely that cooperatives could deliver to more than one processor to take advantage of different market opportunities.

Cooperatives will also have an incentive to consolidate catch, and fish outside of the traditional July time period, to ensure that cooperative members have access to other July fisheries that their members have historically fished. Catch by rockfish catcher vessel participants will be limited in those non-rockfish fisheries by aggregate sideboards to limit potential impacts on others. Rockfish catcher vessel participants, however, could compete among themselves for their share of the sideboard. It is possible that the cooperatives could reach an inter-cooperative agreement to limit catch to their own historic portion of the sideboard. Successfully reaching such an agreement will require most or all members of the sector and provision for monitoring compliance with the agreement. The potential for reaching such an agreement cannot be predicted.

Unlike catcher processors, the allocations of secondary species could constrain the catcher vessel fleet. Allocations of Pacific cod, sablefish, and thornyheads are unlikely to constrain the fleet (absent any substantial changes in the TACs, or changes in incidental catch rates), as those allocations are based on an historic portion of the total catch made by the sector in the rockfish fishery. Shortraker and rougheye rockfish are managed under a 2.0 percent MRA (and shortraker would be subject to PSC status, if catch in the sector exceeds 9.72 percent of TAC). The rationale for MRA management is that the estimated shortraker allocation may not be adequate to support harvest of the target rockfish by the sector. The relatively low shortraker allocation arises from a change in management of shortraker and rougheye. Beginning in 2005, independent TACs were set for shortraker and rougheye. In the past, these species were managed using a combined shortraker/rougheye TAC. The 2005 CGOA TAC for shortraker was approximately half of the rougheye TAC. Yet, NOAA Fisheries estimates of catch composition suggest that 57 percent of the catch of shortraker/rougheye is shortraker. Given the difference between estimates of species abundance and catch composition for shortraker and rougheye, it is uncertain whether the allocation will be constraining, and may depend on the accuracy of those estimates and the extent to which catcher vessels are able to avoid catch of shortraker. In Table 29, observer data for tows targeting CGOA rockfish show slightly higher incidental catches of rougheye, than shortraker. An analysis of options for making allocations of shortraker and rougheye which examines their adequacy, is contained in Appendix 7. Secondary species are required to be retained, with all harvests counting against the allocation of the cooperative. With the exception of shortraker, observer data suggest that in only rare instances would secondary species allocations constrain participants in the rockfish fishery.

At the individual level, however, it is possible that secondary allocations could be constraining. Participants that receive relatively small rockfish allocations that have tows with high incidental catches of secondary species could quickly exceed a secondary species allocation. Also, participants attempting to target rockfish outside of the traditional early July season could have incidental catch rates that differ from historic rates. Participants that have high incidental catch rates during these other parts of the year are likely to limit their rockfish fishing at those times to avoid the constraint of the allocation. Cooperatives should help members avoid constraining allocations by providing information to members about incidental catch rates. By pooling allocations, cooperatives may also prevent constraining harvests of rockfish allocations. Secondary species allocations in the fishery can be expected to be fully harvested

because of their value (which is generally higher than that of target rockfish) and because harvesters have the flexibility to harvest these allocations independently of target rockfish.

Since each cooperative will receive an allocation of halibut PSC, it is possible that halibut bycatch could close the fishery for a cooperative, in the event that bycatch exceeds historic rates. Changes in the rates of halibut bycatch cannot be predicted, since the most significant change in fishing activity is likely to be a change in the timing of harvests under the extended season. If participants observe an increase in the bycatch of halibut outside of the historic season, they are likely to limit their fishing activity under the program to the historic season. On the other hand, if bycatch of halibut can be maintained at or below historic levels at other times of the year while achieving satisfactory CPUE of the target species, it is possible that some participants would extend fishing to different times of the year. Pooling of allocations in cooperatives should help participants avoid exceeding halibut PSC allocations.

The catcher vessel limited access fishery will be managed in the same manner as the catcher processor limited access fishery described above. Participants can be expected to race for catch during the short season, with managers closing the fishery when they estimate that the limited access TAC has been caught. Secondary species MRAs will be reduced from current levels to limit total catch of the secondary species to the allocated amount. These reduced MRAs for valuable secondary species are likely to act as a substantial deterrent to participation in the limited access fishery. Since cooperative formation simply requires four members, and since all cooperatives are required to accept membership of any person eligible for the cooperative subject to the same terms and conditions governing other members, it seems unlikely that anyone will choose to fish in the limited access fishery.

Catcher vessel cooperative with processor associations

Catcher vessel participation and fishing patterns under this alternative are likely to be similar to those described under the catcher vessel cooperative alternative, with limited processor entry, with a few significant differences. Allocations will be determined using the same eligibility requirements and qualifying years, so they will be the same as those described above. In addition, most of the rules governing catcher vessel participation under this alternative are the same as the rules governing participation under the other catcher vessel pilot program alternative. Yet, a few critical differences in the rules of this alternative could result in some substantial changes in participation and fishing patterns. Specifically, under this alternative, most harvesters are eligible to join a single cooperative, which would be required to associate with the processor to whom the harvester delivered the most rockfish during the processor qualifying years (1996 to 2000, with each processor required to choose a year to drop from consideration). A single cooperative would be permitted to associate with each qualified processor. Cooperative formation would require holders of 75 percent of the history eligible to join the cooperative.

Processing associations were estimated in the analysis by assuming that each processor drops the year in which it receives the least number of pounds of rockfish landings. As noted earlier, no cooperative would be permitted to control in excess of 30 percent of the sector allocation of target rockfish, using 2002 as an index year. Table 30 shows the number of qualified processors, by the number of associated LLP licenses. The table shows a variety of processors, including some with 5 or fewer potentially associated licenses, and 2 with 10 or more associated licenses. In addition, there are 5 or 6 licenses that are eligible for allocations, but which have no deliveries to a qualifying processor. These license holders would be permitted to join any of the cooperatives formed under this alternative.[47] Table 31 shows the number of

[47] A suboption considered by the Council would qualify any processor that processed in excess of 250 metric tons in any one year between 1996 and 2002, provided that the owner also invested in excess of some minimum threshold amount in the plant. Confidentiality limitations prevent the disclosure of whether any processor meets this qualification, or would have any associations arising from past landings from qualified catcher vessels. If a

eligible processors, by the number of associated harvesters. The table shows that no processor would have associated harvesters that hold 30 percent or more of the eligible history. Consequently, no cooperative would have members that historically harvested in excess of 30 percent of the qualified history.

Table 30. Number of qualifying processors by number of associated LLP licenses and number of LLP licenses without deliveries to a qualifying processor.

	Number of qualifying processors with				Number of LLPs with no deliveries to a qualifying processor	Allocation to LLPs without deliveries to a qualifying processor
	no associated LLPs	5 or fewer associated LLPs	more than 5 and fewer than 10 associated LLPs	10 or more associated LLPs		
Pacific Ocean perch	0	2	1	2	6	3.0 percent
Northern rockfish	0	2	1	2	5	1.5 percent
Pelagic shelf rockfish	0	2	1	2	6	2.1 percent

Source: NPFMC Rockfish Database 2004, Version 1

Table 31. Number of processors by allocation to associated harvesters.

	Number of processors associated with LLPs holding more than		
	30 percent of all catcher vessel history	20 percent of all catcher vessel history	10 percent of all catcher vessel history
Pacific Ocean perch	0	*	4
Northern rockfish	0	*	5
Pelagic shelf rockfish	0	*	5
Total - 2002 index	0	*	5

* Withheld for confidentiality.

Source: NPFMC Rockfish Database 2004, Version 1

Description of participation and fishing patterns

Fishing within cooperatives is likely to be similar to that described for the other catcher vessel alternative. Cooperatives, however, will be associated with a single processor. The terms of the cooperative agreement, and consequently, the cooperative/processor association are subject to negotiation between the cooperative members and the processor. Given the processor's involvement in this contract, it is likely that each cooperative will have limited latitude to pursue markets for their landings beyond the single associated processor. The implications of these rules for the temporal distribution of fishing (and landings) cannot be predicted. Planning of fishing activity, however, will likely be more coordinated with the associated processor, which could limit the ability of harvesters to pursue the best market opportunities by changing timing of fishing. Each cooperative is likely to pattern its fishing to serve the markets pursued by its associated processor. The overall effects of the processor associations on timing of fishing cannot be predicted.

The cooperative formation rule, together with the limitations on cooperative eligibility and the requirement of a processor association, could have some impact on whether some catcher vessel participants choose to join a cooperative. Specifically, since each catcher vessel participant will be eligible for a single cooperative that must associate with a particular processor, and cooperative formation requires 75 percent of the history eligible for a cooperative, the holders of that super majority of history and the processor are likely to control the terms of the cooperative agreement. While both the cooperative and the processor will realize some benefit from more inclusive membership, it is possible that a cooperative agreement that suits the super majority and the processor may not be agreeable to some

processor, qualified under the suboption, received substantial landings from qualified catcher vessels, it could be better off than it would be competing in the limited access fishery, if the suboption were not adopted. On the other hand, if a processor qualified for the program, but had no catcher vessel associations, it is likely that the processor would be worse off as a qualified processor.

minority participants. Cooperative membership, however, is likely to be favored by most participants in the program because of the reduced MRAs in the limited entry fishery.

Entry level fishery

Since the entry level fishery is made up of a trawl sector and a non-trawl sector, with some differences in management, the participation and fishing practices in these two fisheries are described separately.

The non-trawl entry level fishery will receive an allocation of one-half of the 5 percent entry level target rockfish set aside. The allocation will be made first from northern rockfish and pelagic shelf rockfish, with the remainder coming from Pacific Ocean perch. Since recent Pacific Ocean perch TACs have exceeded the combined northern rockfish and pelagic shelf rockfish TACs, the sector can be expected to receive some Pacific Ocean perch in its allocation.

The entry level non-trawl fishery will be prosecuted as a limited access fishery (similar to the current limited access fishery), open to any non-trawl participant that applies. Historically, non-trawl vessels have very minimal participation in the CGOA target rockfish fisheries. Although the fisheries have opened to non-trawl participants on January 1st, and not opened to trawl gear until early July, non-trawl harvests never exceeded two-tenths of one percent of the TAC for any of the target species. No harvest of Pacific Ocean perch by non-trawl vessels has occurred, although some experimental gear is being used to target Pacific Ocean perch in Southeast. Despite the minimal historic participation, some non-trawl fishermen have expressed an interest in prosecuting the entry level fishery. Most have said that they will participate primarily in the summer months when the weather is the best, allowing the fleet to target these offshore rockfish. The potential success of these persons cannot be predicted. If some participants are successful in the fishery, additional entry can be expected.

The entry level trawl fishery will be allocated one-half of the 5 percent entry level set aside. This allocation will be deducted first from the Pacific Ocean perch set aside, which in the absence of a large TAC change will be large enough to accommodate the entire trawl entry level allocation. The entry level trawl fishery is open only to LLP holders that have not participated in the target rockfish fisheries in the qualifying years. The level of participation in this fishery cannot be predicted, since participants are limited to persons with no CGOA rockfish history. The trawl entry level fishery will also be managed as a limited entry fishery. The fishery would open on the 1st of May, two months earlier than the traditional opening of the rockfish fisheries and simultaneously with the opening of the main pilot program cooperative fisheries.

Fishing practices in this fishery are likely to resemble those in the current limited entry fishery program. If participants perceive an advantage from an increasing share of the catch, handling of catch and quality could suffer, as it does in the current fishery. Secondary species will be managed under the current MRAs (instead of direct allocations or reduced MRAs). Therefore, fishing for targeted rockfish will not be constrained by incidental catches of secondary species. The small rockfish allocation, when translated through the MRA, means that harvests of secondary species will be relatively small, making it difficult for an entry level participant to harvest secondary species in an amount equal to the MRA permitted with targeted hauls. If vessels do attempt to target secondary species, it could result in a substantial amount of discards. Some entry level participants could elect to harvest less than the MRA amount, to avoid overcatching and discarding. In addition, if seasons are managed on fixed time periods (which may be required if substantial numbers of persons apply to participate), participants may not have the time to move from areas of high concentrations of target rockfish to areas of high concentration of secondary species to catch the MRA. Halibut PSC usage by the entry level fishery will be deducted from the general trawl allocation of PSC to the CGOA deep-water complex. Since halibut PSC is allocated quarterly, it is possible that the fishery would not open on May 1st. In one year since 2000, quarterly halibut available to

the deep water complex was fully harvested prior to the May 1st opening. In another year, the deep water complex was closed for directed fishing on May 3rd. Depending on the circumstances, halibut PSC could constrain the operations of this fleet at the beginning of the season, delaying the opening until the next halibut release, in July.

Harvests from both sectors of the entry level fishery will be required to be delivered only to processors that are not eligible for the main program. Although the primary rockfish processors for the CGOA are included in the main program, harvesters should have some choice of processors in the entry level fishery. Processor preferences for delivery timing, however, could play some role in determining when fishing takes place in the trawl entry level fishery. Given that, (1) rockfish are relatively difficult to handle and process; (2) rockfish product value is relatively low; (3) entry level delivery amounts will (by definition) be quite small; and (4) processors to whom entry level fishermen must deliver do not have any substantial history processing or marketing rockfish, it would appear there is little economic incentive for a processor to become involved. In effect, for the reasons cited, processing small deliveries of an unfamiliar species could require virtual "custom processing" because any economies of scale or scope enjoyed by "qualified" rockfish processors would not be available to those eligible to accept entry level landings. This could present a formidable barrier to successful entry into the CGOA catcher vessel rockfish fishery.

2.5.3. Effects on participation in the processing sector

Development of a rationalization program that slows the pace of fishing and distributes landings over a longer period is likely to affect the processing sector in many ways. This section compares the impacts of the different alternatives on participation in the processing sector and processing practices.

Status quo

Processing participation and practices are likely to be similar to current participation and practices, if the status quo is maintained.

Catcher processors in the rockfish fisheries current produce mostly whole and head and gut products. Catcher processors are likely to continue producing these products, processing catch as it is landed in the race for fish.

In the current fishery, shore-based processors race to process landings in an attempt maintain market share and to maintain a minimum quality for products. Quality, however, suffers because of the rapid rate of harvest and processing, which leads to the production of relatively lower value and lower quality products. Secondary species catch, which tends to be of higher value, is often handled better than target rockfish catch by vessels. As a consequence, secondary species are typically processed into higher quality products.

Catcher processor sector allocation with cooperatives

Processing by catcher processors, under the catcher processor sector allocation with cooperatives, is likely to remain similar to the current processing by this sector. Most vessels in the sector are equipped for producing a few simple product forms (e.g., frozen whole, head and gut). Because of size limitations, it is unlikely that any of these vessels will change plant configurations to process higher-valued, more highly processed product forms.

Although catcher processor product mix may not change substantially from the status quo under this alternative, it is possible that some improvement in quality may be made by some participants. Generally, however, catcher processors produce a relatively high quality product, so the ability to make quality improvements may be limited.

Catcher processor cooperative

Processing by catcher processors under this alternative is likely to be the same as processing under the catcher processor sector allocation alternative.

Catcher vessel cooperative with limited processor entry

Under this alternative, only inshore processor that have processed at least 250 metric tons of aggregate CGOA rockfish per year for four years, between 1996 and 2000, will be permitted to receive deliveries of rockfish harvested under the main program.[48] Five processors meet this qualification criterion, all of which are based in Kodiak.

Processing by shore-based plants under this alternative can be expected to change from the status quo. Share allocations to cooperatives should provide the ability to improve quality of landings. These quality improvements should provide processors with the ability to pursue higher revenue products. Whole and head and gut products are the leading products of shore-based plants that currently participate in the rockfish fisheries. Rockfish fillet prices, however, average 5 times the average price of whole, and head and gut rockfish products. Even though recovery rates may be substantially lower and production costs higher for fillet production, the expected return on these higher valued products should be sufficient to warrant changing to fillet production, if quality can be maintained.[49] Similarly, some plants produce substantial amounts of surimi from rockfish. Average prices for fillets are more than twice the average surimi price, while these products have similar product recovery rates. If quality improvements in landings can be realized, processors may also shift from surimi production to fillet production. Some processors are likely to develop products to serve a fresh market. The shipping limitations from Kodiak (where all of the qualified plants are located) could pose some challenge to participants wishing to serve the fresh fish market. Potential revenues in the market, however, should induce some processors to produce fish for fresh markets.

The structure of the market for landings should be competitive under this alternative, inducing some processors to aggressively pursue product improvements to attract additional landings. Although the processors will participate in a market with limited entry, eligible processors have processed in excess of 90 percent of the landings of CGOA rockfish between 1996 and 2002. Since the fishery was prosecuted over a very short period in the past and will be prosecuted under an extended season under this alternative, it is likely that competition for landings would develop despite the limit on processor entry. Although competition should exist in the market for landings, harvesters are likely to time landings to accommodate processing schedules; behavior which processors should reward, in turn, with higher ex-vessel prices. This timing of landings could be critical to processors meeting some market demands, particularly if a fresh market were to develop.

Some processors (particularly those with loyal fleets that have historically made deliveries from many different fisheries to the same processor) may choose to compete less in more challenging markets (such as the fresh market). These processors are likely to produce more high quality products, such as frozen fillets, but may also be expected to balance the potential costs of production of other species with their

[48] A suboption in the current motion would qualify any inshore processor that processed in excess of 250 metric tons in any one year, between 1996 and 2002, provided that the owner also invested in excess of a minimum threshold amount in the plant. It appears that one processor meets this qualification based on available ownership information. Qualification would allow a processor to compete for all landings from the main rockfish pilot program. Although this increased competition from additional qualified processors is unlikely to affect the general conclusions of the analysis, the ability to compete for these landings could be important to a processor that receives that qualification.

[49] Fillet recovery rates have been estimated to be approximately one-half the recovery rate for head and gut products (Crapo, 1993).

improvements of production of rockfish. The extent to which processors are able to adopt this approach would depend on the loyalty of their fleet, including the interaction of the fleet's participation in the rockfish fisheries with their participation in other fisheries. Overall, it is possible that some harvesters that participate in diverse fisheries throughout the year could choose to remain with a processor offering lower rockfish prices, if lower revenues for rockfish were to be compensated for by increased revenues from landings in other fisheries or other operational considerations provided by the processor (e.g., fuel, storage, or pre-season loans).

Catcher vessel cooperative with processor associations

Processing practices under this alternative should be similar to those under the previous alternative. The processor associations under this alternative, however, are likely to dampen competition among the eligible processors, which could limit the extent to which some processors aggressively pursue new or challenging markets.

Under this alternative, each eligible participant would be permitted to join a cooperative in association with the eligible processor to whom it delivered the most pounds of rockfish during the processor qualifying period. Processor eligibility would be based on the same criteria defined for other catcher vessel pilot program alternative, so five processors would be eligible under this alternative. A harvester/processor association would be determined based on the processor to which the harvester delivered the most pounds of target rockfish during the years 1996 to 2000, inclusive, with each processor permitted to drop the year of its choice from the calculation. Harvester/processor associations were estimated for each processor by dropping the year in which the processor received the fewest pounds of target rockfish.

Table 30 and Table 31 (above) show characteristics of the harvester/processor associations. Table 30 shows the number of processors that have various numbers of associated harvesters (or LLP licenses). This table also shows the number of harvesters without deliveries to a qualified processor, and the estimated allocations to those harvesters. The table shows that all qualified processors have at least one associated harvester, while two have 10 or more associated harvesters. In addition, 6 harvesters that would receive allocations have no deliveries to a qualified processor. These harvesters would be permitted to join any rockfish cooperative of their choosing, but their allocations would not be considered in determining whether the cooperative formation threshold is met (holders of 75 percent of eligible history). Table 31 shows the number of processors by the allocations of their associated harvesters. The table shows that no processor would be associated with harvesters that have in excess of 30 percent of the sector's qualified harvest history.

A processing cap is intended to prevent excess consolidation of processing under the program. Under this rule, no processor would be permitted to process in excess of 30 percent of the sector's aggregate rockfish, using 2002 as an index year. On this basis, no processor is associated with harvesters that have historically processed in excess of the 30 percent limit.

Because the cooperative structure under this alternative differs from the structure under the other catcher vessel alternative, it is possible that some processing differences could arise. In general, efficiency gains should be similar to those realized under the other catcher vessel alternative, as processing can be slowed and landings can be better timed. Under this alternative, however, (most) harvesters have no choice of cooperatives to join, but will be eligible only for a single cooperative, associated with a specific processor. As a consequence, processors are unlikely to compete for landings on a regular basis, but only in developing the terms of the cooperative agreement, which is subject to the processor's approval. This limit on the competition for landings from the fishery could reduce competition among processors for markets for their outputs. While some processors may aggressively pursue any available market, it is

possible that others will show less interest in extracting maximum gross revenues from rockfish landings, particularly if their processing of those landings could interfere with their operations in other fisheries. So, processing under this alternative should resemble that of the previous alternative. Nonetheless, fewer products may be produced and marketed into challenging high revenue market niches, as some processors may not perceive the need to compete as aggressively for landings, due to the limited markets available to harvesters.

Entry level fishery

Processing practices in the entry level fishery will likely differ for the two different fleets. In the trawl sector, entry level participants will race for a share of the allocation to that fishery. This could lead to relatively poor handling of catch by vessels (similar to trawl catcher vessels in the current fishery, except a new entrant my have even less knowledge and experience in handling rockfish catch). In addition, vessels may have little or no opportunity to target secondary species, if the season is very short in length. Entry level processors are likely to be smaller than the more established processors that have qualified for the program. Prosecuting the entry level fishery as a limited access race for fish, however, could hurt some processors that may be less well-equipped to handle low quality fish, because of the scale of their operations or the niche markets that they currently serve. One or two larger processors in the entry level trawl fishery could dominate, depressing quality and value of outputs, if they chose to compete aggressively for landings.

The non-trawl rockfish fishery historically have received a higher price for their landings of rockfish, likely as a result of better quality of landings. Because of this higher quality and the relatively smaller landings dispersed over longer time periods, historically landings from this sector have likely been processed into higher quality products. In the entry level program, landings from this sector could be made throughout the year, until the third quarter, when the trawl sector is likely to sweep up any fish remaining in the non-trawl entry level allocation. Landings from the non-trawl rockfish entry level fishery, however, are likely to be concentrated in the summer months. Processors receiving landings from this sector may be more likely to pursue challenging, high value markets (such as the fresh fish market).

2.5.4. Effects on efficiency

This section of the analysis examines changes in efficiency in the fishery under the different alternatives. To simplify, the analysis is separated into sections that examine efficiency changes in the different segments of the industry: catcher processors, catcher vessels, and inshore processors. The next section addresses catcher processor sector efficiency, under the several relevant alternatives, followed by two sections that examine catcher vessel efficiency and shore-based processor efficiency, which in combination determine production efficiency in the shore-based sector. Together, catcher processor efficiency and efficiency in the shore-based sector determine overall production efficiency in the fishery. To assess the overall production efficiency impacts of the alternatives on net benefits, the sum of the effects in these three sections (catcher processor efficiency, catcher vessel efficiency, and shore-based processing efficiency) are summarized for each alternative after these three sections.

To establish a framework for this portion of the analysis, a brief description of production efficiency (and its role in overall economic efficiency that is used to examine the net benefits of an action) follows. In the simplest terms, production efficiency is the difference between production revenues and production costs. Production efficiency is a measure of the effectiveness of a producer in using inputs to produce one or more outputs, focusing on the relationship between the quantity and quality of outputs produced and the quantity and quality of the various inputs (e.g., fuel, vessels, and labor) used for that production.

Economists estimate four different contributing factors, all of which, when taken together, constitute production efficiency:

1. Reducing the quantities of inputs used to produce a given set of outputs;
2. Increasing the quantities of outputs produced with a given set of inputs;
3. Reducing the cost of production by improving the mixture of inputs used to produce a given set of outputs; and
4. Increasing revenues by improving the mixture of outputs produced, using a given set of inputs.

Two different types of efficiencies contribute to, and together constitute, production efficiency. "Technical efficiency" (the first two on the list above) refers only to the production process (i.e., conversion of inputs to outputs) and is a measure of the "quantities" of inputs used and the "quantity" of outputs produced in a given production process (independent of prices and their effects). Decreasing quantities of inputs and increasing quantities of outputs, *ceteris paribus,* are sources of technical efficiency gains. "Allocative efficiency" (the latter two items on the list above) is concerned with both the markets for inputs and outputs, and choices of inputs and outputs. Allocative efficiency is a measure of the economic benefits of choosing different mixes or combinations of inputs and outputs in production. Allocative efficiency necessarily considers the costs and revenues generated by these choices. Collectively, these two types of efficiency define "production efficiency".

Overall production efficiency, which is the concern of this section, therefore requires the consideration of both the choices that the producer makes in the markets for inputs and outputs, as well as the process by which inputs are converted to outputs. In the end, overall production efficiency may be measured by the returns to producers – the difference between the producer's revenues generated by outputs and the producer's costs of inputs.

Since the output of the fishery is fish (e.g., raw fish in the case of catcher vessels; head and gut fish, whole frozen, fillets, and surimi for processors), an analysis of overall efficiency must assess the efficiency of both the catching of fish, as well as the processing of that fish into final products. The Council's problem statement, however, recognizes that production in the fisheries is generally separated into two industry segments – harvesting and processing – and expresses its intent that the rationalization program contribute to the economic stability of both of those segments. To facilitate an understanding of the implications of the alternatives on these two segments, this analysis separately assesses the implications of the different alternatives on the "efficiency of harvesting" and the "efficiency of processing".

To understand impacts on production efficiencies under the alternatives, it is helpful to develop a framework for assessing returns to producers in the fisheries and the sources of those returns. Three different sources contribute to returns to producers in the fisheries: resource rents, harvester normal profits, and processor normal profits. First, fish that will be harvested and processed have a scarcity value, while unharvested in the water. This value can be said to exist independent of the action of harvesters and processors. Once the fish is harvested and processed, this value is captured by the industry. The value referred to here is "resource rent", or the value of fish in its natural state that is realized only through its capture and conversion into some value added form.

In the case of catcher processors, this entire value is captured. For the shore-based sector, the ex-vessel price paid for the raw catch determines the division of resource rents, between the catcher vessels and the shore-based processors. This value, however, is only one part of the returns realized through the harvesting and processing of fish.

In addition to resource rents, each sector is generally expected to receive its normal profits (or a reasonable return on investment). The normal returns on harvesting investments and normal returns on processing investments are the other two sources of returns in the fisheries. As in any business, harvesters and processors invest capital and labor on the reasonable expectation of receiving a return on that investment.

When assessing the economic efficiencies in this section, one must keep in mind the relationship between resource rents and efficiencies. In a more efficient fishery, a greater portion of the rents from the resource will be captured by the fishery participants, *ceteris paribus*. For example, ending a race for fish may slow the flow of rockfish through processing plants, increasing product quality, which increases returns from the raw fish. This capture of additional rents could result in relative improvements in both the catcher vessel and the shore-based processing sectors, if the efficiency gain is shared between the sectors, or it may be disproportionately captured by one or the other sectors, depending on a number of factors exogenous to any given ex-vessel transaction. The discussion of efficiencies is largely an analysis of the capture and distribution of the resource rents between sectors. The reader should bear in mind that in a fishery in which the division of revenues moves to the detriment of one sector, that sector does not necessarily suffer a decline in efficiency (and hence may not be made worse off), if substantial efficiencies are realized (or in other words, substantial additional rents are captured). If total revenues in the fishery rise substantially, even a negative shift in the division of revenues could leave one party more efficient and, at the very least, no worse off than before. Clearly, the other party in such a case benefits very substantially by capturing all the rent gains and his/her share of efficiency improvements. The operator of a catcher processor is not confronted with these dynamic distributional issues, enjoying, as he or she does, both the harvester's and the processor's share of any efficiency gains and 100 percent of the rents.

As should, by now, be apparent from the foregoing discussion, the distributional outcome is much less certain for the inshore portion of the fishery. The ex-vessel price paid for rockfish determines the distribution of rents between the catcher vessel and shore-based processor sectors. Rockfish landings generate output revenues for harvesters, and are a principal input cost to processors. Because of the importance of ex-vessel prices in determining the efficiencies of the different shore-side sectors, the analysis in this section devotes considerable attention to the effects of the different alternatives on the distribution of revenues between these sectors (reflected in those ex-vessel prices).

Since all of the participants in the rockfish fisheries also participate in other fisheries, most of the alternatives will also affect efficiencies in other fisheries. To fully understand the efficiency effects of the alternatives, the effects on rockfish participants' activities in other fisheries are also considered.[50]

For each segment of the industry discussed below, it is possible that efficiencies could differ. Specifically, participants with small allocations could be affected differently from those receiving large allocations. To the extent that these differences can be assessed, the analysis of each alternative concludes with a discussion of the differential impacts of the alternatives within the sector.

[50] Some analysts might consider these effects on other fisheries to be "cumulative effects", because they concern the interaction of the alternatives with the management programs in other fisheries. Since the interactions influence not only the efficiencies realized in those other fisheries, but also the efficiencies realized in the rockfish fisheries, a thorough analysis of the effects of the alternatives on the rockfish fisheries requires their consideration. In addition, since these interactive effects do affect the overall efficiency arising from the rockfish alternatives, a comprehensive net benefits analysis must include those effects.

2.5.4.1 Effects on catcher processor efficiency

This section of the analysis examines the effects of the alternatives on catcher processor efficiency, and thus, only considers the effects of the three alternatives that apply to catcher processors. The interaction of the catcher processor alternatives with the two catcher vessel alternatives is discussed where applicable.

Status quo

Production efficiency of the catcher processor sector under the status quo is limited to some degree by the race for fish under the current LLP fishery. Catcher processors are compelled to race for rockfish harvests with other catcher processors, as well as catcher vessels participating in the fisheries during the few weeks they are open each year. Although catcher processors process their catch quickly, relative to catcher vessels, quality of harvests likely suffer to some extent, as participants adopt fishing techniques to maximize catch rates, which may lead to diminished quality and dissipation of a portion of the potential resource rents that could otherwise be available. Particularly on vessels with smaller processing plants, fishermen may harvest fish at a rate that exceeds the rate at which the plant can efficiently, or perhaps even physically, process that fish. If fish are held too long prior to processing quality will decline. Generally, participants in the catcher processor fleet are only equipped to produce whole, and/or head and gut frozen products. Production of these products is likely to continue if the status quo is maintained.

Catcher processor sector allocation with cooperatives

Under this alternative, the catcher processor sector is likely to realize some gains in production efficiency capturing greater rents from the fishery. As noted earlier, most eligible catcher processors are likely to join cooperatives under this alternative, since operations in the limited access fishery with reduced MRAs are likely to be less efficient (and less profitable).

The primary efficiency gains in the catcher processor sector, under this alternative, will result from improvements in technical efficiency. Allocative efficiency gains are unlikely to occur, since the vessels participating in this sector are equipped to produce only whole and/or head and gut products and are unlikely to reconfigure for different production outputs. Technical efficiency gains should occur as participants are able to slow the pace of fishing and processing. In the slower fishery, participants are likely to be able to reduce expenditures on inputs to some degree (e.g., scaling down crews) and increasing outputs slightly (with less loss, due to delays in processing, which leads to diminished quality). Additional technical efficiencies should arise, because of the cooperative structure provided for in the alternative. In a cooperative, participants will be free to consolidate fishing, up to the 60 percent vessel cap. Consolidating catch on fewer vessels in the fishery should also reduce aggregate harvest costs.

Some cooperatives may also improve efficiency in other July fisheries, if they are able to reduce the number of vessels in the rockfish fishery or change the timing of rockfish harvests (away from the traditional early July fishery). This interactive effect should arise one of two ways. Since each cooperative will be limited to the historic catch of its members in other July fisheries[51], the outputs of each cooperative will be limited. A cooperative could enter more vessels into these other fisheries (since no, or fewer vessels may be occupied with rockfish targeting in early July), slowing the rate of harvesting and processing without reducing its total harvest from historic levels. At this slower rate, technical efficiencies similar to those in the target rockfish fishery could be realized. Alternatively, a cooperative could choose to use fewer vessels to make its historic harvests in these other fisheries, since vessels would be able to

[51] Although cooperative members could choose to be subject to a stand-down in lieu of the cooperative sideboard, it is unlikely that a cooperative would choose to accept the stand-down given the opportunity to enter the July fisheries on their opening.

begin fishing at the opening of the non-CGOA rockfish seasons, instead of needing to race for fish in the CGOA rockfish fishery prior to entering these other fisheries. A cooperative whose members have diverse histories in several different July fisheries may be less able to achieve these efficiencies in other fisheries, since the cooperative may need to enter vessels in several fisheries simultaneously to maintain its historic shares.

Participants in the catcher processor sector will also have the option of transferring their annual allocations to the shore-based sector (although the reverse is not permitted). Some historic participants could elect to transfer their allocations to a catcher vessels cooperative if they perceive an added benefit from doing so. Participants with relatively small allocations who cannot achieve efficiencies internally harvesting and processing those allocations (and are unable to reach satisfactory agreements with other participants in the catcher processor sector) may find that transferring their small allocations to the shore-based sector could yield a better return. Whether better returns can be realized in the shore-based fishery cannot be predicted, *a priori*. It will depend on a number of exogenous factors that may emerge following adoption of the proposed action. These may include any difference in harvesting and processing costs that emerge between the shore-based and offshore sectors under the pilot program; differences in product mix, value-added, and quality; and development of new market opportunities. As noted in the discussion of shore-based processing below, the shore-based sector has an inherent operational advantage, assuming a high quality raw fish can be delivered to it, in producing higher-value processed products, such as fresh fillets, that cannot readily be processed onboard the existing catcher processors that participate in the rockfish fisheries. Whether these different products lead to greater production efficiencies, however, depends greatly on managing harvesting and processing costs and practices.

Although technical efficiencies should be realized by the catcher processor sector overall, some catcher processors eligible for the program may realize efficiencies that are substantially less than those realized by others. Eligible catcher processors that receive small rockfish allocations may have little to gain from coordinating their harvest, particularly since sideboards will limit the participation of these operations in other July fisheries. It is also possible that some members of the sector could be disadvantaged by the loss of revenues from sideboard limits on their activities in other fisheries. These participants are likely to opt-out of the program, to avoid these sideboard constraints. A catcher processor that chooses to opt-out of the program would be permitted to participate in Bering Sea and Aleutian Islands fisheries. If it meets the criteria that it previously participated in a Gulf of Alaska fishery during the first week of July in at least two of the seven qualifying years, it would also be permitted to enter that fishery after opting out of rockfish, as well.

Catcher processor cooperative with individual allocations

Efficiency gains under the catcher processor cooperative alternative should be similar to those realized under the other catcher processor pilot program alternative. Under this alternative, persons who choose not to enter cooperatives would be permitted to fish individual allocations, but would be prohibited from exchanging annual allocations with other participants. Notwithstanding the ability to fish individually, all eligible catcher processors that choose to remain in the program are likely to join cooperatives that will allow greater flexibility in harvesting and the exchange of shares. This flexibility is likely to facilitate harvest of substantially greater portions of the cooperative's allocation, given the hard caps of the secondary species allocations. As under the other catcher processor alternative, some catcher processors with minimal allocations under the program may choose to opt out of the program to avoid the restrictions of the cooperative sideboards, or transfer their allocations to a catcher vessel cooperative, if better returns are available from that sector. Whether recipients of small allocations are more likely to opt out under this alternative, than under the other catcher processor alternative, cannot be predicted. Total catcher

processor efficiencies under this alternative are likely to be very similar to efficiencies realized under the other catcher processor alternative.

2.5.4.2 Effects on catcher vessel efficiency

This section examines efficiency in the catcher vessel sector, under the three alternatives that apply to the sector. A limited literature has developed examining the effects of harvester landing obligations (such as processor quota shares and cooperative/processor associations of the AFA type) on efficiency and the distribution of benefits between harvesters and processors. A brief summary of that literature is contained in Appendix 8. None of this literature examines the specific alternatives under consideration here. The analysis, however, provide some theoretical basis for analyzing efficiency and the distribution of benefits between the sectors.

To understand the efficiency effects of these alternatives on harvesters requires consideration of the nature of the cooperatives created under the program. The harvest cooperatives are explicitly for the sole purpose of coordinating the harvest of allocations. The cooperatives are not cooperatives formed under the Fisheries Collective Management Act (FCMA). Given their form, these cooperatives cannot negotiate price or terms of deliveries with processors. Members (or even potential members of a harvest cooperative), however, may form an FCMA cooperative with the same or similar membership as a rockfish harvest cooperative.[52] This FCMA cooperative could negotiate price and delivery terms for all or a portion of the rockfish harvest cooperative allocation. The ramifications of this distinction are discussed in the analysis of the pilot program alternatives below, and are of particular significance under catcher vessel cooperative with processor association alternative.

Status quo

Production efficiency of catcher vessels under the status quo is also limited by the short race for fish that has arisen under LLP management. Catcher vessel efficiency is particularly vulnerable under the current management, because catcher vessel efforts that maximize the share of the TAC also substantially diminish quality of landings. Increasing catch per tow and filling holds to capacity can damage rockfish, a species group that is notoriously difficult to handle in comparison to other groundfish. Also, extending trip lengths to increase catch per trip and decrease total travel time to and from grounds also results in a decline in quality of rockfish, which typically lose color after approximately 72 hours in a hold. The LLP management and the system of MRAs has led most catcher vessel participants to use fishing effort to maximize *quantities* of target rockfish, and *quality* of incidental catch species (primarily Pacific cod and sablefish), which are often iced in totes separate from the target rockfish in the holds. The result is a loss of resource rents from target rockfish. These fishing practices are likely to be perpetuated, if the current management regime is maintained.

Returns to catcher vessels under the existing management program have been limited, both by the quality of their landings and the compressed time period in which those landings must be made. During the current seasons, most processors have needed to process deliveries quickly to keep pace with the landings. These conditions have dampened competition for landings among the participating processors to some extent. In addition, the inability of harvesters to maintain both quality of landings and their shares of the total catch has also limited their ability to attract some smaller processors into the market that would only be capable of serving higher quality markets. The extent to which any resource rents are captured, and if so, what the division of those rents may be under the status quo, is not known. In a fishery that is

[52] Catcher vessel participants that are affiliated with, or owned or controlled by processors, however, may not join FCMA cooperatives.

prosecuted over a very short season, as are the rockfish fisheries, a substantial portion of the rents are likely to be dissipated, even with an LLP.

Catcher vessel cooperative with limited processor entry

The catcher vessel cooperative with limited processor entry alternative is likely to improve catcher vessel efficiency, over status quo management. As noted earlier, most eligible catcher vessels are likely to join cooperatives under this alternative.[53]

Since participants will be able to gain exclusive share allocations by joining cooperatives, a harvester's share of the fishery will generally be unaffected by catch rates.[54] Participants, instead, will refocus their efforts toward harvesting allocations in a manner that improves technical efficiency – reducing inputs and increasing the quality of rockfish deliveries, *ceteris paribus*.[55] Most participants may be expected to choose to sacrifice some cost efficiencies (i.e., use more inputs such as fuel) to improve quality of deliveries and receive a better price for landings. This trade off may increase overall efficiency of catcher vessels.

Some cooperatives are likely to remove vessels from the rockfish fisheries to reduce costs. Consolidation of catch on fewer vessels, and fishing outside of the traditional July season, could also allow the cooperative to enter more vessels in other July fisheries, to ensure that the cooperative's members maintain their historic harvests in those fisheries. Sideboards will prevent rockfish catcher vessel participants from increasing their share from July fisheries, in the aggregate, but will not prevent the cooperatives from competing amongst themselves to increase their shares of the sideboard amount. The extent of this competition in other fisheries could be reduced, if cooperatives are able to agree on the division of the sideboard amount.[56] Such an agreement could provide the sector with some opportunity to realize efficiency gains in those other fisheries, if harvests can be slowed. Slowing the fishery will also depend on the level of competition from persons outside the rockfish program. Substantial competition from others could limit the ability of rockfish participants to slow their fishing in other fisheries. In addition, the prospect for cooperatives reaching an agreement concerning the harvest of the sideboard amount cannot be predicted.

Although processor entry into the rockfish fisheries is limited, harvesters should be able to generate additional competition for landings among the licensed processors under this alternative. Since qualified processors have processed in excess of 90 percent of all historic landings during the two to three week season, processors that have been unable to compete for additional landings because of capacity

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[53] The alternative of participating in the limited access fishery (with reduced MRAs to keep catch under the allocation) is unlikely to appeal to many participants. In addition, cooperative rules are favorable for cooperative membership under this alternative. Cooperative formation simply requires four holders of four eligible LLPs. Also, cooperatives are required to accept any eligible LLP holder as a member, subject to the same rules governing other members.

[54] Seasons will be of limited length to accommodate management and oversight. Harvests, however, are unlikely to be constrained by season length, given the current ability of the fleet to harvest the TACs of all CGOA rockfish in less than three weeks.

[55] Because catcher vessels deliver a single product (unprocessed fish) to shore plants, the change in their outputs arising from quality improvements is characterized as a technical efficiency improvement here. Some economists may assert that the change is actually allocative, because of the difference in quality could be argued to be effectively changing outputs. Regardless of the characterization of the change, the result is an efficiency improvement.

[56] Unlike the catcher processor sector, the catcher vessel sector sideboard limit will not be divided among cooperatives. Consequently, participants within the sector could be compelled to race against other members of the sector to catch sideboarded amounts to maintain their historic shares of the sideboarded fisheries.

constraints during the brief season are likely to have the ability to process substantially greater quantities of rockfish, if landings can be timed to take advantage of available processing capacity.[57] Catcher vessel participants are likely to have the greatest negotiating leverage in the ex-vessel market under this alternative because of the extended season and the limited restriction on the processing market relative to the alternative with fixed processor associations. As a result, catcher vessel participants should be expected to receive a greater share of resource rents under this alternative, than under the other pilot program alternative.[58]

Since the CGOA rockfish fishery is only a small portion of the fishing undertaken by most participants in the fishery, it is possible that some catcher vessel participants may choose to accept a lower price for landings from the rockfish fishery to maintain a favorable relationship with a processor in other fisheries. In addition, it is possible that some catcher vessel participants may not exert their competitive advantage to the fullest extent, because it may affect the distribution of negotiating strength under comprehensive Gulf of Alaska groundfish rationalization. If this rockfish pilot program is adopted and perceived to have a great imbalance of power in favor of catcher vessels, it is possible that the distribution of power under Gulf rationalization may be designed to disproportionately favor processors. The strength of the effects of these constraints cannot be predicted.

Overall, the ability to coordinate harvest activity and remove vessels from the fleet without loss of harvest share, together with a relative improvement in bargaining strength arising from the relatively weak processor protection of the limit on processor entry, should result in substantial improvements in harvest sector efficiency over the status quo.

Catcher vessel cooperative with processor associations

Operation of the catcher vessel sector under this alternative should be similar to those under the other pilot program alternative. Catcher vessel efficiency gains, however, are likely to be smaller under this alternative, because of the rigid cooperative/processor associations.[59]

Catcher vessel fishing practices and technical efficiency gains under this alternative are likely to resemble those under the other catcher vessel pilot program alternative. Rockfish fishing will be dispersed over longer seasons. The slower fishing pace provides an opportunity for greater attention to handling of catch,

[57] Although most processors have substantial participation in other Gulf of Alaska LLP fisheries, substantial down time exists between seasons that occupy most of the qualified processing capacity.

[58] Matulich, et al. (2001) concluded that under the more restrictive AFA cooperative/harvester associations and landing obligations, harvesters realize a substantial portion of the rents of the fishery.

[59] Although the alternative creates no specific landing requirement, given that cooperative formation requires a specific processor relationship, it is likely that processors will use that requirement to negotiate landing obligations. Anderson (2002) concluded in his analysis of the relatively more flexible cooperative structure of the AFA that cooperative obligations limited the efficiency gains in that fishery. Anderson, however, did not account for inter-cooperative transfers under that program. Matulich et al. (2001) also question the efficiency gains under the AFA, suggesting that in the absence of tradable quota, processing efficiency will not be maximized. Inter-cooperative transfers (undertaken by harvesters with processor consent) would seem to overcome these inefficiencies. Whether participants would engage in these transfers, however, is uncertain. Some participants may choose not to engage in inter-cooperative transfers to use their rockfish operations to support their equipment use during periods when other fisheries are closed. In addition, as Matulich et al. (2001) suggest, some differences in the "scale of operations", across participants in a sector, may lead to certain efficiencies from association with participants of compatible scale in another sector. The potential for these efficiencies, however, is not fully explored in that analysis. The potential reduction of processor efficiency from the rigid cooperative/processor associations in this program, are examined in 0 below.

should improve quality of landings. Also, cooperatives are likely to use fewer vessels to fish rockfish. This reduces costs and allow cooperative members to maintain their share of harvests in other fisheries.

Although fishing under the two catcher vessel pilot program alternatives should be similar, the ability of catcher vessels to realize efficiency gains will be less under this alternative because of the fixed cooperative/processor associations. Since each catcher vessel participant will be eligible to join a single cooperative that is in association with the processor that it delivered the most rockfish to in the qualifying years, catcher vessel participants will have substantially less ability to use competition for rockfish landings as leverage in price negotiations. Two potential sources of negotiating leverage might be exploited under this alternative. First, a cooperative's members could use the threat of not fishing their allocation, instead choosing to either not fish at all, or fishing in the limited access fishery. The potential for negotiating leverage that arises from the opportunity to participate in the limited entry fishery is limited because of the reduced MRAs for valuable secondary species. So, the extent to which a rockfish catcher vessel can exert leverage depends on the economic importance of the rockfish fishery to the participant. If the rockfish fishery is an important component of a catcher vessel's operational viability, the ability to withhold fishing to leverage a better price may be very limited. Similarly, the effectiveness of withholding catch from a processor for negotiating leverage also depends on the importance of rockfish to the processor. Processors that are more dependent on rockfish revenues are likely to be more responsive to catcher vessel threats to withhold catch. For the qualified processors under this program, rockfish has historically been a relatively small portion of their overall processing activity, limiting the potential for rockfish catcher vessels to withhold landings to exert negotiating leverage.

A second potential source of negotiating leverage for rockfish catcher vessels is their deliveries in other fisheries. Some harvesters may be able to use their deliveries in other fisheries to induce a processor to share efficiency gains. This approach could be more effective than threats to withhold rockfish, but still should have only a limited effect, since the market for those other landings is somewhat fluid, allowing the processor to compete for landings from other vessels, if formerly loyal catcher vessels threaten to move to another processor because of low ex-vessel prices in the rockfish fishery. The ability of catcher vessels to use this method of negotiating leverage will likely depend on whether a substantial portion of the processor's supply of raw fish from these other fisheries, is attributable to vessels willing to withhold deliveries. If so, substantial leverage may be brought to bear on the processor. Given the relatively small scale of the rockfish fishery, and the fleet that participate in that fishery, efforts to exert leverage by withholding deliveries (from either the CGOA rockfish fishery or other fisheries) are likely to have only a minor effect. In instances in which a processor is highly dependent on the fleet that delivers to it in the CGOA rockfish fishery, it is possible that organized effort of the fleet to exert leverage on the processor could yield some results. In the case of large processors that participate in several different fisheries (including fisheries outside of the Gulf), efforts by catcher vessels to exert negotiating leverage by withholding deliveries of CGOA rockfish or fish from other fisheries are likely to be unsuccessful. In most cases, the prospect of a catcher vessel negotiating a disproportionately large share of the increase in resource rents from a processor will be limited.

A substantial portion of resource rents are likely dissipated in the very short season under the status quo management. As a result, overall catcher vessel efficiency should not decline under this alternative in comparison to the status quo. The potential for a substantial share of increases in rents, however, is limited by the relatively weaker negotiating position of catcher vessel participants under the alternative. All catcher vessels that participate in the fishery can be expected to receive at least their costs of fishing and normal profits. Catcher vessels that are able to exert some negotiating leverage may be able to use that leverage to gain some portion of the rents accruing from the fishery.

The dynamics of price negotiations under this alternative could be complicated by the limited purpose served by the harvest cooperatives and the harvest cooperative formation rules. Since the harvest cooperatives under the program are not permitted to negotiate price, members of the same harvest cooperative could each conduct negotiations, separately. This could disadvantage some cooperative members and lead to different prices for landings of equivalent quality in the same harvest cooperative. For example, a group of catcher vessel participants eligible to associate with a processor could form an FCMA cooperative. If this FCMA cooperative includes holders of more than 25 percent of the history that is eligible to associate with the processor, the FCMA cooperative members could threaten the formation of a harvest cooperative in its negotiations with the processor. Once a cooperative has formed, any catcher vessel participants that have not agreed to delivery terms with the processor will be disadvantaged in their negotiations, losing any ability to threaten cooperative formation.[60] The processor, on the other hand, will have less incentive to make any concessions to participants (including matching the already agreed price) once the cooperative has formed. Whether a processor is likely to assert different leverage against cooperative members will depend on the level of unification of catcher vessel participants in their negotiations. In addition, price differences could be relatively small, if the processor exerts the leverage available to it in its negotiations prior to formation of the harvest cooperative.

Additionally, the prospect of comprehensive rationalization of the Gulf of Alaska groundfish fisheries could affect price negotiations under this alternative. Specifically, processors may choose not to fully exert their bargaining strength under this alternative, if they believe that the balance of negotiating strength under the future rationalization program could be affected. If this program is perceived to have a great imbalance of negotiating strength, it is possible that the program selected to rationalize the Gulf could be designed to be more favorable to catcher vessels. The extent of this effect on negotiations under this alternative cannot be predicted.

Entry level fishery

Since the operations of the trawl and non-trawl sectors differ, the catcher vessel efficiency effects of these alternatives are discussed separately.

Fishing practices in the trawl entry level fishery may be similar to those in the current limited access fishery. The entry level participants will compete for a very small allocation, relative to the participants in the current fishery. Whether participants will improve quality over the current fishery is uncertain. Since harvests are likely to be relatively small, participants may have time to take better care of their catch. If participants perceive a benefit from increasing catch rates, however, quality is likely to suffer and remain at levels similar to those in the current fishery. Entry level participants will be subject to the current MRAs, which would allow catch of higher value secondary species at current rates, but because of the relatively small allocation of target rockfish to the entry level fishery, participants may not have time to harvest these species to the MRAs. This relatively low harvest of secondary species could reduce revenues (and efficiency) for entry level trawl sector participants.

Participation in the entry level fishery requires that the harvester demonstrate a market for landings with a processor eligible for the entry level fishery (i.e., a processor that is <u>not</u> eligible for the main program). Since several operations that process landings from the Central Gulf of Alaska are not eligible for the main program, at least potentially, demonstration of a market should not be difficult but may present some challenges. The small allocation to the entry level fishery, together with the difficulty of handling

[60] The provision permitting eligible catcher vessels to join the harvest cooperative, subject to the same terms and conditions as other members, will not address any pricing differences, since harvest cooperatives cannot negotiate delivery terms.

and processing rockfish, could pose some challenge to entry level participants in demonstrating a market for their landings.

Harvest of the remaining TAC from the non-trawl entry level fishery by trawl vessels at the end of the third quarter will also be managed as a limited access fishery. As a result, harvests of this fish will likely be similar to the harvests in the status quo fishery. Quality could suffer if trawl vessel participants race to harvest the available TAC. Prices of landings from this fishery are likely to be lower than harvests made with exclusive allocations in the entry level fishery, because of the quality of landings.

Non-trawl entry level participants will fish in a limited access fishery. Although the limited access fishery will be managed similarly to other competitive fisheries in the Gulf of Alaska, a race for fish that dissipates rents is not likely (at least initially). Non-trawl participants have little historic participation in the rockfish fisheries, never harvesting even one-tenth of the amount of fish that is being allocated to the sector under this program. This lack of history in the fishery raises the question of whether non-trawl vessels can successfully prosecute the fishery. It is possible that harvests by non-trawl vessels could remain relatively low under the program, with most of the allocation being caught when opened to the trawl sector in the third quarter.

Any portion of the allocation harvested by the non-trawl sector should be of relatively higher quality and should bring a relatively higher ex-vessel price, as the few harvests of this sector in the past have generated substantially higher ex-vessel prices than trawl harvests in the current fishery. Participants in this sector's entry level fishery are likely to have substantial negotiating leverage, since their harvests can be made over an extended period of time, including times when processors have fewer landings, because few other fisheries are being prosecuted by the higher volume trawl fleet.

2.5.4.3 Effects on shore-based processing efficiency

Shore-based processing is explicitly provided for only under the two catcher vessel alternatives and in the entry level fishery. The efficiency effects of these alternatives are discussed in this section.

Status quo

Under the current management, fishermen race for catch, and land that catch with processors shortly after it is harvested. Because of the race for fish, they tend to extend the length of trips, to maximize fishing time. The result is they tend to take less care in handling their catch and they hold it longer before delivery, decreasing the quality of landings. Processors also must race to process the glut of landings that occur during a compressed season, from fishermen that are trying to maximize their share of the total catch. Total efficiency in the processing sector suffers as lower valued products are made from poorer quality raw fish. Technical efficiency is lost, as crews must be scaled up for a short period of time to accommodate the rapid pace of landings during the brief season.

Vertical integration likely has minor effects on processor efficiency in the current fishery. Vertically integrated processors likely have some information concerning fishing costs and operations that is not available to independent processors. This information likely provides only a minimal negotiating advantage in the current fishery, because of the concentrated season.

Landings from non-trawl participants are a very small portion of the status quo CGOA rockfish fishery. These landings, however, bring fishermen and processors a premium price, because of their relative

higher quality.[61] The relatively unique high quality catch made over a long season, provides harvesters with some negotiating leverage. The small scale of the fishery, however, limits its importance to any processor (except possibly some of the small 'specialty' processors) thereby reducing fishermen's negotiating leverage commensurately.

Catcher vessel cooperative with limited processor entry

Under this alternative, fishing will be slowed, as cooperative receive exclusive allocations. Technical efficiency in processing should improve as processors are better able to schedule crews to process landings. Allocative efficiency should also increase, as processors produce more products of higher quality, as compared to that produced under the current management structure. Catcher vessel participants are likely to use cooperatives to coordinate landings, contributing to technical efficiency gains in the processing sector, as well as the harvesting sector.

Processors may experience little improvement in their overall efficiency, under this alternative because of their relatively weak negotiating position in the market for rockfish landings. Although entry is limited under this alternative, the capacity of qualified processors far exceeds that necessary to process landings in a slowed fishery with an extended season. The cooperation from catcher vessels may improve quality and value of processing outputs and help processors minimize costs of production, but catcher vessels should be in a relatively good negotiating position to receive most of the benefits of those improvements through ex-vessel pricing. Notwithstanding the relatively strong position fishermen may have under this alternative, processors, overall, should obtain normal profits from their processing. Some less efficient processors may be unable to realize normal profits and may be expected to drop out of the rockfish fishery.

Some processors qualifying for the CGOA rockfish pilot program likely will be able to gain some relative negotiating leverage in the rockfish market, through negotiating landings terms with these same fishermen in other fisheries. The extent of this leverage is likely to be limited and only arise from landings in fisheries in which fishermen have limited markets for their landings (such as the flatfish fisheries). As noted in the discussion of catcher vessel efficiency, it is also possible that catcher vessels may not fully exert their negotiating strength under the CGOA rockfish pilot program if they believe that it could affect the distribution of negotiating strength under comprehensive Gulf rationalization.

Vertically integrated processors could have some advantage over processors that are not vertically integrated under this alternative. In general, vertically integrated processors (i.e., those that own and operate one or more catcher vessels) would be assured of some landings in the fishery. In the structure of this alternative, however, the ability to leverage their position for landings is not certain and is likely to be limited. Under the structure of this alternative, processor owned licenses are not permitted to participate in negotiations concerning deliveries of the cooperative. As a result, it is unlikely that a processor could use its license ownership to assure landings of other members of a cooperative at its plant. The processor, however, could ensure that the cooperative agreement allowed it to land catch of its own licenses at its plant (otherwise, there is no advantage to joining). These landings could provide a basis upon which to build, with landings from other licenses in the cooperative or other cooperatives, and could be used to fill gaps between landings from these other participants. There are surely economies of scale associated with processing a particularly difficult species like rockfish. Having a "guarantee" of some set amount to underwrite the start up costs of rockfish processing (i.e., catch from their own boats) could provide a vertically integrated facility with a significant economic and operational advantage over those plants

[61] The specific processed products data from CGOA rockfish non-trawl fishing cannot be separated from processed products data from other fisheries. Both fishermen and processors assert, however, that products from this fishery are generally of higher quality and sell for a higher price than products from the trawl fishery.

without such a guarantee. Vertically integrated processors are also likely to be more familiar with catcher vessel operating costs, providing them with some negotiating advantage over processors that are not integrated. In addition, if a vessel owned by a processor has operating relationships with vessels that are not vertically integrated, it is possible that this relationship could influence the non-integrated vessel's choice of processors. The extent of the advantage held by vertically integrated processors is difficult to predict and will differ with circumstances.

A portion of the benefits realized by shore-based processors could flow to foreign-owned entities. This distribution depends on the extent of foreign ownership of processing facilities and the extent to which those entities are profitable and take those profits outside the U.S. While detailed data on ownership structure are not presently available to the analysts, there is a long and continuing tradition in Alaska-based inshore processing of substantial foreign ownership and operation.

Catcher vessel cooperative with processor associations

As under the other catcher vessel pilot program alternative, technical efficiencies and product improvements in the processing sector are likely to occur under this alternative. The slower rate of fishing should allow processors to reduce processing costs and produce higher value and higher quality outputs.

Unlike the other catcher vessel alternative, this alternative provides processors with a substantial advantage in the market for landings, through the mandated processor/cooperative associations. Because each qualified catcher vessel participant who does not wish to opt-out of fishing rockfish, or who does not choose to fish in the dramatically scaled back open access fishery, will have to join a cooperative in association with a specific processor, fishermen will have little negotiating leverage with respect to their landings. Any potential negotiating leverage for the fishermen would arise from the threat to withhold deliveries to the processor (either in the CGOA rockfish fishery or other fisheries). This leverage is likely to be limited, particularly if the processor is not highly dependent on the rockfish fishery. The outcome should be that processor efficiency improves, substantially, with both the reduction in processing costs and product improvements (arising from both improved landings quality and better processing practices). Processors are likely to capture most of the increase in rents under this alternative, improving overall processing efficiency. As noted in the discussion of catcher vessel efficiency, processors may choose not to fully exploit their bargaining strength under this alternative if they believe it could adversely affect the distribution of bargaining strength under Gulf rationalization.

Vertical integration is unlikely to affect landings patterns significantly under this alternative. Processors have substantial negotiating leverage under this alternative, regardless of the extent of vertical integration in the fishery. Vertically integrated processors, however, could have an advantage in negotiations, because of their knowledge of vessel operating costs and the favorable position it may provide its own vessels within the cooperative framework. This cost and operations information could aid vertically integrated processors in their negotiations with independent catcher vessels.

As under the other catcher vessel alternative, a portion of the benefits realized by shore-based processors could flow to foreign-owned entities. Although the amount cannot be predicted with any specificity, the flow of benefits outside the U.S. is likely to be greater under this alternative because a greater share of the benefits flows to the processing sector, which is the sector with foreign ownership.

Entry level fishery

In the trawl entry level fishery, efficiency and product outputs should be similar to those realized in the current fishery. It is possible that some improvement in quality of products could be realized, if participants are able to improve handling of their relatively small catches. The entry level could, as easily, lose some efficiency, since harvest and processing of small amounts are likely to sacrifice scale

efficiencies. In addition, efficiency will suffer if, because of the very small allocation made to entry level rockfish fisheries, participants perceive an advantage to racing for catch from the fishery. Efficiencies could also be sacrificed, if participants are unable to target secondary species, because of the relatively small allocation to the fishery. The distribution of benefits in the fishery is difficult to predict, but should be similar to the current distribution, as, at the margin, both harvesters and processors should realize normal profits from the fishery (while resource rents continue to be largely dissipated).

Processor efficiencies from harvests by trawlers of any remaining TAC from the non-trawl allocation should be similar to those of the status quo fishery. The relatively small amount of the allocation likely remaining at this point in the year, however, could lead to limited participation and a very short season in the fishery. If this fourth quarter season is very short, perhaps allowing only one or two tows for rockfish, it is possible that quality could be maintained, as harvesters perceive little loss of opportunity from handling catch with care. In the fourth quarter trawl fishery, it is possible that some of the negotiating leverage could shift back to processors. Fishermen, however, should be able to generate competition by negotiating with several processors, prior to the opening.

Efficiency in the processing sector in the non-trawl entry level fishery should be the same as processor efficiency for non-trawl participants under the status quo.

2.5.5. Effects on overall production efficiency

This section examines the effects of the alternatives on overall production efficiency. This efficiency is the combined efficiency in fishing and in processing. This analysis is relatively short, as it is derived from the separate analyses of efficiency of the fishing and processing sectors, above.

Status quo

Overall production efficiency in the CGOA rockfish fisheries is likely to remain at its current level, if the status quo management alternative is continued. For catcher processors, product quality is relatively high as catch is processed quickly onboard. These vessels are likely to continue producing exclusively whole and/or head and gut products, as is the current practice. Both physical and regulatory constraints prevent these vessels from diversifying their product mix. For the shore-based sector, quality of landings and processed products are likely to continue to suffer under the status quo race for fish. In addition, the race for fish is likely to limit the ability of shore-based processors to develop and supply markets for higher valued products.

Production of rockfish caught by non-trawl vessels is likely to remain at the current level of efficiency. Catch is likely to be of relatively higher quality and will be processed into relatively higher valued products, as compared to trawl caught rockfish under the status quo alternative.

Catcher processor sector allocation with cooperatives alternative

Overall production efficiency is likely to increase slightly under this alternative, as catcher processors are able to make some quality improvements with the cessation of the race for fish that exists under the current management regime. Product form (whole and head and gut) almost certainly will remain the same under this alternative, due to operational limitations and regulatory and vessel safety requirements (e.g., load line). Some technical efficiencies could be realized through the consolidation of catch on fewer vessels, but vessels will not be retired, because rockfish is a minor part of each vessel's annual activity.

Catcher processor cooperative alternative
The change in overall production efficiency under this alternative is likely to be the same as under the other catcher processor alternative. Modest improvements in quality and technical efficiencies could result in some overall production efficiency gains.

Catcher vessel cooperatives with limited processor entry
Overall production efficiency should improve substantially under this alternative. Quality of rockfish landings should improve, as the race for fish is ended. Processors should also be able to better handle landings, producing higher quality, more varied, and higher valued products. Both sectors should realize some gains in technical efficiency through better scheduling of their activities. Costs should be reduced as participants in both sectors are able to determine optimal inputs to reduce costs of production, without concern over losing share in the fishery if the rate of harvest is slowed.

Catcher vessel cooperatives with processor associations
Overall production efficiency should also improve substantially under this alternative. As under the previous catcher vessel alternative, quality of production should improve and higher valued products should be produced. Participants in both segments of the inshore sector should realize some efficiencies in cost, as they will no longer have to race to preserve their share of fish. Efficiency gains under this alternative, however, could be less than under the other catcher vessel alternative. The strict cooperative/processor association under this alternative could reduce the incentive for some processors to aggressively pursue new or alternative markets for rockfish landings.

Entry level fishery
The trawl sector of the entry level fishery should realize levels of overall production efficiency similar to that realized under the status quo. The entry level fishery, however, may be more successful in achieving efficiencies if participants are able to better care for their relatively small catches. With small allocations, however, efficiencies in operational costs could be hard to realize for both segments of the inshore sector. Efficiency of the trawl sector in the harvest of the remaining non-trawl allocation at the start of the fourth quarter should be similar to the status quo efficiency.

Overall production efficiency of catch from the non-trawl entry level fishery should be similar to the level of efficiency achieved by the non-trawl sector in the status quo fishery. Catch may be expected to be of relatively higher quality (as compared to trawl landings) and processed into relatively higher valued.

2.5.6. Effects on consumers
This section examines the effects of the pilot program alternatives on consumers. To allow an examination of the net benefits to the Nation, where possible, the effects on U.S. consumers are distinguished from the effects on consumers in other markets. The pilot program alternatives are again grouped in this section.

Status quo
Consumers are likely to be supplied with products from the CGOA rockfish fisheries that resemble those currently produced under status quo management. Catcher processors are likely to continue to produce relatively higher quality frozen head and gut, and/or whole fish rockfish, most of which is sold into Asian markets. Production from catcher vessel deliveries is likely to continue to suffer from poor handling. Landings are likely to be made into primarily head and gut, and/or whole fish.

Most of the catcher vessel production is sent to Asia, much of which subsequently returns to the U.S. market, after value-added reprocessing. Some catch is made into fillets at the primary processing plant,

but the ability to make quality fillets is limited because of the time pressures arising from the race for fish and the labor intensive 'hand work' required to produce a quality fillet product.

Pilot program alternatives

Products under the pilot program alternatives from the catcher processor sector fishing rockfish in the CGOA are likely to be similar to current production. Some quality improvement may occur, but these vessels already produce relatively high quality products because their catch is processed onboard soon after it is harvested, rather than held round in a hold for the duration of a trip, then transported to a processing facility.

The majority of the catcher processor output from the CGOA rockfish fishery is exported for reprocessing, where it enters the highly competitive world seafood marketplace. Better quality primary production means less waste during reprocessing, which, in turn, means more finished product and lower production costs per unit of input. The U.S. is a significant net importer of seafood, and a substantial portion of this reprocessed CGOA fish re-enters the U.S. consumer market. It follows that U.S. consumers stand to benefit directly from quality improvements resulting from the CGOA pilot project. These benefits may take the form of higher quality, lower priced, and more abundant supplies of seafood in the domestic market. Because consumers have many "substitutes" in the seafood marketplace from which to choose, increased supplies and/or quality of one product form will tend to force prices lower for all close substitutes. While estimation of the size, distribution, and timing of these benefits must await empirical data, these consumer benefits would be expected to emerge, following adoption of the proposed pilot program.

Substantial changes are likely to occur in the production of catcher vessel harvests. Catcher vessel landings are likely to be of higher quality under both of the catcher vessel pilot program alternatives. Processors are also likely to slow lines, allowing them to produce alternative value-added products (e.g., frozen fillets, fresh fish) instead of the less processed whole and/or head and gut products currently produced. This has the potential to limit the amount of reprocessing of products abroad for re-importation to U.S. markets (a net benefit to U.S. consumers, *ceteris paribus*), although labor costs will likely influence this balance. Some processors are likely to attempt to serve domestic fresh markets, which would directly benefit U.S. consumers. Indeed, most of the consumer benefits of production improvements in the inshore fisheries are likely to be realized by U.S. consumers.

Although the effects on consumers of the two catcher vessel alternatives are likely to be similar, a few differences could arise. Under the alternative with cooperative/processor associations, processors may be less inclined to compete aggressively for landings. This could lead to less aggressive competition in the product outputs markets, if some processors perceive no threat to their supply of fish from reducing competition. Lesser competition is likely to be manifest in continued reliance on lower quality outputs and export markets, as processors perceive less need to incur additional processing costs, take on risk associated with product and market development, compete with established suppliers for market-share in unfamiliar markets, and search for higher revenues in the world marketplace.

The impact of these factors on potential benefits to U.S. consumers is not obvious and depends on the extent to which prices affect demand for the products. It is generally accepted that a measure of consumer benefit is the difference between the amount consumers are willing to pay for a product, and the amount that is actually paid in the market (i.e., consumer's surplus). It follows that the larger the area under the demand curve and above the market clearing price for a given good, the greater the associated consumer's surplus. Products that consumers value, but for which there are few close substitutes, are likely to have relatively steep demand curves. Likewise, lower quality products that have relatively greater numbers of substitutes have flatter demand curves than do higher quality products, *ceteris paribus*. Assuming the

same quantity of production, higher quality products therefore could be argued to bring a greater benefit to consumers, as consumers in general would be willing to pay more than the market clearing price per unit for higher quality products. Consumer's surplus is likely to be greater under the processor limited entry alternative, than the alternative with processor associations, if the assumption about inherent incentives to seek alternative markets and product forms, etc., is correct. The magnitude of this difference is an empirical question, and depends on the degree to which competition in product markets is dampened by the protection of the processor associations, as well as a number of exogenous macroeconomic factors (e.g., trade barriers, currency exchange rates, comparative environmental/health/safety regulations, worldwide demand for protein).

2.5.7. Effects on management, monitoring, and enforcement costs

Management, monitoring, and enforcement under the different alternatives are described in section 2.5.1, above. This section compares the costs of the management, monitoring, and enforcement under the different alternatives, as part of the net benefits analysis.

Status Quo

Under the status quo management, NOAA Fisheries incurs the costs of management and enforcement of fishing under the LLP. The costs of observer coverage are borne largely by the fleet and shore-based processors.

Catcher processor pilot program alternatives

Under the catcher processor pilot program alternatives, NOAA Fisheries will incur additional costs of determining eligibility and making allocations of history to participants under the program. Cooperative agreements will be reviewed by the agency. Annual allocations must be made to cooperatives (and to either a limited access fishery, or to individuals, if any persons eligible for the program choose not to join a cooperative). NOAA Fisheries will be required to conduct catch accounting for the different allocations and monitor the allocations, using observer data. The costs to NOAA Fisheries are likely to exceed the current costs of managing the rockfish fisheries under the LLP, which are in large part coordinated with management costs of several fisheries (and, therefore, are distributed across several fisheries). Enforcement costs are also likely to rise under the pilot program, as enforcement personnel will potentially be required to oversee activities over a longer period. In addition, individual accountability for catch of cooperative allocations requires additional enforcement resources.

If a limited access fishery is required (which, as noted above, is not likely) additional in-season management of a limited access fishery with a relatively small allocation will be required. This management is generally similar to the current management. Although the cost of management for a small limited access CGOA rockfish fishery should be less, the additional complication of monitoring a very small fleet fishing a very small allocation could add to those costs.

In addition to costs that will be borne by NOAA Fisheries, participants in the fishery are likely to incur some additional costs, as well. To date, NOAA Fisheries has maintained that, to fully monitor total catch on a catcher processor requires the use of flow scales, with every haul observed. A sampling station with a motion-compensated platform scale (to verify accuracy of the flow scale) could also be required on board the vessel. Currently, 3 of the 15 vessels that carry licenses that are eligible for the program have both flow scales and observer stations. One vessel carrying a license eligible for the program has flow scales, but no approved observer station (NMFS, 2004). Fully outfitting vessels to meet the monitoring

requirements could be costly.[62] Approximately one-half of the vessels qualifying for this program, however, would be subject to minimum groundfish retention standard requirements to continue their participation in Bering Sea fisheries. Since that program also requires these same monitoring upgrades, the cost of the upgrades for those vessels should be considered a cost of maintaining the vessel's operations in both the CGOA rockfish fisheries, and the Bering Sea fisheries, rather than simply a cost of continued participation in the rockfish fisheries. In addition, it is possible that some participants may choose to have their allocations harvested by vessels already equipped with adequate monitoring equipment and facilities, instead of upgrading their vessel(s) to participate in the cooperative component of the rockfish fisheries.

Approved flow scales cost approximately $50,000. Equipment to outfit an observer station, including a motion-compensated platform scale to verify the accuracy of the flow scale, cost between $6,000 and $12,000. Installation costs are much more difficult to estimate. Due to space constraints on many C/Ps, the need to relocate sorting space and processing equipment, and the wide range of configurations on individual vessels, the installation cost range for the scales and observer sample stations could be between $20,000 and $250,000 per vessel. Installation costs exceeding $100,000 are expected to be rare. The total cost of purchasing and installing flow scales to weigh groundfish catch on H&G vessels may range between $76,000 and $300,000 per vessel (Alan Kinsolving, NMFS, *pers. comm*, April, 2005). Some H&G vessels participate in other fisheries which have heightened monitoring requirements and have already installed flow scales and/or sample stations. These vessels may not incur any of the costs associated with this equipment or with any factory changes.

Added costs of observers are difficult to predict under the program. A requirement that all catch under the program be observed is likely to result in some added observer coverage per vessel for vessels harvesting fish under the program (but, perhaps, significantly fewer total vessels). A certified observer is estimated to cost approximately $375 per day. The rockfish fishery has remained open approximately 2 to 3 weeks each year. The cost of an observer for approximately 2 and ½ weeks is approximately $6,500. If an average vessel attempted to slow fishing to improve product quality under the program, fishing could be extended beyond the current 2 and ½ weeks. In considering these costs, it is also important to consider costs will vary with the size of the allocation fished, and that several participants' allocations diverge from the average.

The extent of the additional coverage, however, is difficult to predict, because participants may coordinate fishing under the program to focus observer coverage to reduce costs. Savings are likely to be realized not only by participants stacking history on a single vessel, but also through coordinating monitoring within a trip. For example, a catcher processor harvesting allocations in the program may be able to catch pilot program rockfish and non-pilot program fish in a single trip. If pilot program tows are coordinated with an observer that is already on the vessel to observe harvests in the fisheries for other species, some savings on pilot program attributable to observer costs may be realized. This coordination of observer coverage will determine the extent to which participants are able to realize observer cost savings.

[62] Approved flow scales are estimated to cost $50,000. Observer station equipment, including an approved platform scale, is estimated to cost between $6,000 and $12,000. Installation costs are likely to vary across vessels and cannot be predicted. In addition, smaller vessels in the fleet could have difficulty accommodating these equipment and facility upgrades, and in some cases, it may be literally impossible, at any cost. As a result, installation could range from $20,000 to $250,000. Total costs of equipment and installation would therefore range from approximately $75,000 to $300,000. Costs in excess of $150,000 are likely to be rare.

NMFS has determined that special catch handling requirements for catcher/processors may subject vessel owners and operators to additional costs depending on which of the three monitoring options is chosen. These options are:

- **Limit tank access option.** No crew would be allowed inside the bin unless the flow of fish has been stopped between the tank and the location where the observer collects unsorted catch, and all catch has been cleared from all locations between the tank and the location where the observer collects unsorted catch, and the observer has been given notice that vessel crew must enter the tank. Also, the observer would be required to be given the opportunity to observe activities of the person(s) in the tank. H&G representatives are concerned that a total ban on crew entering the fish bin would prevent the flow of fish in rockfish fisheries or cases where mud prevents the natural flow of fish from the bin. Therefore, when informed by the observer that all sampling activities are completed for any haul, crew would be allowed to enter the bin without meeting the requirement of stopping the flow of fish and clearing catch between the tank and location where the observer collects unsorted catch. These requirements would allow observers to monitor activities within the bin or tank while maintaining sample collection protocols.

- **Line of sight option.** From the observer sampling station and the location from which the observer collects unsorted catch, an observer must be able to see all areas of the bin where crew could be located. This requirement may be accomplished by creating a viewing port inside the bin, and would be approved by NMFS during the observer sample station inspection.

- **Video option.** A vessel may provide and maintain cameras, a monitor, and a digital video recording system for all areas of the bin where crew could be located. The video data must be maintained and made available to NMFS upon request for no less than a 120 day period. This option would also be subject to approval by NMFS at the time of the observer sample station inspection.

Costs associated with the option to limit crew access could require modifications to vessel factories. These costs are included in estimates of costs associated with observer sampling stations and scales. A variety of additional costs could be associated with these requirements. For example, sorting space may be reduced and processing equipment may be moved to accommodate factory changes, possibly reducing the efficiency of the factory. These costs would vary among vessels, depending on factory configuration. Furthermore, production efficiencies could be reduced for those vessels required to stop belts to allow crew in fish bins while being monitored by an observer. However, under the Rockfish Pilot Program, where vessels or coops would receive an allocation of some target species, vessels could slow fishing practices and increase operating efficiencies without the negative impacts associated with these requirements under a race for fish.

Costs for the line-of-sight option are highly variable depending on bin modifications the vessel may make, the location of the observer sample station, and the type of viewing port installed. Vessels have a wide range of possibilities for meeting this requirement and it is difficult to estimate the associated costs. By incorporating the costs of installing viewing ports with factory modifications made during the installation of a flow scale, costs could be reduced.

Costs for the video option include cameras, a digital video recorder (DVR), associated software, storage of the data, installation of the equipment, and maintenance of the system. Because vessel bin configurations are variable, the costs for a vessel to implement this option to ensure an observer can monitor activities within a bin could be quite variable, depending on the nature of the system chosen. In most cases, the system would be expected to consist of one DVR/computer system and between two and

five cameras. DVR systems range in price from $1,500 to $10,000 and cameras cost between $75 and $300 each. Storage costs will vary depending on the frame rate, color density, amount of compression, and image size. The system would be expected to record data at a rate of between 5 and 20 gigabytes (GB) per day. Assuming that a catcher/processor vessel fishes for an average of 20 days per trip, the amount of storage space would be between 100 and 400 GB per camera, or between 200 (for a two camera system producing highly compressed images, with 8 bit color density, and a fairly small frame size) and 2000 GB (for a five camera system producing moderately compressed images, with 16 bit color density, and a fairly large screen size). Assuming that vessels choose to purchase redundant storage capacity, and that USB compatible hard drives cost approximately $1.00 per GB, NOAA Fisheries estimates that storage will cost between $400 and $3,000 per vessel.

Installation costs will be a function of where the DVR/computer can be located in relation to an available power source, cameras, and the observer sampling station. In most cases, the DVR/computer would be located on the factory deck in an office/lab if one is available, or in the wheel house if one is not. It is also possible that vessel owners will choose to build a weather resistant enclosure for the DVR/computer in or near the observer sampling station. We estimate that a fairly simple installation will cost approximately $2,000 while a complex installation will cost approximately $10,000. However, these costs could be considerably lower if the vessel owner chooses to install the equipment while upgrading other wiring. Thus, total installed system costs would be expected to range between $4,050 and $24,500 per vessel. Maintenance costs are difficult to estimate because much of this technology has not been extensively used at-sea by the US fleet. However, we estimate a hard disk failure rate of 20 percent per year, and a DVR/computer lifespan of three years, or between $680 and $4,100 per year.

The overall projected rise of administration and enforcement costs will be limited by the very small catcher processor fleet that is eligible for the program, as well as by the expected consolidation of actual participation within that fleet.

Catcher vessel pilot program alternatives

As under the catcher processor pilot program alternatives, NOAA Fisheries likely will incur additional costs under the catcher vessel pilot program alternatives associated with determining eligibility and making allocations of history to participants under the program. Cooperative agreements will be reviewed by the agency. Annual allocations must be made to cooperatives (and to either a limited access fishery or individuals, if any persons eligible for the program choose not to join a cooperative). NOAA Fisheries will be required to conduct catch accounting for the different allocations and monitor the allocations using observer data. Enforcement costs are also likely to rise under the pilot program, as more resources will be required because of the cooperative allocations and the longer seasons. If an entry level fishery is prosecuted by non-members of cooperatives, the cost of management would rise to an extent similar to the costs described for the limited access catcher processor fishery.

Under all of the alternatives, participating catcher vessels would be required to install and maintain a computer for use by an observer when the vessel is participating in the program. This would include all catcher vessels fishing for a cooperative or in the limited entry fishery. NOAA Fisheries would install custom software on each of these computers. This software would allow the vessel's observer to enter and edit data that could be transferred to a disk and sent electronically to NOAA Fisheries from the plant observer's computer. This requirement is discussed in more detail in Section 3.4.1. Computers that meet NOAA Fisheries specifications described in regulation cost approximately $600 each. If every vessel eligible to fish in the limited entry fishery obtained a computer in order to comply with this proposed requirement, the total cost to the fleet would be approximately $27,000. However, because it is not known how many of vessels already have computers that meet these requirements, this sum may overestimate the actual cost to the fleet.

Observer costs borne by the fleet are likely to increase for the catcher vessel sector to provide adequate information concerning fishing activity under the program. The extent of these additional costs is not known and depends on the specific monitoring program developed by NOAA Fisheries and the fishing practices of participants. To reduce observer costs (and operational costs), it is likely that some rockfish harvesting will be consolidated within (and possibly across) cooperatives. The extent of the impact of this consolidation cannot be predicted and will depend on costs in general, including observer costs.

Entry level fisheries

For both entry level sectors, NOAA Fisheries would have some expense related to the application process for persons that wish to participate in the program. Once applications are received, NOAA Fisheries would also have the expense of making allocations to the two fisheries and to the individual participants in the trawl sector. Since none of the allocations are based on catch or participation history, the computation of allocations would be very simple and virtually cost free.

For the trawl catcher vessel sector, the entry level fishery would be managed, monitored, and enforced in a manner similar to the status quo fishery. Costs of management, monitoring, and enforcement would be similar to that described for status quo. The specific costs will depend, in part, on the number of applicants for the program, which cannot be predicted.

For the non-trawl sector, the entry level fishery would be managed, monitored, and enforced in a manner similar to the status quo fishery. In general, these limited access fisheries cost less to manage than fisheries with share allocations. In addition, NOAA Fisheries' expenses should be reduced, since protocols for these fisheries are already well defined.

NOAA Fisheries is also likely to incur some additional expense, if the non-trawl allocation is opened for harvest by trawl vessels, at the end of the third quarter. The agency will likely require a second application process for this fishery, which would be used to estimate the catching power of participants and determine whether a limited opening should be set for the fishery (e.g., 12 or 24 hour opening). The general expense of management and monitoring this opening should be similar to the management of the current LLP fisheries.

2.5.8. Effects on environmental/non-use benefits

Improving management, conservation, and wise use of the environment are known to be valued by the public at large. For example, preservation of endangered species, and the conservation of critical habitat are often considered to have significant economic, social, cultural, and symbolic value to the public. Although it is unlikely that CGOA rockfish populations would rank high on the public's list of environmental amenities, for which they would be willing to pay to realize an "improvement", it is nonetheless likely that, if queried, the public would reveal a preference for conservation (in the "wise use" sense) of these stocks. As a particularly long-lived species, it is likely that rockfish have added value to the public. The value of knowing that a stock is well maintained in its natural habitat is commonly referred to as a non-use value. In addition to the existence of a resource, the public also likely values the use of the resource. For example, even if fish stocks are well managed and catch is at levels that maintain acceptable stock sizes, the public may experience some welfare loss, if catch from the fishery is not well utilized or goes to waste. No known studies of these non-use values have been conducted to date, preventing any quantitative estimates here. This section, however, provides a qualitative analysis of these non-use benefits.[63]

[63] This section intends to discuss only the public benefits from the environmental consequences of the alternatives.

Status Quo

In the current fisheries, catch of all species of interest are limited either by TAC or by PSC limits. Managers monitor harvests in season, closing fisheries when the total allowable catch is estimated to be taken. Managers have become quite adept in their estimates and have generally succeeded in maintaining catch at or below TAC. Occasionally, TACs are exceeded, but overages have not exceeded OFL or threatened the long term productivity of stocks. Present levels of public non-use benefits that were derived from the wise management of health stocks of these species are likely to be maintained if the current management regime is perpetuated.

Although total catch of each species is limited, discarding of rockfish is permitted for most species. Mortality rates of discarded rockfish are extremely high, and the resulting perception of waste of these long-lived animals constitutes a welfare loss to the public. Secondary species tend to have very low discard rates in the rockfish fisheries, rarely exceeding 1 percent of the total catch of any one of these secondary species (NMFS discard reports).[64] Additionally, minor amounts of other species are caught incidentally, much of which is discarded (see Table 48). Mortality of discards of incidental catch reduces the non-use values to the public.

Pilot program alternatives

Under the pilot program alternatives, catch of all species of interest will continue to be limited by TAC or PSC limits. These limits should be effectively maintained through the monitoring and management program, perpetuating the current non-use public benefit derived from maintenance of healthy stocks.

NOAA Fisheries will make annual, exclusive cooperative allocations for the three target rockfish species, and for 3 (or 4) secondary species, depending on the sector The program will establish full retention requirements for all of these allocations. These measures should have the effect of reducing discards (and associated perceived waste) of these species, contributing additional non-use benefits that might arise from conservation (in the "wise-use" sense) of the resource. In addition, production from rockfish catch under the program is likely to be of substantially higher quality and of higher valued products in the catcher vessel sector. These improvements could also provide non-use benefits to the public that values efficient production from the public resource (i.e., improved utilization and improved retention).

2.5.9. Effects on net benefits to the Nation

The net benefits to the Nation arising out of the change in management can accrue from several sources. First, production efficiencies in harvesting and processing could occur as a direct result of management changes. These production changes may affect the benefits realized by U.S. consumers, through changes in product quality, availability, variety, and price. Further, the changes in conduct of the fisheries and management could result in changes in the environment, which yield benefit changes to the Nation through ecosystem productivity changes and welfare changes attributable to non use/passive use values. These various contributing effects of the alternatives to the net benefits to the Nation are analyzed in the sections above. This section summarizes the other effects to allow comparison of the different alternatives and conclusions concerning the overall effects of the alternatives on net benefits to the Nation.

One general benefit of any of the pilot program alternatives to the status quo is likely to arise from its limited and experimental scope. The Council is currently considering a more comprehensive rationalization program of this type that would apply to all Gulf of Alaska groundfish fisheries. Any lessons learned from this program can be applied to improve on the benefits realized (and reduce the costs

[64] In only one year, 1998, have any of the discard rates of secondary species exceeded 2 percent of total catch of that species. In that year, discards of thornyheads was almost 20 percent.

incurred) under that broader, longer term program. Although the magnitude of any benefit of the program as a demonstration model is speculative, the program should provide benefits in the design, development, and implementation of the Gulf of Alaska program and others under consideration.

Status Quo

If the current management of the rockfish fisheries is continued, net benefits to the Nation are likely to remain at their current level. This level is well below their potential, owing to resource rents dissipating behavior associated with the race for fish. For catcher processors, quality of whole and head and gut production is relatively high. Few consumer benefits from this production are realized in the U.S., as most fish is sold into foreign markets. For the shore-based sector, quality of landings and value of processed products suffer decreasing production efficiency. Consumer benefits of these harvests are diminished by the low quality and product value. In addition, a substantial portion of any consumer benefit is not realized by U.S. consumers, as much of the production is sold into foreign markets. Costs of monitoring and management are relatively low, as catch is monitored at the fleet level. Non-use benefits to the public are decreased to some extent by waste and bycatch.

Catcher processor sector allocation with cooperatives alternative

Net benefits to the Nation will be affected by a few different factors under the catcher processor pilot program alternatives. Production efficiency should increase slightly, as some participants realize moderate improvements in quality of production. Slowing the race for fish and coordinating fishing activity and effort will reduce costs and increase the share of resource being captured. The fleet is likely to continue to deliver only primary (or partially) processed product forms (i.e., whole and/or head and gut). Vessel size, design, and characteristics largely preclude production of alternative "value-added" product forms (e.g., load line certification requirements). Most of the product is likely to continue to be transported overseas for secondary processing. Portions of that production, however, return to the United States, where consumers are likely to benefit from any quality improvements arising under the program. Because the cooperative allocations under the pilot program are strictly binding, fewer discards are likely (i.e., improved utilization), as all catch (retained or discarded) is deducted from cooperative allocations. A portion of the increase in quantity of production, arising directly from the reduction in discards, is also likely to benefit U.S. consumers.

Catcher processor cooperative alternative

The effects of this alternative on net benefits to the Nation should be the same as those realized under the other catcher processor alternative.

Catcher vessel cooperatives with limited processor entry

A few different factors will affect net benefits to the Nation under the catcher vessel cooperatives with limited processor entry alternative. Slowing the rate of fishing and extending the season should lead to substantial increases in production efficiency and a reduction in resource rents dissipating behavior, as participants in both sectors improve quality and produce higher value products. Some production benefit could flow to foreign-owned processing entities, but since increases in processor net benefits under this alternative are relatively minor, almost all of the gain in production efficiency should be realized by U.S. entities and citizens. Production improvements should lead to benefits for U.S. consumers, as this fleet is likely to maintain, or even increase production for domestic markets. In addition, more value-added production is likely to occur domestically, as fewer primary products are shipped abroad for reprocessing. Increased administration and oversight necessary for cooperative allocations and an extended season will result in an increase in costs of management, monitoring, and enforcement. Participants may also require additional observer coverage. Some additional benefits to the Nation could arise through reduction in bycatch, since the program requires full retention of several species. Since discard rates of these species are relatively low in the current fishery, these benefits are likely not substantial.

Catcher vessel cooperatives with processor associations

Changes in net benefits to the Nation under this alternative are likely to be similar to the changes in net benefits to the Nation under the other catcher vessel alternative. Overall, the distribution of benefits among participants is likely to differ from the distribution under the previous alternative. The relatively strong processor association is likely to limit the need for processors to compete for landings, resulting in a greater proportion of benefits accruing to processors under this alternative. The reduced incentive to innovate, aggressively develop new product forms and market opportunities, and assume risk, all typically associated with a competitive environment, could reduce net benefits to the Nation under this alternative from the level they might otherwise be if processor competition was driving the industry. Also, the distribution pattern, favoring processors, could affect benefits to the Nation, since some processors are foreign owned. Net benefits to the Nation may be further reduced to the extent that the increase in benefits realized by foreign-owned processors are redistributed to their foreign-based parent owners.

2.5.10. Effects on entry into the fisheries

The ability of interested persons to enter the rockfish fisheries differs under the status quo and the pilot program alternatives. Since the "entry level fishery" is a component of any pilot program, the analysis analyzes the main program alternatives, given the existence of the entry level fishery. Since entry opportunities are very similar across all pilot program alternatives, these alternatives are analyzed in a single discussion, with any differences discussed within that section.

Status quo

Entry into the trawl rockfish fisheries under the status quo is limited by the LLP. Since a substantial number of LLPs endorsed for the CGOA fisheries are not currently active in the rockfish fisheries, persons holding those licenses could enter the fishery. The lack of entry to the fishery under continuation of the status quo is a result of overcapacity in the fishery, which is demonstrated by the very short seasons. If the current management is continued, entry of additional vessels is unlikely. In the longer run, some persons may choose to enter the fishery, but only if current participants depart from the fishery, or stock abundance or market conditions change significantly for the better.

Entry to the non-trawl sector is also limited by the LLP. Vessels under 26 feet in length over all (LOA), however, do not require an LLP license to fish in Federal waters, so fishermen wishing to use these relatively small vessels are not limited. If the status quo management is maintained, it is possible that some entry in the non-trawl sector would occur, as several small boat operators have expressed an interest in the fishery. The under 26' LOA fleet has had relatively little historic participation in fishing CGOA rockfish, so the potential for this group of vessel operators to successfully target rockfish has not been firmly established.

Pilot program alternatives

To assess the effect of the pilot program alternatives, a workable definition of entry must be developed. This analysis assumes that entry means more than simply entering a vessel into the fishery, but instead means the development of one's interest in the fishery to the level of an average participant. The analysis examines both the potential to achieve that level of participation and the potential processes by which a person could develop participation to that level.

Using that definition, entry to the trawl fishery is clearly limited by the rules of the pilot program alternatives. Although access to the "entry level fishery" is open to all LLP holders, this fishery is unlikely to support activities of a typical rockfish vessel. To enter the rockfish fisheries at the level of a typical participant, a person must acquire one or more eligible licenses that carry history adequate to

support the operation of a vessel.[65] Clearly, entry is quite limited under the pilot program alternatives. In addition, the prices of eligible licenses are likely to vary with history in other fisheries. Since any transaction is likely to value all groundfish history related to the non-severable license, it is possible that some rockfish licenses with substantial history in other fisheries could be very costly, despite relatively small qualifying rockfish histories.[66] The extent of the effects of histories in other fisheries on the prices of licenses cannot be predicted. Whether entry is more effectively limited by the pilot program than under the existing management (which allows free entry to a fishery that dissipates a substantial portion of the rents in a race for fish) is uncertain.

For catcher vessels, entry is likely to be more limited under the catcher vessel cooperative with limited processor entry alternative. Under this alternative, catcher vessels are likely to receive a substantially greater portion of the rents in the fishery. These rents are likely to be capitalized into the eligible licenses, thus driving up the costs of those licenses to potential entrants. Acquisition of annual allocations under the program is also likely to be more costly under this alternative. Under the catcher vessel cooperative with processor association alternative, entry of catcher vessels should be less costly as catcher vessel participants are likely to realize little more than normal profits from their participation in the fishery. Entry, however, could still be costly if most rockfish eligible licenses carry substantial history in other fisheries.

Entry to the non-trawl sector is likely to be similar to entry in the status quo fishery. In recent years, non-trawl participants have harvested a very small portion of the target rockfish TACs. Unless harvests can be increased substantially in the future, the relatively small 2.5 percent allocation should be adequate to support any participants in this sector that wish to enter the fisheries.

2.5.11. Effects on fishing crew

The effects on fishing crew of the different pilot program alternatives are likely to be the same. To simplify the analysis, the discussion of those alternatives is consolidated in a single discussion.

Status quo

Crew participation and compensation in the rockfish fishery are likely to continue in their current manner if the status quo alternative is selected. Most crewmembers currently work in several different fisheries on the vessel that they work on during the rockfish season, while some move to other vessels for particular fisheries. Crewmembers are compensated on a share basis, receiving a specific percent of the vessel's revenues (with crew of greater experience, or in more skilled positions receiving a greater share). The existing patterns should persist under the status quo.

Pilot program

The development of the pilot program is likely to have some minor effects on crew. Fishing can be expected to slow and perhaps occur outside of the traditional July season. In addition, some vessels that have historically participated are likely to no longer fish in the rockfish fisheries. Notwithstanding this decrease in vessels in the rockfish fishery, it is unlikely that any vessels will entirely leave the North Pacific fisheries, as most rockfish vessels also have substantial participation in other fisheries.

[65] Alternatively, a person could acquire a single eligible license with limited history to enter the fishery, then enter a cooperative and acquire annual allocations within a cooperative to fish on a vessel. While this entry is possible, these annual leases are likely to be cost prohibitive.

[66] Histories in other fisheries will likely be considered an economic asset for their potential value in other rationalization programs, such as comprehensive Gulf rationalization.

Crew compensation could change in some cases. Crew on some vessels that leave the rockfish fishery are likely to lose some income if the vessel is unable to make up the loss in revenues in other fisheries. This income is not likely to be a substantial portion of a person's annual income, but could be significant to the crewmember in some cases. In addition, crew on vessels that remain in the rockfish fishery could realize an increase in income from increased harvests and revenues in the fishery. Catch increases are likely under all alternatives to the status quo. Revenue increases should be the greatest for catcher vessels under the catcher vessel with limited processor entry, because of the increased negotiating leverage of catcher vessels, and because of anticipated product improvements under that alternative. Catcher vessel crews, however, may not fare as well under the catcher vessel cooperative with processor association alternative, as catcher vessel negotiating leverage is likely to be substantially weaker.

Crew on catcher processors that continue to actively participate in the fishery could benefit from consolidation of harvests on fewer vessels, and possibly a minor increase in revenues, if quality improvements are realized. Fewer participating vessels meanings fewer opportunities, in the aggregate, for catcher processor crew employment. The expectation is that at least some of the vessels not employed in CGOA rockfish fishing as a result of cooperative based capacity consolidation will actively participate in other alternative fisheries. This should lessen the adverse impact on crew employment, although to an unknown degree. Certainly, an LLP permit holder with CGOA rockfish history who chooses to join a cooperative and have his/her shares fished by another of the cooperative's boats will have no incentive to share the resulting revenues with those who would otherwise have crewed his/her vessel under the status quo. So, while these LLP holders stand to benefit under the cooperative-based alternatives, their crew likely do not.

2.5.12. Effects on shore-based processing crew

Shore-based processing crew could be affected by the pilot program. Affects are likely to be similar under the two catcher vessel alternatives, so they are discussed in a single section.

Status quo

Processing practices are likely to remain unchanged if current management is maintained. In the current fishery, most of the processing takes place in Kodiak and is undertaken by (predominantly) resident crews. Crews are employed processing rockfish for a relatively short period of time. When rockfish is processed, relatively large crews are necessary to maintain a flow of fish through plants that keeps pace with vessel offloads. Because the rockfish fishery currently coincides with the pink salmon fishery, some plants must employ substantially larger crews that are juggled between lines to process landings from both fisheries. Although most plant workers are also employed in other fisheries, the short intense rockfish season means that their employment is potentially more sporadic. Processing landings from limited access competitive fisheries hinder the ability of plants to develop regular employment schedules and support their primary resident crews. The absence of regular employment also makes it more difficult for plants to retain good employees.

Pilot program alternatives

Shore-based processing employment should change some under the pilot program alternatives. Harvests from the rockfish fishery are likely to be distributed over a longer period of time. This would contribute to improved quality and higher valued, more highly processed product forms. Landings are likely to be scheduled to serve particular markets, but also to facilitate the scheduling of crews. Although the rockfish fishery is a relatively small portion of the processing of participating qualified processors, the pilot program alternatives are likely to contribute to stability in processing employment if landings are distributed across periods when plants are less utilized. This increased stability could lead to fewer processing jobs at peak times, but the remaining jobs should provide more stable and consistent

employment. The relative stability should contribute to the maintenance of a stable resident employee base for these CGOA rockfish plants, as is common in most Kodiak processing facilities.

2.5.13. Effects on excessive shares

Limits on excessive shares can serve a variety of purposes, including limiting market control to prevent monopoly/monopsony power in the product market, limiting market control in the labor market, limiting the ability of a few shareholders to control entry to the fishery, limiting windfall gains from the resource, and increasing the number of persons that are supported by resource utilization and production. In the case of a pilot program modeled on one or the other of the alternative under consideration, the limits may also improve the utility of the program as a demonstration for both participants and managers, as broader participation would familiarize more participants with the workings of a rationalized fishery that could affect their choices in future rationalization programs. The rationalization program proposed is also complex relative to those in other North Pacific fisheries (i.e., halibut and sablefish), since it involves share allocations of several species (including target and incidental catch species) that are fished simultaneously. Consolidation of shares by a few participants could limit the ability of management to identify and develop solutions to problems that might arise in a more complex program (such as Gulf rationalization). The benefit of a more expansive pilot program to management could be considerable.

In assessing the caps, the participation patterns of rockfish participants should be kept in mind. Participants in the fishery have historically participated in several different fisheries throughout the year (and in July). Consolidation in the fishery could have benefits of allowing greater specialization, improving harvest techniques and quality of landings, and potentially reducing bycatch and waste in the CGOA rockfish fishery.

Since the pilot program alternatives for each sector have the same excessive share limitations, the effects on excessive shares for each sector are discussed in a single section.

Status quo

Since no allocations are made under the existing management regime, no issue concerning excessive shares exists.

Catcher processor pilot program alternatives

Under the catcher processor pilot program alternatives, participants would be permitted to consolidate the harvest of up to 60 percent of the CGOA rockfish allocation to the sector on a single vessel. Although some vessels currently have significant participation in the fishery, this cap is equal to approximately the aggregate allocation to the four largest participants in the sector. Assuming the sector consolidated catch to the extent permitted by the program, few vessels are likely to develop any experience harvesting allocations under the program, limiting its utility in this regard as a pilot program.

Although considerable consolidation is allowed at the vessel level, a person use cap would prevent any person from holding or using in excess of 20 percent of the sector's allocation.[67] Although this cap could prevent some consolidation, the number of persons retaining interests in this small fishery could be

[67] Although this 20 percent person use cap might appear inconsistent with permitting the harvest of 60 percent on a vessel, the potential inconsistency is resolved by applying the individual cap to the allocation brought to the cooperative by an individual. So, the individual cap would limit the amount of history that a person may hold (by virtue of license holdings) and the amount of history that the person could bring to a cooperative through leases of annual allocations. Using this approach, any leasing of annual allocations by a cooperative would need to be accomplished through "individual members", to allow application of the individual caps.

reduced somewhat from the initial allocation to 13 participants. The sector's participation in the fishery historically has been concentrated among relatively few participants.

Catcher vessel pilot program alternatives

The catcher vessel pilot program alternatives prevent any cooperative from controlling in excess of 30 percent of the sector's allocation in the fishery. A parallel cap would limit any eligible plant from processing in excess of 30 percent of the sector's allocation.[68] This cap is slightly larger than the greatest potential allocation to a single cooperative under the alternative with processor associations, so historically, no group of vessels that could enter into a cooperative under that alternative would have harvested in excess of the cap, and no processor has historically processed in excess of the cap amount. The cooperative use cap would limit the degree of consolidation of fishing harvests by any one cooperative through the leasing of annual harvest privilege among cooperatives. The extent to which the cap would prevent consolidation under the limited processor entry alternative cannot be predicted, but it would prevent consolidation to an extent that no fewer than four cooperatives would exist and fish allocations under the program, or no fewer than four processors would participate in the fishery. Six processors have adequate processing to qualify for the program.

An additional cap would limit any individual from holding or using in excess of 5 percent of the catcher vessel sector allocation. A few participants that have historically exceeded 5 percent of the harvest in the fishery would be "grandfathered" in to the extent of their actual history. This cap would allow some consolidation in the fishery, particularly for the participants with relatively little qualifying history.

2.5.14. Effects on safety

Since fishing practices and seasons are likely to be very similar under all of the pilot program alternatives, implications for safety should be the same. To simplify the analysis, safety considerations under the pilot program alternatives are contained in a single discussion.

Status Quo

Under the status quo, participants race for catch share during a brief season, early in July. Although weather tends to be relatively good at this time of the year in the CGOA, occasionally, inclement weather comes up during this season. Under the current management regime, an economic incentive is created to fish in inclement weather and to continue fishing despite operational dangers, to increase one's share of the total catch. The effects of this incentive likely vary among participants. The overall effect on safety in the fishery is not known with certainty.

Pilot program alternatives

Management of the fishery under an extended season with exclusive allocations to cooperatives should reduce the incentive for fishermen to assume risks associated with fishing in severely inclement weather or when other operational dangers arise. Although a person's allocation will not be jeopardized by decisions to delay fishing to reduce safety risks, some economic incentives may continue to exist for persons to fish in inclement weather (including market opportunities and operational cost savings). Many proponents contend that share-based management (or rationalization) makes fisheries safer. Although empirical work undertaken to verify that conclusion is limited, most studies suggest that safety benefits could arise under rationalization programs. Overall, the incentive for participants to fish in inclement weather should be reduced under the pilot program alternatives.

[68] Under both catcher processor alternatives, a participant in that sector could bring their allocation onshore to be harvested by a catcher vessel cooperative and processed onshore. This use of catcher processor shares would be subject to catcher processor caps only (and would not count toward either a catcher vessel cap, or a shore-based processing cap), since the caps apply exclusively to use and control of the specific "sector" allocations.

2.5.15. Effects on other fisheries

Development of a rationalization program has the potential to adversely impact other fisheries, if participants in the program are able to increase their effort in other fisheries, because of the redistribution of effort under the rationalization program. This section examines the effects of the pilot program alternatives on other fisheries.

Status Quo

Continuation of the current management regime will have no incremental effect on other fisheries. The opening of the rockfish fisheries is scheduled to distribute effort between rockfish and flatfish in the North Pacific. Retention of the status quo alternative would be expected to perpetuate the current distribution of effort.

One effect of the status quo management of the CGOA rockfish fisheries on other fisheries arises from the division of the TAC for shortraker and rougheye rockfish, which have historically been managed using a combined TAC. Based on estimated historic catch of shortraker (in CGOA rockfish fisheries and other fisheries), it is possible that the shortraker TAC will be inadequate to support historic catch levels of that species in all fisheries. Whether the catch of shortraker would result in that species being put on PSC status, or some other limitations on catch or retention is imposed, cannot be determined with certainty. Additional information on catch of these species and the effects of the TAC division are presented in Appendix 7.

Catcher processor alternatives

Under the catcher processor alternatives, inter-sectorial sideboards will be established to limit license holders eligible for the rockfish program from increasing their effort in other fisheries. Under the alternatives, the sector will be limited, in the aggregate, 1) to their historic catch of target species in Gulf of Alaska fisheries occurring July, that are typically constrained by catch of the target species, and 2) to their historic average halibut mortality in Gulf of Alaska fisheries occurring July, that are typically constrained by catch of halibut. The halibut sideboard will be managed on a Gulf-wide basis, with separate sideboard amounts for the deep water complex fisheries and shallow water complex fisheries. Table 32 shows the reasons for closings of the different July fisheries during the qualifying years. Although management has changed over time, in general, the rockfish fisheries in the Gulf close because of harvest of the TAC, and the flatfish fisheries in the Gulf close because of halibut PSC bycatch limits. Based on these closure summaries, catch limitations on target species would be established for Western Gulf of Alaska Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish, and Western Yakutat Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish, while halibut PSC limits would be established for Western Gulf of Alaska rex sole, flathead sole, shallow-water flatfish, deep-water flatfish, and arrowtooth flounder, Central Gulf of Alaska rex sole, flathead sole, shallow-water flatfish, deep-water flatfish, and arrowtooth flounder, and Western Yakutat rex sole, flathead sole, shallow-water flatfish, deep-water flatfish, and arrowtooth flounder. As noted earlier, to manage the halibut sideboards, the limits would be applied to all fishing within the applicable complex (i.e., deep-water or shallow-water).

Table 32. Reasons for closures in Gulf of Alaska July groundfish fisheries (1996-2002)

		1996	1997	1998	1999	2000	2001	2002
Western Gulf	Pacific Ocean perch	TAC	TAC	TAC	TAC	TAC	TAC	TAC
	Northern rockfish	TAC	TAC	TAC		TAC	TAC	TAC
	Pelagic shelf rockfish			TAC		halibut	halibut	halibut
	Other rockfish		TAC	TAC		bycatch	bycatch	bycatch
	Shallow water flatfish					halibut	halibut	halibut
	Deep water flatfish						halibut	halibut
	Rex sole					halibut	halibut	halibut
	Flathead sole					halibut	halibut	halibut
	Arrowtooth flounder					TAC	halibut	halibut
Central Gulf	Other rockfish					bycatch	bycatch	bycatch
	Shallow water flatfish					halibut	halibut	halibut
	Deep water flatfish					halibut	halibut	halibut
	Rex sole					halibut	halibut	halibut
	Flathead sole					halibut	halibut	halibut
	Arrowtooth flounder					halibut	halibut	halibut
West Yakutat	Pacific Ocean perch	TAC*	TAC*	TAC*	TAC*		TAC	TAC
	Northern rockfish	bycatch*	TAC*	bycatch*	bycatch*			
	Pelagic shelf rockfish			TAC*		TAC	TAC	TAC
	Other rockfish		TAC*	TAC*	TAC*	TAC	bycatch	bycatch
	Shallow water flatfish					halibut	halibut	halibut
	Deep water flatfish					halibut	halibut	halibut
	Rex sole					halibut	halibut	halibut
	Flathead sole					halibut	halibut	halibut
	Arrowtooth flounder					halibut	halibut	halibut
Gulfwide	Shallow water complex	halibut	halibut	TAC	halibut			
	Deep water complex	halibut	TAC	halibut	halibut			

* Managed in the Eastern Gulf

To estimate sideboard amounts, data from the week ending dates shown in Table 33 were used. These dates were chosen to estimate July harvests as specified by the Council motion. Table 34 shows estimated sideboards for the catcher processor sector in fisheries that would be limited by catch of the target species.[69] The table shows both the sector's retained catch, total retained catch, and total catch (including discards) taken by rockfish eligible catcher processors. The preferred alternative would base sideboards on the sector's retained catch, as a percentage of retained catch in a fishery. In reviewing the table, it should be noted that the retained and total catch figures for the West Yakutat pelagic shelf rockfish fishery include catch from Southeast Outside for the years 1996 through 1998. Separate West Yakutat pelagic shelf total catch data for 1996 through 1998 were unavailable at the time of release of this document. In the years 1999 through 2002, pelagic shelf rockfish retained and total catch in the Southeast Outside district were approximately 3 percent of the Eastern Gulf retained and total catch, respectively. Consequently, the effect of including Southeast Outside catch in the sideboard calculation denominators is likely very small (i.e., less than 3 percent, if 1999 through 2002 are representative). In calculating the sideboard upon implementation, the Council has requested that the agency use only catch from West Yakutat during those years.

[69] "Transfer history" is included in the tables by including both the harvests of the vessel that is currently associated with the LLP license and the vessel that was originally associated with the LLP license, in the case of transferred LLP licenses. The table includes all retained catch by eligible participants, regardless of whether the species was targeted.

Table 33 Week ending dates for data used to generate retained harvest of sideboard species.

Weekending Dates for Sideboarded Species Table of Retained Harvests

1996	1997	1998	1999	2000	2001	2002
6-Jul	5-Jul	4-Jul	3-Jul	8-Jul	7-Jul	6-Jul
13-Jul	12-Jul	11-Jul	10-Jul	15-Jul	14-Jul	13-Jul
20-Jul	19-Jul	18-Jul	17-Jul	22-Jul	21-Jul	20-Jul
27-Jul	26-Jul	25-Jul	24-Jul	29-Jul	28-Jul	27-Jul
3-Aug	2-Aug	1-Aug	31-Jul		4-Aug	3-Aug

Table 34. Estimated catcher processor sideboard amounts in fisheries limited by target catch (using 1996 to 2002 catch).

		Number of vessels	Retained catch (metric tons)	Total catch (metric tons)	Percent of total catch	All retained catch (metric tons)	Percent of retained catch
Western Gulf	Northern rockfish	6	1,094.4	2,511	43.6	1,786	78.9
	Pelagic shelf rockfish	8	411.0	961	42.8	747	63.3
	Pacific Ocean perch	6	5,488.1	10,426	52.6	9,033	61.1
West Yakutat	Pelagic shelf rockfish	4	2,454.1	3,418*	71.8	3,389*	72.4
	Pacific Ocean perch	4	4,718.6	6,449*	73.2	6,206*	76.0

* Catch from Eastern Gulf (1996-1998) and West Yakutat (1999-2002)
Note: Northern rockfish is not open for directed fishing in West Yakutat.
Source: NPFMC Rockfish Database, Version 1 and NMFS Discard Reports

Catcher processors would also be limited in their catch of halibut, by a second sideboard that is intended to constrain harvests from fisheries that are typically halibut constrained. NOAA Fisheries would administer the sideboard on a deep-water complex/shallow-water complex basis. So, a separate sideboard would be set for each complex.[70] The sideboards will be set for Gulf-wide halibut usage, as halibut is currently managed on a Gulf-wide basis. If, in July, vessels eligible for the pilot program have caught the sideboard halibut amount within a complex, they would be precluded from participating in halibut sideboarded fisheries in the complex for the remainder of the month of July. Table 35 shows the halibut usage in fisheries in the Western Gulf, Central Gulf, and West Yakutat. Notably, halibut usage is generally highest in the rockfish target fisheries in the Central Gulf and Western Gulf, and substantial halibut is taken in the rockfish fishery in West Yakutat. The relatively high incidental catch of halibut in the rockfish fisheries raises the question of why halibut has not constrained the rockfish fisheries. The reason that the rockfish fisheries have not been constrained by halibut is likely that participants typically target rockfish prior to moving on to the other fisheries. The non-rockfish fisheries (mostly the flatfish fisheries) are halibut constrained because of their own halibut usage and the reduced halibut remaining

[70] The deep-water complex includes sablefish, rockfish, deepwater flatfish, rex sole, and arrowtooth flounder. The shallow-water complex includes flathead sole, shallow water flatfish, pollock, and Pacific cod.

after the taking of halibut by the rockfish fisheries. These trends in halibut usage could suggest two interpretations needed to make the halibut sideboard fair and effective.

First, since halibut usage in the rockfish fishery is substantial in the Western Gulf and West Yakutat rockfish fisheries, the halibut catch by the rockfish fisheries in those areas could be included in determining the deep-water complex limit for those areas. Otherwise, catch of halibut in the rockfish target fisheries is likely to preclude sideboarded vessels from the opportunity to maintain their historic participation in the flatfish fisheries in the deep-water complex. (Since halibut is allocated for the CGOA rockfish fisheries under this program, halibut to support incidentally caught halibut in the CGOA rockfish fisheries should not be included in the sideboard.) The preferred alternative would include halibut mortality in the Western Gulf and West Yakutat rockfish fisheries in determining the halibut mortality sideboard amount.

Second, applying a halibut sideboard to the deep-water complex (including rockfish in West Yakutat and the Western Gulf) raises the question of whether the halibut sideboard could also be applied to the rockfish fisheries in those areas. Since the rockfish fisheries are responsible for substantial halibut catch in those areas and that halibut catch would be included in the sideboard, it could be logically consistent to apply the halibut sideboard to the rockfish fisheries, as well as the flatfish fisheries. The Council's preferred alternative would not limit rockfish harvests, if the halibut sideboard amount is taken.

Table 36 shows July halibut mortality in the Western Gulf, Central Gulf, and West Yakutat from 1996 through 2002, on which are based sideboard estimates. The table shows substantial halibut mortality in rockfish fisheries. Halibut mortality is reported at the processing plant basis (including catcher processors). In some instances, halibut mortality could not be reported because of confidentiality protections. Also, because of the limited number of entities reporting data for each target, estimates could not be provided for eligible catcher processors only.

Table 35. July halibut mortality in Gulf of Alaska trawl fisheries (1996-2002).

	Western Gulf	Central Gulf	West Yakutat
Rockfish	119.41	1,484.56	83.08
average annual halibut mortality	17.06	212.08	11.87
Deep water flatfish	0.00	35.32	8.84
average annual halibut mortality	0.00	5.05	1.26
Shallow water flatfish	0.00	877.02	**
average annual halibut mortality	0.00	125.29	**
Flathead sole	22.23	80.58	22.33
average annual halibut mortality	3.18	11.51	3.62
Arrowtooth flounder	162.28	325.68	16.12
average annual halibut mortality	25.18	46.53	2.30
Rex sole	*	97.06	*
average annual halibut mortality	*	13.87	*

* Rex sole included with arrowtooth due to confidentiality concerns.

** Shallow water flatfish included with flathead sole due to confidentiality concerns.

Deepwater complex includes sablefish, rockfish, deepwater flatfish, rex sole, and arrowtooth flounder.

Shallowwater complex includes flathead sole, shallowwater flatfish, pollock, and Pacific cod.

Source: NMFS GOAHALX data file for the years 1996 through 2002.

The second step in estimating halibut mortality is to estimate the amount of halibut historically used by catcher processors eligible for the CGOA rockfish pilot program. To estimate the amount of halibut used in a fishery, the percentage of total retained catch of each target species in July, by eligible catcher

processors, was determined.[71] This percentage was multiplied by the total halibut usage in that target fishery for the month. Estimates arrived at using this method are shown in Table 37. Estimates are separated into the deep-water complex and shallow-water complex, with estimates of halibut amounts to support the Western Gulf and West Yakutat rockfish fisheries. As noted earlier, halibut to support the Central Gulf rockfish harvests are allocated under the program, and therefore are not included in the sideboard amounts. Lastly, the amounts in the different subareas are aggregated, since the sideboards will be administered on a Gulf-wide basis (rather than by subarea).

Table 36. Estimated catcher processor July halibut mortality sideboard amounts.

		Number of eligible catcher processors with July catch	July retained catch of eligible catcher processors (metric tons)	Total retained July catch (metric tons)	Percent of retained July catch by eligible catcher processors	July halibut mortality sideboard amount
Central Gulf						
Deep water complex	Arrowtooth flounder	16	4,759.5	8,303.5	57.3	26.7
	Deepwater flatfish	15	383.7	1,174.9	32.7	1.6
	Rex sole	16	1,215.5	2,325.7	52.3	7.2
	Total deep water					**35.6**
Shallow water complex	Flathead sole	13	473.4	1,719.4	27.5	3.2
	Shallow water flatfish	13	232.9	7,106.2	3.3	4.1
	Total shallow water					**7.3**
Western Gulf						
Deep water complex	Arrowtooth flounder	10	2,918.2	4,379.5	66.6	17.8
	Deepwater flatfish	6	5.9	5.9	100.0	0.0
	Rex sole	10	682.2	717.6	95.1	*
	Rockfish	10	8,763.2	11,173.9	78.4	13.4
	Total deep water					**31.2**
Shallow water complex	Flathead sole	5	211.7	216.6	97.7	3.1
	Shallow water flatfish	6	67.0	77.8	86.1	0.0
	Total shallow water					**3.1**
West Yakutat						
Deep water complex	Arrowtooth flounder	5	98.3	132.4	74.3	1.3
	Deepwater flatfish	5	137.1	233.6	58.7	0.7
	Rex sole	5	42.7	124.1	34.4	*
	Rockfish	4	7,641.4	8,247.4	92.7	11.0
	Total deep water					**13.0**
Shallow water complex	Flathead sole	3	4.1	47.6	8.7	0.2
	Shallow water flatfish	0	0.0	49.0	0.0	**
	Total shallow water					**0.2**
Gulf-wide - Totals						
Deep water complex						**79.7**
Shallow water complex						**10.5**

* Rex sole included with arrowtooth due to confidentiality concerns.

** Shallow water flatfish included with flathead sole due to confidentiality concerns.

Deepwater complex includes sablefish, rockfish, deepwater flatfish, rex sole, and arrowtooth flounder.

Shallowwater complex includes flathead sole, shallowwater flatfish, pollock, and Pacific cod.

Source: NPFMC Rockfish Database and NMFS GOAHALX data file for the years 1996 through 2002.

[71] This estimation uses retained catch, as total catch estimates on a vessel basis for catcher vessels are inherently unreliable, particularly for a short period of time, such as a single calendar month.

In addition, either a cooperative sideboard or a stand-down would apply to any eligible license holders that elect to participate in the cooperative program. As noted earlier, most participants can be expected to join a cooperative, and limit catch under a cooperative level sideboard (i.e., a cooperative would be limited to its historic catch in sideboarded fisheries). These limitations should be sufficient to prevent participants from encroaching on other fisheries by increasing their efforts. Some eligible license holders with relatively small allocations could elect to either opt-out of the program, or fish in the limited access fishery. Since these license holders are likely to have relatively small rockfish allocations, their impacts on the other fisheries, arising from the rockfish program, can be expected to be relatively minor.

Under cooperatives program with individual allocations, any eligible license holder that chooses to opt-out of the program would be prevented from fishing in any fishery that the license holder did not participate in the first week of July during at least two of the seven qualifying years. This provision is intended to prevent participants with multiple licenses and substantial history, from opting out of the program with one license and entering other fisheries in which the license holder has no history. The history from the "opt out license" would be reallocated within the sector, including to other licenses also held by the holder of the "opt out license". To determine whether an eligible license holder participated in another fishery in the first week of July, will require identification of the initial week of operation for each vessel in the program, for each year. Table 37 shows the weekending dates from the first two weeks of July, in each of the qualifying years. The Council has identified the bolded weekending dates, as those that should be used for identifying participation in the first week of July. Because the choice of vessel operators to opt-out of the program is uncertain, no estimation of the extent to which vessels will enter other fisheries under this provision can be provided. Whether this provision can effectively prevent participants from increasing participation in non-rockfish fisheries to the detriment of other persons eligible for the program, cannot be determined with any certainty.

Under the preferred alternative, participants could elect to fish in a limited access fishery, instead of joining a cooperative or opting-out of the program. Participants that choose to enter the limited access fishery that have in excess of 5 percent of the sector's qualified catch of Pacific Ocean perch would be required to stand-down in the Bering Sea and Aleutian Islands non-pollock groundfish fisheries, until 90 percent of the limited entry allocation is harvested. Seven licenses are estimated to have history in excess of the 5 percent threshold. Participants with less than 5 percent of the Pacific Ocean perch qualified history would not be subject to any stand-down requirement. Whether some vessels would choose to opt-out, instead of fishing in the limited access fishery, cannot be predicted.

The limited access fishery is not included in the catcher processor cooperative alternative with individual allocations. Whether participants could use the limited access fishery to effectively increase participation in other fisheries is not certain, but is unlikely, since only persons with little history in the rockfish fishery would receive a stand-down exemption.

Table 37. Rockfish opening dates and weekending dates for federal data (1996-2002).

	Opening	1st Weekending date	2nd Weekending date
1996	July 1	**July 6**	July 13
1997	July 1	**July 5**	July 12
1998	July 1	**July 4**	July 11
1999	July 4	July 3	**July 10**
2000	July 4	July 8	**July 15**
2001	July 1	**July 7**	July 14
2002	June 30	**July 6**	July 13

Bolded dates are to be used for identifying participation in the first week of July for sideboard purposes.

Another possible effect of the rockfish program on other fisheries could arise from the allocation of shortraker to pilot program participants. Given the small allocation of shortraker to the catcher processor sector, relative to the sector's history, it is unlikely that other fisheries will be limited by a disproportionate allocation of shortraker to the catcher processor sector. Appendix 7 contains a comprehensive analysis of the allocations and the usage of shortraker and rougheye by fisheries in the Central Gulf of Alaska.

Catcher vessel alternatives

Catcher vessel participation in other fisheries is limited by the same sector sideboard that limits the catcher processor sector. Under sideboards eligible catcher vessel license holders will be limited in the aggregate 1) to their historic catch of target species in Gulf of Alaska July fisheries that are typically constrained by catch of the target species and 2) to their historic average halibut mortality in Gulf of Alaska July fisheries that are typically constrained by catch of halibut. The halibut sideboard will be managed on a Gulf-wide basis, with separate sideboard amounts for the deep water complex fisheries and shallow water complex fisheries. In addition, the eligible license holders would also be limited, in the aggregate, to their historic catch of Pacific cod in the Bering Sea and Aleutian Islands in the month of July.

Table 38 shows estimated sideboard percentages for the catcher vessel sector in fisheries in which sideboards would limit harvest of the target species. The table shows the sector's retained catch, total retained catch, and total catch (including discards) taken by rockfish eligible catcher vessels. The Council's preferred alternative bases the sideboard amount on the sector's total retained catch, as a percentage of retained catch of the species. These sideboards should effectively prevent members of this sector from increasing their participation in other Gulf of Alaska July fisheries.

The preferred alternative would exempt AFA catcher vessels that are not exempt from AFA Gulf of Alaska groundfish sideboards from the sideboards under this program.[72] Of the 48 catcher vessels that are eligible for the catcher vessel sector in this program, 24 are qualified for AFA cooperatives. Of these 13 vessels are exempt from the AFA Gulf sideboards, and 3 are exempt from the AFA Bering Sea and Aleutian Islands Pacific cod sideboards. Under the CGOA rockfish program preferred alternative, it is possible that sideboard exempt AFA vessels could increase their catch in other GOA groundfish fisheries.

In considering the effect of sideboards, the Council should consider a few factors. First, in the Western Gulf northern rockfish and pelagic shelf rockfish fisheries, the catch vessel sector has no July harvests. The proposed sideboard would effectively remove all CGOA rockfish catcher vessels from those fisheries. In addition, the Council should recognize that the relatively small sideboard percentages in other fisheries are likely to make the sideboard percentages for the Gulf of Alaska rockfish fisheries unmanageable, in which case, NOAA Fisheries would likely prohibit sideboarded vessels from

[72] Under both catcher vessel alternatives, the Council considered an option to exempt AFA catcher vessels from the rockfish sideboards. The rationale for this exemption is that those vessels are already covered by AFA sideboards for their harvests of Gulf of Alaska and Bering Sea/Aleutian Islands species that would be sideboarded under this program. Some AFA catcher vessels with limited pollock history, however, are exempt from the AFA sideboards. The rationale for excluding these vessels from the sideboards under this program is not apparent, since their catch in the exempt fisheries are not limited by the AFA sideboards. In addition, it is possible that some AFA catcher vessels (that are not exempt from AFA sideboards) could increase their harvests in July in fisheries sideboarded under the AFA, because CGOA rockfish allocations may allow them to redistribute effort to these other fisheries. Whether these increases by AFA sideboarded vessels would be detrimental to other participants depends on the extent of the increase and whether it deprives others of their harvests in those other fisheries because of earlier harvest of the TAC and closure.

participating in the Western Gulf and West Yakutat target rockfish fisheries altogether. If NOAA Fisheries determines that catch of sideboarded vessels can be effectively constrained to the sideboard amount, it could allow participation by sideboarded vessels.

Table 38. Estimated catcher vessel sideboard amounts in fisheries limited by target catch and historic participation by AFA vessels eligible for the CGOA rockfish program (using 1996 to 2002 catch).

		AFA Trawl CVs						Non-AFA Trawl CVs		All trawl		Total catch including discards (metric tons)	Percent of total catch	All retained catch (metric tons)	Percent of retained catch
		Not exempt		Exempt		Total									
		Number of vessels	Landings (metric tons)	Number of vessels	Landings (metric tons)	Number of vessels	Landings (metric tons)	Number of vessels	Landings (metric tons)	Number of vessels	Landings (metric tons)				
BSAI Pacific cod		15	*	1	*	16	*	2	*	18	355.1	304,135**	0.0	292,572**	0.0
Western Gulf	Northern rockfish	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2,511	0.0	1,786	0.0
	Pelagic shelf rockfish	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	961	0.0	747	0.0
	Pacific Ocean perch	0	0.0	0	0.0	0	0.0	1	*	1	*	10,426	*	9,033	*
West Yakutat	Pelagic shelf rockfish	3	*	2	*	5	50.8	6	7.1	11	57.9	3,418***	1.7	3,389***	1.7
	Pacific Ocean perch	3	*	3	*	6	*	3	*	9	181.9	6,449***	2.8	6,204***	2.9

* Withheld for confidentiality.
** Includes only inshore catch
*** Catch from Eastern Gulf (1996-1998) and West Yakutat (1999-2002)
Note: Northern rockfish is not open for directed fishing in West Yakutat.
Source: NPFMC Rockfish Database, Version 1 and NMFS Discard Reports

Eligible catcher vessels would also be limited by halibut mortality in flatfish fisheries in the Western Gulf, Central Gulf, and West Yakutat. Table 39 shows estimated halibut mortality sideboard amounts, including amounts for rockfish in the Western Gulf and West Yakutat. Halibut sideboard will be administered on a Gulf-wide basis, as halibut limits are currently managed on a Gulf-wide basis. The table also shows participation by AFA catcher vessels, including AFA catcher vessels exempt from the AFA Gulf sideboards.

Table 39. Estimated July halibut mortality sideboard amounts for catcher vessels.

		Number of non-exempt eligible AFA catcher vessels with July catch	Number of exempt eligible AFA catcher vessels with July catch	Total number of eligible AFA catcher vessels with July catch	July retained catch of eligible AFA catcher vessels (metric tons)	Number of non-AFA eligible catcher vessels with July catch	July retained catch of eligible non-AFA catcher vessels (metric tons)	Total number of eligible catcher vessels with July catch	July retained catch of all eligible catcher vessels (metric tons)	Total retained July catch (metric tons)	Percent of retained July catch by eligible catcher vessels	July halibut mortality sideboard amount
Central Gulf												
Deep water complex	Arrowtooth flounder	11	13	24	2,156.2	23	2.9	47	2,159.1	8,303.5	26.0	12.1
	Deepwater flatfish	10	13	23	447.0	23	223.3	46	670.3	1,174.9	57.0	2.9
	Rex sole	10	13	23	499.7	23	265.1	46	764.8	2,325.7	32.9	4.6
	Total deep water											**19.5**
Shallow water complex	Flathead sole	9	13	22	486.8	23	667.3	45	1,154.1	1,719.4	67.1	7.7
	Shallow water flatfish	8	12	20	2,142.3	23	4,386.3	43	6,528.6	7,106.2	91.9	115.1
	Total shallow water											**122.8**
Western Gulf												
Deep water complex	Arrowtooth flounder	0	0	0	0.0	0	0.0	0	0.0	4,379.5	0.0	0.0
	Deepwater flatfish	0	0	0	0.0	0	0.0	0	0.0	5.9	0.0	0.0
	Rex sole	0	0	0	0.0	0	0.0	0	0.0	717.6	0.0	0.0
	Rockfish	0	0	0	0.0	1	*	1	*	11,173.9	*	*
	Total deep water											*****
Shallow water complex	Flathead sole	0	0	0	0.0	0	0.0	0	0.0	216.6	0.0	0.0
	Shallow water flatfish	0	0	0	0.0	0	0.0	0	0.0	77.8	0.0	0.0
	Total shallow water											**0.0**
West Yakutat												
Deep water complex	Arrowtooth flounder	3	4	7	30.7	4	1.1	11	31.8	132.4	24.0	1.0
	Deepwater flatfish	3	4	7	59.4	8	36.4	15	95.8	233.6	41.0	0.5
	Rex sole	3	4	7	43.0	7	38.3	14	81.3	124.1	65.5	**
	Rockfish	3	4	7	244.1	10	67.2	17	311.2	8,247.4	3.8	0.4
	Total deep water											**2.0**
Shallow water complex	Flathead sole	1	3	4	17.3	6	26.1	10	43.5	47.6	91.2	3.5
	Shallow water flatfish	1	2	3	*	7	*	10	49.0	49.0	100.0	***
	Total shallow water											**3.5**
Gulf-wide - Totals												
Deep water complex												**21.5**[+]
Shallow water complex												**126.3**

* Withheld for confidentiality
** Rex sole included with arrowtooth due to confidentiality concerns.
*** Shallow water flatfish included with flathead sole due to confidentiality concerns.
[+] excludes Western Gulf rockfish halibut due to confidentiality concerns.
Deepwater complex includes sablefish, rockfish, deepwater flatfish, rex sole, and arrowtooth flounder.
Shallowwater complex includes flathead sole, shallowwater flatfish, pollock, and Pacific cod.
Source: NPFMC Rockfish Database and NMFS GOAHALX data file for the years 1996 through 2002.

In addition to the rockfish sideboards, the eligible catcher vessel license holders would be prohibited from entering the Bering Sea and Aleutian Islands directed fisheries for yellowfin sole, 'other' flatfish, and Pacific Ocean perch, in the month of July, as these vessels have not historically participated in those fisheries.

Another possible effect of the rockfish program on other fisheries could arise from the allocation of shortraker and rougheye to pilot program participants. Whether the portion of the TAC remaining after the allocations to the rockfish fisheries will be adequate to support catch of shortraker and rougheye in other fisheries is not certain. Appendix 7 contains a comprehensive analysis of the allocations and the usage of shortraker and rougheye by fisheries in the Central Gulf of Alaska.

3. Environmental Assessment

In Section 802 of the Consolidated Appropriations Act of 2004, the U.S. Congress directed the Secretary of Commerce to establish, in consultation with the Council, a pilot program for management of the Central Gulf rockfish fisheries. In response to this directive, and at the request of NOAA Fisheries, the Council has developed two pilot program alternatives for the catcher vessel sector and two pilot program alternatives for the catcher processor sector for analysis. This section of the document contains an environmental assessment of the proposed pilot program alternatives and the status quo addressing the requirements of the National Environmental Policy Act.

3.1. Purpose and need statement

The Council has developed the following problem statement defining its purpose for development of the rockfish pilot program:

The present management structure of the CGOA rockfish fishery continues to exacerbate the race for fish with:

- Increased catching and processing capacity entering the fishery,
- Reduced economic viability of the historical harvesters (both catcher vessels and catcher processors) and processors,
- Decreased safety,
- Economic instability of the residential processor labor force,
- Reduced product value and utilization,
- Jeopardy to historical groundfish community stability,
- Limited ability to adapt to Magnuson-Stevens Act (MSA) requirements to minimize bycatch and protect habitat.

While the Council is formulating GOA comprehensive rationalization to address similar problems in other fisheries, a short-term solution is needed to stabilize the community of Kodiak. Kodiak has experienced multiple processing plant closures, its residential work force is at risk due to shorter and shorter processing seasons and the community fish tax revenues continue to decrease as fish prices and port landings decrease. Congress recognized these problems and directed the Secretary in consultation with the Council, to implement a pilot rockfish program with the following legislation:

> SEC. 802. GULF OF ALASKA ROCKFISH DEMONSTRATION PROGRAM. The Secretary of Commerce, in consultation with the North Pacific Fishery Management Council, shall establish a pilot program that recognizes the historic participation of fishing vessels (1996 to 2002, best 5 of 7 years) and historic participation of fish processors (1996 to 2000, best 4 of 5 years) for pacific ocean perch, northern rockfish, and pelagic shelf rockfish harvested in Central Gulf of Alaska. Such a pilot program shall (1) provide for a set-aside of up to 5 percent for the total allowable catch of such fisheries for catcher vessels not eligible to participate in the pilot program, which shall be delivered to shore-based fish processors not eligible to participate in the pilot program; (2) establish catch limits for non-

rockfish species and non-target rockfish species currently harvested with pacific ocean perch, northern rockfish, and pelagic shelf rockfish, which shall be based on historical harvesting of such bycatch species. The pilot program will sunset when a Gulf of Alaska Groundfish comprehensive rationalization plan is authorized by the Council and implemented by the Secretary, or 2 years from date of implementation, whichever is earlier.

The fishing fleets have had little experience with cooperative fishery management and needs to begin the educational process. For the fishery to be rationalized all aspects of the economic portfolio of the fishery needs to recognized. To stabilize the fishery economy all the historical players – harvesters (both catcher vessels and catcher processors) and processors need to be recognized in a meaningful way. The demonstration program is designed as a short-term program for immediate economic relief until comprehensive GOA rationalization can be implemented.

3.2. The alternatives

To address its problem statement, the Council has adopted two pilot program alternatives for the catcher vessel sector and two pilot program alternatives for the catcher processor sector for analysis, in addition to the status quo. Options would create separate sectors for trawl catcher processors, trawl catcher vessels, and non-trawl catcher vessels. Under this construction, the different gear types in the catcher vessel sector would be governed by the same management program, but they would be managed as separate sectors.

For the catcher processor sector, one pilot program alternative would allow harvesters to form cooperatives, which would receive annual harvest share allocations based on the qualified harvest histories of their members. Alternatively, a catcher processor license holder would receive an annual allocation based on the history associated with the license that could be fished independently. The second catch processor pilot program alternative would simply make an allocation to the sector based on the histories of catcher processors in the CGOA rockfish fisheries.

For the catcher vessel sector, one pilot program alternative would allow each harvester to join a cooperative in association with the processor to which it delivered the most pounds of CGOA rockfish during the processor qualifying period. Cooperatives would receive an annual harvest share allocation based on the qualified harvest history of its members. Although no specific processor delivery requirement is created by this cooperative/processor relationship, since cooperative formation depends on the processor association, some delivery arrangement is likely to be incorporated into that relationship. The second catcher vessel pilot program alternative would allow harvesters to form cooperatives, which again would receive allocations based on members' qualified harvest histories. These cooperatives would be required to deliver their landings to processors that met threshold landing requirements during the processing qualifying years. Under both of these alternatives, harvesters that choose not to join a cooperative would be permitted to fish in a competitive fishery that receives an allocation based on the harvest histories of non-members of cooperatives.

Under all of the pilot program alternatives, set asides of CGOA rockfish would be made for an entry level fishery and to support incidental harvests in other directed fisheries.

The pilot program alternatives are derived from a common set of elements with differences that reflect the different operations of the two fleets. The specific elements and options that define the alternatives follow the brief description of the alternatives (including status quo) below.

3.2.1. Alternatives considered but not advanced for analysis

The Council developed the alternatives using a list of elements and options proposed by industry proponents of the program, the public, and the Advisory Panel. The Council used an iterative process for defining alternatives, deliberating concerning the specific provisions after receiving staff discussion

papers and public testimony over the course of several meetings. In general, the starting point for developing the options was the Congressional legislation. One alternative for the catcher processor sector would have made a simple sector allocation to the catcher processor sector, without any further division of allocations to individuals or cooperatives. The Council chose to drop that alternative, as it would not rationalize that portion of the fishery, as necessary to satisfy the problem statement. In addition, the Council chose to remove or modify several other provisions to establish alternatives consistent with the problem statement, including:

- Removing provisions that would make very small allocations to non-trawl catcher vessels that would limit their ability to fish the entry level set aside.
- Modifying provisions to limit the participation of eligible catcher processors in other fisheries to balance the interests of vessel with limited history with the interests of vessels with extensive history.
- Generally, making allocations of secondary species based on retained catch except when those allocations would be limiting on participants.
- Limiting the role of cooperatives to allow processor affiliated vessels to participation in the program without risk of anti-trust violations.

3.3. Affected environment

This section describes the environment (including the human environment) that would be affected by the proposed action. The section begins with a description of the physical environment of the CGOA rockfish fisheries. The section describes the stocks and biology of the various species that could be affected by the action and provides a brief fishery overview for each species. The section also describes various other species that could be affected by the rockfish fisheries, such as marine mammals and seabirds. The section concludes by very briefly describing the Gulf of Alaska marine ecosystem and the economic and socioeconomic conditions in the human environment that would be affected by the proposed action.

3.3.1. Physical environment

The Fishery Management Unit (FMU) for the Gulf of Alaska includes all waters in the EEZ along the southeastern, southcentral and southwestern coasts of Alaska from Dixon entrance to Unimak Pass. While depths in this region are as great as 7,000m in the western region near the Aleutian Trench, it is the continental shelf area which is of greatest importance in the context of fishery management. The continental shelf in the GOA is narrowest in southeast alaska, and broadens to between 100-200 km along the southcentral coast. South of Kodiak Island it reaches its broadest point (approximately 200km) at Portlock Bank. Along the Alaska Peninsula and proceeding westward the shelf narrows to 50 km at Unimak Pass.

Circulation in the GOA is dominated by the Alaska Coastal Current (ACC), a fast moving westward trending coastal current. Coastal circulation in the GOA is driven in the winter by anti-clockwise wind stress over the GOA region and in the summer by the freshwater inputs along the coast. To the west of Kodiak Island where freshwater input is reduced, the circulation is driven by prevailing winds.

Along the continental shelf, seasonal variations in water properties are driven by differential wind stress. During the winter, southwesterly winds bring convergence and downwelling (Royer 1981) together with winter cooling and replacement of the warm, high saline bottom waters. During the summer the wind field is reversed resulting in the upwelling of warmer, higher saline nutrient rich waters from the central GOA onto the shelf break.

The GOA FMU is subdivided for management purposes into three regions, Western GOA, Central GOA and Eastern GOA. For purposes of this analysis it is the Central GOA subregion that is of interest. This region includes the regulatory areas of 620 and 630.

3.3.2. Target rockfish stocks

The principal target rockfish species for this pilot project are Pacific Ocean Perch, Northern rockfish and the pelagic Shelf rockfish assemblage. Pertinent information on the biology, ecological relationships and fishery information on each species is summarized below.

Pacific Ocean Perch

Pacific Ocean perch (*Sebastes alutus*) is a demersal rockfish species with a wide geographic distribution from California to the North Pacific and the Bering Sea to the Kuril Islands (Hanselman et al 2003). They are a long-lived, slow-growing rockfish species, with maximum age estimated to be in excess of 90 years (Leaman 1991). There is a great deal of uncertainty about the early life history of the species given that larval identification is difficult and infrequent (Gharrett et al 2001). Larvae are hypothesized to stay at depth of release for several months then move to shallower waters. Larvae are pelagic and do not become demersal for approximately 2-3 years (Gunderson 1977, Haldorson and Love 1991) Pacific Ocean perch juveniles have some of the slower daily growth rates of all the rockfish species. After recruitment, juveniles settle on hard low-relief sediments while older fish are generally found between 150-350 meters in the summer and deeper in the winter (Love, et al., 1991).

Pacific Ocean perch abundance is influenced by periodically abundant year classes. Availability of abundant zooplanktonic prey for Pacific Ocean perch larvae or post-larvae may be an important determining factor in year class strength (Hanselman et al 2003). However, there is no information on food habits of larval or post-larval rockfish thus it is difficult to draw a relationship between food availability and year class strength. Some juvenile rockfish in inshore habitat have been found to prey on shrimp, amphipods, other crustaceans, mollusks and some fish (Byerly 2001). Adult Pacific Ocean perch feed primarily on euphausiids which is also a major prey item for walleye pollock, thus changes in walleye pollock population could impact the population of euphausiids and thus impact the Pacific Ocean perch populations as well (Hanselman et al 2003).

Pacific Ocean perch are preyed upon by a variety of other fish at all life stages and to some extent marine mammals as well during late juvenile and adult stages (Hanselman et al 2003). Documented predators include Pacific halibut and sablefish and it is likely that Pacific cod and arrowtooth flounder also prey upon Pacific Ocean perch (NMFS 2004). Pelagic juveniles are consumed by salmon and benthic juveniles are consumed by lingcod and other demersal fish (NMFS 1997). The relative population impact of predators is unknown, although it is presumed predation would have a larger impact at the larval, post-larval and juvenile life stages. Information on these life stages and their related predators however is unknown.

The majority of the historical commercial catch of Pacific Ocean perch has been taken by bottom trawls, although in recent years a portion of the catch has been taken by pelagic trawls. The percentage of the POP Gulf-wide catch taken in pelagic trawls increased from 2-8% during 1990-1995 to 14-20% during 1996-1998 (Hanselman et al 2003). In the most recent period from 1999-2002, annual percentages have ranged from 10.3-17% (Hanselman et al 2003).

The Pacific Ocean perch ABC, OFL and TAC are apportioned over the three areas of the GOA (western, central and eastern) based upon a proportional weighting scheme which considers the proportion of biomass in each region as well as the relative variability in survey biomass estimates. The ABC, OFL and TAC and catch for the CGOA Pacific Ocean perch stock from 1996 to 2003 are included in Table 40.

Recent data from 1997-2002 (Gaichas and Ianelli summaries of Observer data) indicate that bycatch in the combined rockfish trawl fishery is predominantly arrowtooth flounder, Pacific cod and sablefish. The only non-rockfish fishery catching a major amount of Pacific Ocean perch as bycatch is in the rex sole fishery, averaging 280 metric tons per year, while smaller amounts are taken in the other flatfish, pacific cod and sablefish fisheries (Gaichas and Ianelli summary, in Hanselman et al 2003).

Additional information on the GOA Pacific Ocean perch biology and fishery can be found in the Final PSEIS (NMFS 2004) as well as the annual Stock Assessment and Fishery Evaluation reports.

Table 40. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska Pacific Ocean perch (1996-2003).

Pacific Ocean Perch *(mt.)*				
Year	**Overfishing Level**	**ABC**	**TAC**	**Catch**
2004	9,960	8,390	8,390	8,446
2003	10,120	8,510	8,510	8,106
2002	9,760	8,220	8,220	8,262
2001	11,350	9,610	9,610	9,249
2000	15,390	9,240	9,240	8,379
1999	18,490	6,760	6,760	7,910
1998	18,090	6,600	6,600	7,452
1997	19,760	6,690	5,352	6,720
1996	10,165	3,860	3,333	5,145
Source: NMFS Annual Catch Reports & Groundfish Harvest Specifications, 1996-2004.				
Available at: *http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm*				

Northern Rockfish

The northern rockfish, *Sebastes polyspinis*, are a semidemersal long-lived rockfish species. Their distribution ranges from northern British Columbia across the Pacific Rim to eastern Kamchatka and the northern Kurile Islands to the eastern Bering Sea (Allen and Smith 1988). They are most abundant throughout their northerly range in Alaskan waters from the western end of the Aleutian Islands to Portlock Bay in the Central GOA (Clausen and Heifetz 2004). There is little known about the life history of northern rockfish.

While there is limited information on the habitat preference of juvenile northern rockfish, trawl surveys and commercial fishery data have indicated that adult northern rockfish prefer relatively shallow banks on the outer continental shelf at depths between 75-150 m (Clausen and Heifetz 2004). These data also indicate that within this habitat adult northern rockfish have patchy, localized distributions (Clausen and Heifetz 2004). This may be a result of the prey availability of euphausiids. Offshore euphausiids are not directly associated with the bottom, but are presumed to be advected onshore near bottom at the upstream ends of underwater canyons (Brodeur 2001). This distribution of prey may help to explain the observed patchy distribution of northern rockfish.

Northern rockfish feed primarily on euphausiids but have also been shown to feed on copepods, hermit crabs and shrimp in smaller quantities (Yang 1993, 1996, Yang and Nelson 2000). Predators of northern rockfish are not well documented. Predators of other rockfish species, such as Pacific halibut, are presumed likely to prey upon northern rockfish. Rockfish in general are preyed upon by a variety of other fish at all life stages and to some degree marine mammals during late juvenile and adult stages. Predator effects are likely to be more important on the earlier lifestages of northern rockfish but actual information on these lifestages and their relative predators is unknown. The influence of predator-prey relationships on the population dynamics of northern rockfish is likewise unknown.

The majority of the commercial catch of northern rockfish in the fishery is taken with bottom trawl gear. Most of the catch has been taken in the Central GOA management area, where the majority of the exploitable biomass is concentrated. The northern rockfish ABC and TAC are apportioned over the three areas of the GOA (western, central and eastern) based upon a proportional weighting scheme which considers the proportion of biomass in each region as well as the relative variability in survey biomass estimates. The majority of the exploitable biomass of northern rockfish is located in the Central GOA. The weighted average apportionment utilized for the 2004 fishery was 84.10% of the biomass in the Central GOA. The OFL for northern rockfish is Gulf-wide over the three management areas. The ABC, OFL and TAC and catch for the CGOA northern stock from 1996 to 2003 are included in Table 41.

Based on observer program data from 1990-1998, 80 percent of the catch of northern rockfish came from the directed fishery while 18% came as bycatch in other fisheries (Clausen and Heifetz 2004), in Courtney et al 2003). Bycatch in the directed northern rockfish fishery was predominantly dusky rockfish, followed distantly by "other slope rockfish", Pacific Ocean perch, and arrowtooth flounder (Ackley and Heifetz 2001). This study was based on observer program data from 1993-1995 and represents the only detailed study to date of bycatch in the slope rockfish fishery in the GOA. Additional information on the GOA northern rockfish biology and fishery can be found in the Final PSEIS (NMFS 2004) as well as the annual Stock Assessment and Fishery Evaluation reports.

Table 41. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska northern rockfish (1996-2003).

Northern Rockfish *(mt.)*				
Year	**Overfishing Level (Gulfwide)**	**ABC**	**TAC**	**Catch**
2004	5,790	4,100	4,100	3,711
2003	6,560	4,640	4,640	4,810
2002	5,910	4,170	4,170	2,999
2001	5,780	4,280	4,280	2,588
2000	7,510	4,490	4,490	2,578
1999	9,420	4,150	4,150	4,825
1998	9,420	4,150	4,150	2,967
1997	9,420	4,150	4,150	2,870
1996	9,926	4,610	4,610	3,146
Source: NMFS Annual Catch Reports & Groundfish Harvest Specifications, 1996-2004.				
Available at: *http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm*				

Pelagic Shelf Rockfish

The pelagic shelf rockfish are a managed assemblage of mid-water, schooling rockfish which inhabit the continental shelf area of the Gulf of Alaska. The assemblage is comprised of three species: dusky rockfish, *Sebastes ciliatus*, yellowtail rockfish, *S. flavidus*, and widow rockfish, *S. entomelas*. Of these three, dusky rockfish is the most important species Gulf-wide in the assemblage while the other two species are minor parts of the assemblage in Alaskan waters. Dusky rockfish has the northernmost distribution of all rockfish species in the Pacific Ocean. While the species range extends from British Columbia north to the Bering Sea and west to Hokkaido Island, Japan, the species appears to be abundant only in the Gulf of Alaska.

There are two distinct species of dusky rockfish in the Gulf of Alaska, a lighter-colored species (light dusky), found in more offshore waters and a darker-colored species found in shallow waters closer inshore (Clausen, et al. 2003). The majority available data on dusky rockfish from trawl surveys and the commercial fishery is on light dusky rockfish. Currently an annual stock assessment with an age-structured model is being done for light dusky rockfish. There exists the potential in the future to separate light and dark duskys for management purposes, with dark duskys being removed to the state for jurisdiction over management, similar to black and blue rockfish in 1998. However, at present the two are managed as one species despite the majority of the catch being comprised of light dusky rockfish (NMFS, 2003).

The stock condition of dusky rockfish is influenced by periodically abundant year classes. As with the other rockfish species, the availability of zooplankton prey may play an important role in year class strength, however there is insufficient information available on food habits to determine this. Euphausiids are important in the diet of adult rockfish thus any change in the abundance of euphausiids based on climatic conditions or predation by other fish species could impact food availability for rockfish.

Pelagic shelf rockfish are caught almost exclusively with bottom trawl gear although some small amounts of reported catch are caught with longline gear. The vast majority of the catch is composed of light dusky rockfish (see table below). Catch of light dusky rockfish occurs in July following the close of the Pacific Ocean perch target fishery. Catches are concentrated on shallow, offshore banks of the continental shelf, specifically the areas west of Yakutat, Portlock Bank northeast of Kodiak Island and around Albatross Bank southeast of Kodiak Island (Clausen et al. 2003). The highest CPUE in the commercial fishery tends to be within the 100-149m depth range (Reuter 1999).

The ABC and TAC for pelagic shelf rockfish assemblage are apportioned over the three areas of the GOA (western, central, eastern). In the Eastern GOA, West Yakutat and South East Outside are split with separate ABCs and TACs for each region. The OFL for the complex is Gulf-wide. The ABC, OFL and TAC for the complex from 1996-2003 are included in Table 42.

Bycatch in the directed pelagic shelf rockfish fishery tends to be largely northern rockfish and “other slope” rockfish, with smaller amounts of Pacific Ocean perch (Ackley and Heifetz 2001). Catch data from a different study also showed that dusky rockfish were most commonly associated with northern rockfish, Pacific Ocean perch and harlequin rockfish (Reuter 1999). No information is available on bycatch of pelagic shelf rockfish in the non-rockfish fisheries, however it is presumed to be small (Clausen et al 2003).

Additional information on the GOA pelagic shelf rockfish biology and fishery can be found in the Final PSEIS (NMFS 2004) as well as the annual Stock Assessment and Fishery Evaluation reports.

Table 42. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska pelagic shelf rockfish (1996-2003).

Pelagic Shelf Rockfish *(mt.)*				
Year	**Overfishing Level**	**ABC**	**TAC**	**Catch**
	(Gulfwide)			
2004	5,570	3,010	3,010	2,158
2003	8,220	3,480	3,480	2,209
2002	8,220	3,480	3,480	2,680
2001	9,040	4,080	4,080	2,436
2000	9,040	4,080	4,080	3,074
1999	8,190	3,370	3,370	3,835
1998	8,040	3,260	3,260	2,477
1997(Offshore*)	8,400	3,320*	3,320*	1,760*
1997(Nearshore**)		260**	260**	199**
1996	8,704	3,200	3,200	1,849
Source: NMFS Annual Catch Reports & Groundfish Harvest Specifications, 1996-2004.				
Available at: *http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm*				

3.3.3. Allocated secondary species stocks and prohibited species catch

The following section summarizes biological, ecosystem, and fishery information concerning other species that are caught incidentally in the Central Gulf of Alaska rockfish fisheries, including sablefish, shortraker rockfish, rougheye rockfish, thornyhead rockfish, and Pacific cod.

Sablefish

Sablefish (*Anoploma fimbria*) are distributed from northern Mexico to the Gulf of Alaska, westward to the Aleutian Islands and into the Bering Sea (Wolotira et al 1993). Adult sablefish are found along the continental slope, gullies and deep fjords generally at depths greater than 200m. Sablefish that were observed from a manned submersible were found within 1m of the bottom (Krieger 1997).

Sablefish are assessed as a single population in Federal waters off Alaska because northern sablefish are highly migratory for at lease part of their life (Heifetz and Fujioka, 1991; Maloney and Heifetz, 1997; Kimura et al, 1998). Sablefish are managed by discrete regions to distribute exploitation throughout their wide geographical range. There are four management areas in the Gulf of Alaska; Western, Central, West Yakutat, and East Yakutat/Southeast Outside (SEO) and two management areas in the Bering Sea/Aleutian Islands.

Spawning is pelagic at depths of 300 to 500 meters near the edges of the continental slope (McFarlane and Nagata, 1988), with eggs developing at depth and larvae developing near the surface as far offshore as 180 miles (Wing, 1997). Average spawning (date based on otolith analysis) is March 30 (Sigler, et al., 2001). During surveys of the outer continental shelf, most young-of-the-year sablefish are caught in the central and eastern Gulf of Alaska (Sigler et al., 2001). Near the end of the first summer, pelagic juveniles less than 20 cm drift inshore and spend the winter and following summer in inshore waters, reaching 30 to 40 cm by the end of their second summer (Rutecki and Varosi, 1997). After their second summer, they begin moving offshore, typically reaching their adult habitat, the upper continental slope at 4 to 5 years.

Young-of-the-year sablefish prey mostly on euphausiids (Sigler, et al., 2001). Juvenile and adult sablefish are opportunistic feeders. Diet studies have found that three-fourths of stomach content weight is fish,

with the remainder invertebrates (Yang and Nelson, 2000). Because of their opportunistic feeding practices, juveniles and adults are unlikely to be affected by availability and abundance of individual prey species, but overall changes in ecosystem productivity could affect growth and survival rates. The main sablefish predators are adult coho and Chinook salmon, which prey on young-of-the-year.

Water mass movements and temperature appear related to recruitment success (Sigler, et al., 2001). Above average recruitment is somewhat more likely with northerly winter currents and much less likely for years when the drift is southerly. Growth rate of young-of-the-year sablefish is higher in years when they are more abundant.

Fishing effects of the current management regime are either minimal or temporary based on the criteria that sablefish are currently above MSST. Sablefish are substantially dependent on benthic prey, which may be adversely affected by fishing. Little is known about sablefish spawning habitat and the effects of fishing on that habitat. Habitat requirements for growth to maturity are better known, but this knowledge is incomplete. Although sablefish do not appear dependent on physical structure, living structure and coral are substantially reduced in much of the area where sablefish are concentrated.

U.S. and Canadian fishermen have exploited sablefish since the end of the 19th century. The fishery developed as a secondary fishery for participants in the U.S. and Canadian halibut fisheries. The fishery developed off the Washington and British Columbia, spreading north to Alaska in the 1920s. Until the late 1950s, the fishery was exclusively U.S. and Canadian ranging from northern California to the Gulf of Alaska off Kodiak Island (Low, et al., 1976).

In the late 1950s, Japanese longliners entered the sablefish fisheries in the eastern Bering Sea. Japanese fishing quickly expanded to the Gulf of Alaska, where catches peaked at almost 37,000 metric tons in 1972. This heavy fishing led to a substantial population decline and a sharp reduction in catch. Japanese trawlers also caught sablefish incidentally in the Gulf Pacific Ocean perch fishery until 1972, when directed trawl fishing for sablefish developed (Sasaki, 1973).

The U.S. longline fishery began expanding substantially in 1982. By 1988 almost all Gulf sablefish were taken by U.S. fishermen, with the exception of minor harvests by some remaining joint venture participants. The fishery expanded rapidly through the 1980s, prompting the development the IFQ program. IFQ management has increased fishery catch rates and decreased the harvest of immature fish (Sigler and Lundsford, 2001).

In addition to the directed longline fishery, sablefish are caught incidentally in Gulf trawl fisheries, primarily fisheries for rockfish and deep-water flatfish. In addition, five State longline fisheries land sablefish outside of the IFQ program. A switch by some fishermen to pot gear for sablefish in the Bering Sea and Aleutian Islands has been prompted by killer whale depredation of longline catch. Pot gear is not permitted in the Gulf of Alaska.

The longline fishery catches mostly medium and large fish which are typically mature. The trawl fishery, which accounts for a small part of the total catch, occurs along the continental shelf where catches medium and small fish are often made. Catching these fish as juveniles, likely reduces the yield available from each recruit, though the shift is likely small because trawl harvests are a small portion of the total catch.

The ABC and TAC for sablefish are apportioned over the four areas of the Gulf of Alaska: the Western Gulf, the Central Gulf, West Yakutat, and East Yakutat/South East Outside with separate ABCs and

TACs for each region. The OFL for sablefish is Gulfwide. The ABC, OFL and TAC for the sablefish from 1996-2003 are included in Table 43.

The sablefish quota in the Central Gulf of Alaska is allocated 80 percent to hook and line gear and 20 percent to trawl gear. Current MRAs vary by directed basis species. The MRA for pollock, Pacific cod, Atka mackerel, shallow water flatfish, skates, "other species," and aggregated amounts of non-groundfish species is 1 percent. Deep water flatfish, rex sole, flathead sole, Pacific Ocean perch, shortraker rockfish, rougheye rockfish, northern rockfish, pelagic shelf rockfish, thornyheads, and other rockfish have an MRA of 7 percent. Sablefish may not be retained for directed arrowtooth flounder.

Table 43. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska pelagic shelf rockfish (1996-2003).

Sablefish *(mt.)*				
Year	**Overfishing Level**	**ABC**	**TAC**	**Catch**
	(Gulfwide)			
2004 (H&L)	22,160	16,550	5,840	6,096
2004 (Trawl)	```		1,460	989
2003 (H&L)	20,020	6,440	5,152	5,661
2003 (Trawl)			1,288	1,429
2002 (H&L)	19,350	5,430	4,344	4,611
2002 (Trawl)			1,086	1,569
2001 (H&L)	15,720	5,410	4,328	4,434
2001 (Trawl)			1,082	1,084
2000 (H&L)	16,660	5,730	4,584	4,786
2000 (Trawl)			1,146	1,386
1999 (H&L)	19,720	5,590	4,472	4,557
1999 (Trawl)			1,118	1,316
1998 (H&L)	23,450	6,320	5,056	4,674
1998 (Trawl)			1,264	1,245
1997 (H&L)	39,950	6,410	5,128	4,935
1997(Trawl)			1,282	1,302
1996 (H&L)	22,800	6,900	5,520	5,122
1996 (Trawl)			1,380	1,650
H&L refers to hook and line fishing gear.				
Source: NMFS Annual Catch Reports & Groundfish Harvest Specifications, 1996-2004.				
Available at: *http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm*				

Shortraker/Rougheye rockfish

As with most other rockfish, shortraker rockfish (*Sebastes borealis*) and rougheye rockfish (*Sebastes aleutianus*) are slow growing and long-lived. They inhabit waters of the outer continental shelf and continental slope. Shortraker are consistently most abundant in the Yakutat area. Rougheye are typically most abundant in the Southeastern area. Estimates of maximum age of shortraker rockfish is 120 years, while estimates of maximum age of rougheye rockfish range from 90 years to 140 years.
Shortraker and rougheye rockfish have traditionally been combined for management purposes. Prior to 2004 there was no requirement to report catchers of these two species separately and fishermen and

processors could report shortraker, rougheye or shortraker/rougheye catch. Beginning in 2005, on the suggestion of the Scientific and Statistical Committee, the management of these two species will be separated to protect shortraker rockfish from disproportionate harvest within the shortraker/rougheye group. Instead, the ABC for shortraker rockfish will be the estimated proportion of shortraker in the shortraker/rougheye catch in trawl surveys. An important component of management is the accurate estimation of shortraker catch within that group in the commercial fishery. This estimation is particularly problematic in the longline fleet, which is primarily composed of small vessels with little or no observer coverage in the Gulf of Alaska. A pilot program is underway to develop further information on catch from the unobserved portion of the fleet. Appendix 7 to this analysis provides some additional background information concerning historic harvests of shortraker and rougheye in various target fisheries in the Central Gulf.

As with other slope rockfish, shortraker and rougheye appear to be influenced by periodic abundant year classes. Availability of suitable zooplankton prey in sufficient quantity for larval and post-larval rockfish may be an important determining factor of year class strength. Information is unavailable to further assess this relationship. Adult shortraker and rougheye are thought to opportunistically feed on mollusks and fish. Little is known about the abundance trends of rockfish prey items. Rockfish are preyed on by a variety of other fish at all lifestages, and to some extent marine mammals during late juvenile and adult stages. Whether any particular predator has a significant or dominant effect is unknown. Predator effects on larval, post-larval, and small juvenile fish, but information on these stages and their predators is nil.

Shortraker/rougheye are harvested incidentally by both longline and trawl gear. In 1991, management of these species was separated from slope rockfish in 1991. Historically, both species were harvested in directed longline and trawl fisheries. Currently, no directed fishery exists for these species, but incidental catch is permitted under MRAs. Currently, these species are part of the “aggregated rockfish” MRA, which includes other slope rockfish species. The current MRA is 15 percent for basis species in the deep-water complex and 5 percent for species in the shallow-water complex.

Shortraker and rougheye are caught with both trawl and hook and line gear. The ABC and TAC for shortraker and rougheye are apportioned by each of the three GOA areas while the OFL is managed Gulf-wide. The relative proportions by areas are calculated based on comparison with the most recent trawl survey results. The largest proportional allocation in 2003 and 1999 was in the Central GOA (52% of the ABC/TAC 2003, 42% in 1999) while in previous years the Eastern GOA had the largest proportional allocation. The ABC, OFL and TAC for the complex from 1996-2003 are included in Table 44.

Table 44. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska shortraker/rougheye rockfish (1996-2003).

Shortraker/rougheye *(mt.)*				
Year	**Overfishing Level**	**ABC**	**TAC**	**Catch**
	(Gulfwide)			
2004	2,510	656	656	329
2003	2,340	840	840	856
2002	2,340	840	840	631
2001	2,510	930	930	998
2000	2,510	930	930	887
1999	2,740	970	970	580
1998	2,740	970	970	868
1997	2,740	970	970	931
1996	2,925	1,210	1,210	941
Source: NMFS Annual Catch Reports & Groundfish Harvest Specifications, 1996-2004.				
Available at: *http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm*				

Thornyhead rockfish

Thornyhead rockfish are long-lived, slow-growing high value rockfish species in Alaskan waters. The shortspine thornyheads, *Sebatolobus alaskanus,* are abundant in the Gulf of Alaska and are of commercial importance as a high value rockfish species. Longspine thornyheads, *S. altivelis,* as well as another thornyhead species common off Japan, *S. macrochir,* are infrequently encountered in the Gulf of Alaska, thus annual assessments focus upon the shortspine thornyhead.

Shortspine thornyheads are a demersal species found in deep waters from 92m to 1460 m with a geographic distribution extending from the Bering Sea and Gulf of Alaska to Baja California (Gaichas and Ianelli 2003). Thornyhead life history is not well known. The maximum recorded age is in excess of 50 years (NMFS 2004). Groundfish species that are commonly associated with thornyheads include: arrowtooth flounder, Pacific Ocean perch, sablefish, rex sole, Dover sole, shortraker rockfish, rougheye rockfish and grenadiers (Alverson 1964, in Gaichas and Ianelli 2003).

Shrimp had been noted to be the most important food in the thornyhead diet (Yang 1993, 1996 and Yang and Nelson 2000, In, NMFS 2004) Other important prey items include Tanner crabs, Pollock, capelin, sculpins, polychatetes, mysids, amphipods and other crabs (Yang 1993, 1996 and Yang and Nelson 2000, In, NMFS 2004). California sea lion (Lowry et al 1990) and sablefish (Orlov 1997) are documented predators of shortspine thornyheads.

Thornyhead rockfish are caught with both trawl and hook and line gear. Directed fishing for thornyheads is not permitted currently. The ABC and TAC for thornyheads are apportioned by each of the three GOA areas while the OFL is managed Gulf-wide. The relative proportions by areas are calculated based on comparison with the most recent trawl survey results. The largest proportional allocation in 2003 and 1999 was in the Central GOA (52% of the ABC/TAC 2003, 42% in 1999) while in previous years the Eastern GOA had the largest proportional allocation. The ABC, OFL and TAC for the complex from 1996-2003 are included in Table 45.

Discards of thornyheads by weight were highest in 2001 and 2002 in the sablefish fishery followed by rockfish and the combined flatfish fishery (Gaichas and Ianelli 2003).

Additional information on thornyhead rockfish biology and fishery can be found in the Final PSEIS (NMFS 2004) as well as the annual Stock Assessment and Fishery Evaluation reports.

Table 45. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska thornyhead (1996-2003).

Thornyhead *(mt.)*				
Year	**Overfishing Level**	**ABC**	**TAC**	**Catch**
	(Gulfwide)			
2004	2,590	1,940	1,940	401
2003	3,050	840	840	744
2002	2,330	840	840	505
2001	2,770	970	970	523
2000	2,820	990	990	551
1999	2,800	700	700	583
1998	2,840	710	710	716
1997 (Gulfwide)	2,400	1,700	1,700	1,240
1996 (Gulfwide)	2,200	1,560	1,248	1,132
Source: NMFS Annual Catch Reports & Groundfish Harvest Specifications, 1996-2004.				
Available at: *http://www.fakr.noaa.gov/sustainablefisheries/catchstats.htm*				

Pacific cod

Pacific cod (*Gadus macrocephalus*), also known as grey cod, are moderately fast-growing and short-lived fish. Females reach 50 percent maturity of about 67 cm, at an age of 6.7 years and are highly fecund. Annual natural mortality of adults is estimated to be 0.37. Cod are demersal fish and in the winter and spring concentrate on the shelf edge and upper slope at depths of approximately 100 to 200 meters. They spawn from January through April, and then move to shallower waters (less than 100 meters) in the summer. Cod recruit to trawl fisheries at approximately 3 years, but are not fully recruited to all fisheries until 7 years.

Pacific cod is a transoceanic species, occurring at depths from shoreline to 500 meters. The southern limit of the species distribution is about 34 N latitude, with a northern limit of about 63 N latitude. Pacific cod is distributed widely over the Gulf of Alaska, as well as the eastern Bering Sea and Aleutian Islands area. Tagging studies have demonstrated significant migration both within and between the eastern Bering Sea, Aleutian Islands, and Gulf of Alaska. Genetic studies have failed to show significant evidence of stock structure within these areas. Pacific cod is not known to exhibit any special life history characteristics that require it to be assessed or managed differently form other groundfish stocks in the Gulf of Alaska.

A primary ecosystem phenomenon affecting Pacific cod seems to the periodic occurrence of “regime shifts” (Livingston, ed. 2002). Additional study of the relationship between ecology of Pacific cod and these regime changes is necessary to fully understand the implications of these changes. Major trends in predators and prey can be expected to affect Pacific cod dynamics. Small Pacific cod feed mostly on invertebrates, while large Pacific cod are mainly piscivorous. Predators for Pacific cod include halibut,

salmon shark, northern fur seals, Steller sea lions, harbor porpoises, various whale species, and tufted puffin.

Potentially, fisheries for Pacific cod can have effects on other species in the ecosystem through a variety of means. Pitcher (1981) showed that Pacific cod is important winter prey for Steller sea lions. Sinclair and Zeppelin (2002) reinforced this finding, showing that Pacific cod was one of the four most important prey items of Steller sea lions, based on frequency of occurrence averaged over years, seasons, and sites, and was particularly important in winter. Size ranges of Pacific cod harvested commercially overlap with those consumed by sea lions, and to some extent commercial fisheries share geographic regions with sea lions (Livingston, ed., 2002).

Prior to adoption of the MSA in 1976, the Pacific cod fishery was relatively small, averaging approximately 3,000 metric tons per year in the two previous decades. In the late 1970s the fishery grew, mostly through foreign participation, which peaked in 1981 with a catch of almost 35,000 metric tons. The domestic fishery grew slowly through the early 1980s, and then jumped sharply in 1987 to approximately 31,000 metric tons, as the foreign fishery was eliminated. The current fishery is prosecuted by three gear types: trawl gear, hook and line gear, and pot gear. Traditionally trawl gear has taken the largest share of the catch, although in the last two years, pot gear has accounted for the largest share.

The ABC and TAC for Pacific cod are apportioned by each of the three GOA areas (Western Gulf, Central Gulf, Eastern Gulf), while the OFL is managed Gulf-wide. In addition, Pacific cod is allocated between processor components (inshore/offshore) and season. 90 percent of the TAC is allocated to the inshore component and 10 percent to the offshore component. On the Central Gulf, 60 percent of each component's quota is allocated to the A season (January 1 to June 10), and the remainder is allocated to the B season (June11 to December 31). Directed fishing in the B season opens September 1. Historically, the majority of the Gulf catch of cod has come from the Central Gulf. This distribution of effort has resulted, to some extent, from catch limits established for the different areas. Area specific allocations have varied with estimates of the distribution of biomass and management responses to local concerns. The ABC, OFL and TAC for Pacific cod from 1996-2003 are included in Table 46.

Table 46. Overfishing limit, allowable biological catch, total allowable catch, and catch of Central Gulf of Alaska Pacific cod (1996-2003).

Pacific cod *(mt.)*				
Year	**Overfishing Level**	**ABC**	**TAC**	**Catch**
	(Gulfwide)			
2004 (Inshore)	102,000	35,800	27,116	25,129
2004 (Offshore)			2,712	1,931
2003 (Inshore)	70,100	29,000	20,421	22,584
2003 (Offshore)			2,269	2,159
2002 (Inshore)	77,100	31,680	22,311	22,665
2002 (Offshore)			2,479	2,393
2001 (Inshore)	91,200	38,650	27,225	25,255
2001 (Offshore)			3,025	2,066
2000 (Inshore)	102,000	43,550	30,672	30,257
2000 (Offshore)			3,408	1,928
1999 (Inshore)	134,000	53,170	38,642	40,928
1999 (Offshore)			4,293	3,619
1998 (Inshore)	141,000	49,080	37,548	38,031
1998 (Offshore)			4,172	3,405
1997 (Inshore)	180,000	51,400	42,321	43,406
1997 (Offshore)			1,369	271
1996 (Inshore)	88,000	42,900	38,610	42,213
1996 (Offshore)			4,290	5,351

Halibut

Pacific halibut (*Hippoglossus stenolepsis*) range from the Eastern Bering Sea to Oregon, with the center of abundance in the Gulf of Alaska. Spawning takes place in the winter months from December to February, mostly off the edge of the continental shelf at depths of 400 to 600 meters. Male halibut become sexually mature at 7 or 8 years of age; females become sexually mature at 8 to 12 years. In the 1970s, 10-year old males averaged 9.1 kilograms, and females averaged 16.8 kilograms. Males can grow to approximately 35 kilograms and live up to approximately 30 years; females can grow to over 225 kilograms and live up to approximately 40 years. Females can produce up to 3 million eggs annually. Fertilized eggs float free for about 15 days before hatching. Larvae drift free for up to 6 months and can be carried great distances to shallow waters by prevailing currents. Most young halibut spend 5 to 7 years in shallow waters. At about 35 centimeters, these fish begin life as bottom dwellers. Up to age 10, halibut in the Gulf are highly migratory, generally migrating clockwise throughout the Gulf. Older halibut are much less migratory. Halibut prey on variety of fish, crab, and shrimp, at times leaving the bottom to feed on fish, such as herring and sand lance.

The catch of halibut in directed fisheries is managed under a treaty between the U.S. and Canada, through the International Pacific Halibut Commission. Pacific halibut are considered a single interrelated stock, but are regulated by quotas at the subarea level. Both commercial and recreational fisheries date back to the 1800s.

NOAA Fisheries regulates the bycatch of halibut in Gulf of Alaska groundfish fisheries. The Council and NOAA Fisheries set mortality rates each year and TAC apportionments each year for each gear and target

fishery group. In limited access fisheries, NOAA Fisheries monitors halibut mortality throughout the year (including using extrapolated estimates for unobserved vessels), closing fisheries when the applicable bycatch mortality limit is estimated to be reached (50 CFR 79.21). Other measures have been used to reduce halibut bycatch including area closures, careful release requirements, a vessel incentive program to hold individual vessels accountable for excessive bycatch, public reporting of individual bycatch rates, and gear modifications.

In recent years, the halibut mortality limit in the Gulf of Alaska trawl fisheries has been 2,000 metric tons. Of this, 800 metric tons is allocated to the deep-water complex, which includes the rockfish fisheries. This allocation is split among seasons, with the third season (starting in July, when the rockfish fisheries open) being allocated 400 metric tons. If the halibut mortality limit is reached prior to the catch of the rockfish TAC, the rockfish fisheries are closed for the season and reopened when a rollover of any amounts of mortality on used in the first two seasons comes available in September. In the Central Gulf of Alaska trawl rockfish fisheries, a halibut mortality rate of 67 percent was set for 2005 and 2006 in the TAC specification process.

3.3.4. Unallocated prohibited species catch

In prosecuting the targeted rockfish fishery in the CGOA, participating catcher processors and catcher vessels in the fishery also harvest prohibited species. Retention of prohibited species is not allowed in the GOA groundfish fisheries, including the trawl rockfish fishery. The Magnuson-Stevens Act prohibition on retention of prohibited species harvests was intended to eliminate any incentive that groundfish fishermen might otherwise have to target these species. Prohibited species include: Pacific halibut (*Hippoglossus stenolepis*), Pacific salmon (*Oncorhynchus spp.*), steelhead trout (*Oncorhynchus mykiss*), Pacific herring (*Clupea pallasi*), red king crab (*Paralithodes camtschaticus*), blue king crab (*P. platypus*), golden or brown king crab (*Lithodes aequispinus*), bairdi Tanner crab (*Chionoecetes bairdi*) and opilio Tanner crab (*C. opilio*).

Prohibited species harvest data were obtained from NOAA Fisheries for the CGOA trawl rockfish fishery. NOAA Fisheries uses observer data to calculate prohibited species harvests. For prohibited species other than halibut, 100 percent mortality is assumed. Table 47 provides an overview of the prohibited species catch that has resulted from the CGOA rockfish fishery over the seven year period from 1996-2002. The total annual amount of targeted groundfish (reported in metric tons) is shown in the second column of the table. For the prohibited species, the figures show the number harvested, not the weight of the harvest, with the exception of herring. The last column in the table shows the harvest of herring in kilograms.

Table 47. Prohibited Species Catches in the Targeted CGOA Rockfish Fishery - 1996-2002

year/sector	targeted groundfish (mt.)	halibut mortality (nos)	bairdi mortality (nos)	red king crab mortality (nos)	chinook salmon mortality (nos)	other salmon mortality (nos)	other king crab mortality (nos)	other tanner crab mortality (nos)	herring mortality (kgs.)
1996 CP totals	7,112.00	50.6	60.83	0	14.68	0.19	422.52	393.18	20.4
1997 CP totals	8,718.50	143.8	62.19	0	2,201.69	362.24	456.28	0	0
1998 CP totals	9,049.50	146.4	19.2	0	51.79	145.55	276.66	0	0
1999 CP totals	9,322.90	168.6	173.52	226.09	140.53	619.7	332.05	0	0
2000 CP totals	6,202.20	48	0.19	0	905.71	81.5	279.2	0	57.5
2001 CP totals	7,881.40	110.6	1,615.10	0	176.98	129.93	324.68	36	0
2002 CP totals	6,114.40	111	724.49	0	1,139.02	671.17	354.25	0	0
1996 CV totals	7,340.20	93	4,172.38	0	121.23	49.74	75.4	163.84	0
1997 CV totals	4,669.50	49.5	6,770.81	0	0	0	0	0	0
1998 CV totals	5,680.20	86.8	2,726.97	0	55.42	207.7	82.38	0	0
1999 CV totals	8,797.20	124.3	384.54	5.23	328.02	909.44	130.59	0	0
2000 CV totals	10,574.30	136.4	223.51	0	210.79	485.29	0	0	
2001 CV totals	5,887.30	114.8	12.16	0	51.2	144.38	39.11	0	0
2002 CV totals	10,143.60	95.1	178.36	0	107.89	222.91	21.12	0	0

Source: NMFS, based on GOA observer data, 1996-2002

3.3.5. Other unallocated species

All non-allocated secondary species harvested in the CGOA rockfish fishery will be managed by MRA, the same as under current management. These non-allocated species include arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, pollock, other species, Atka mackerel and other rockfish.

Table 48 shows the annual harvest of the non-allocated secondary species for the period from 1996 through 2002 for the catcher processor sector and the catcher vessel sector. The data source for all of the tables is the same, NOAA Fisheries blend data 1996-2002.

Table 48. Incidental catch of unallocated species by sector in the Central Gulf of Alaska target rockfish fishery (1996-2002).

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Atka Mackerel	1996	CP	1.02	8.96
Atka Mackerel	1997	CP	1.02	7.40
Atka Mackerel	1998	CP	0.04	38.20
Atka Mackerel	1999	CP	0.13	0.75
Atka Mackerel	2001	CP	6.90	17.92
Atka Mackerel	2002	CP	11.08	29.57
total 1996-2002 harvest			20.18	102.80

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Atka Mackerel	1996	CV	2.61	8.96
Atka Mackerel	1998	CV	0.00	38.20
Atka Mackerel	1999	CV	0.00	0.75
Atka Mackerel	2000	CV	1.29	2.45

Atka Mackerel	2001	CV	0.00	17.92
Atka Mackerel	2002	CV	15.02	29.57
total 1996-2002 harvest			18.92	97.85

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Arrowtooth Flounder	1996	CP	271.04	19,739.55
Arrowtooth Flounder	1997	CP	524.86	12,619.02
Arrowtooth Flounder	1998	CP	773.99	9,589.66
Arrowtooth Flounder	1999	CP	937.77	11,458.38
Arrowtooth Flounder	2000	CP	589.04	17,633.50
Arrowtooth Flounder	2001	CP	326.89	12,732.61
Arrowtooth Flounder	2002	CP	394.23	14,894.73
total 1996-2002 harvest			3,817.82	98,667.45

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Arrowtooth Flounder	1996	CV	1,507.46	19,739.55
Arrowtooth Flounder	1997	CV	476.85	12,619.02
Arrowtooth Flounder	1998	CV	659.36	9,589.66
Arrowtooth Flounder	1999	CV	1,232.85	11,458.38
Arrowtooth Flounder	2000	CV	1,659.44	17,633.50
Arrowtooth Flounder	2001	CV	1,035.09	12,732.61
Arrowtooth Flounder	2002	CV	746.62	14,894.73
total 1996-2002 harvest			7,317.68	98,667.45

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Flathead Sole	1996	CP	7.48	2,165.45
Flathead Sole	1997	CP	13.59	1,933.09
Flathead Sole	1998	CP	5.91	1,167.92
Flathead Sole	1999	CP	6.64	686.67
Flathead Sole	2000	CP	2.39	1,270.62
Flathead Sole	2001	CP	19.64	1,309.87
Flathead Sole	2002	CP	2.64	1,724.84
total 1996-2002 harvest			58.27	10,258.47

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Flathead Sole	1996	CV	99.76	2,165.45
Flathead Sole	1997	CV	32.24	1,933.09
Flathead Sole	1998	CV	12.53	1,167.92
Flathead Sole	1999	CV	50.90	686.67
Flathead Sole	2000	CV	71.62	1,270.62
Flathead Sole	2001	CV	70.93	1,309.87
Flathead Sole	2002	CV	17.07	1,724.84
total 1996-2002 harvest			355.03	10,258.47

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Other flatfish	1996	CP	59.83	10,853.66
Other flatfish	1997	CP	115.71	9,983.95
Other flatfish	1998	CP	37.52	5,386.01
Other flatfish	1999	CP	33.46	4,144.98

Other flatfish	2000	CP	28.10	7,129.99
Other flatfish	2001	CP	70.45	6,613.22
Other flatfish	2002	CP	48.55	7,444.01
total 1996-2002 harvest			393.62	51,555.82

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Other flatfish	1996	CV	579.42	10,853.66
Other flatfish	1997	CV	158.68	9,983.95
Other flatfish	1998	CV	97.39	5,386.01
Other flatfish	1999	CV	157.09	4,144.98
Other flatfish	2000	CV	490.82	7,129.99
Other flatfish	2001	CV	459.48	6,613.22
Other flatfish	2002	CV	154.76	7,444.01
total 1996-2002 harvest			2,097.63	51,555.82

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Other rockfish	1996	CP	489.67	1,278.30
Other rockfish	1997	CP	843.70	1,184.31
Other rockfish	1998	CP	553.51	828.71
Other rockfish	1999	CP	252.77	688.32
Other rockfish	2000	CP	221.47	550.54
Other rockfish	2001	CP	220.85	461.60
Other rockfish	2002	CP	367.93	600.34
total 1996-2002 harvest			2,949.90	5,592.12

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Other rockfish	1996	CV	382.53	1,278.30
Other rockfish	1997	CV	32.98	1,184.31
Other rockfish	1998	CV	58.33	828.71
Other rockfish	1999	CV	307.17	688.32
Other rockfish	2000	CV	61.91	550.54
Other rockfish	2001	CV	34.91	461.60
Other rockfish	2002	CV	49.60	600.34
total 1996-2002 harvest			927.43	5,592.12

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Other species	1996	CP	54.38	3,699.30
Other species	1997	CP	98.05	4,508.58
Other species	1998	CP	63.85	2,691.32
Other species	1999	CP	60.01	2,778.80
Other species	2000	CP	55.01	4,982.18
Other species	2001	CP	118.04	4,334.60
Other species	2002	CP	115.54	3,444.54
total 1996-2002 harvest			564.88	26,439.32

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Other species	1996	CV	65.24	3,699.30
Other species	1997	CV	63.52	4,508.58
Other species	1998	CV	45.85	2,691.32

Other species	1999	CV	76.50	2,778.80
Other species	2000	CV	123.27	4,982.18
Other species	2001	CV	178.88	4,334.60
Other species	2002	CV	103.05	3,444.54
total 1996-2002 harvest			656.30	26,439.32

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Pollock	1996	CP	27.02	25,653.92
Pollock	1997	CP	130.10	57,977.89
Pollock	1998	CP	35.73	88,078.00
Pollock	1999	CP	18.51	68,273.75
Pollock	2000	CP	17.03	47,685.81
Pollock	2001	CP	11.85	37,663.33
Pollock	2002	CP	7.50	31,437.34
total 1996-2002 harvest			247.73	356,770.05

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Pollock	1996	CV	48.85	25,653.92
Pollock	1997	CV	47.10	57,977.89
Pollock	1998	CV	47.97	88,078.00
Pollock	1999	CV	30.94	68,273.75
Pollock	2000	CV	117.07	47,685.81
Pollock	2001	CV	53.38	37,663.33
Pollock	2002	CV	92.80	31,437.34
total 1996-2002 harvest			438.11	356,770.05

Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Rex Sole	1996	CP	40.88	5,202.28
Rex Sole	1997	CP	87.18	2,437.59
Rex Sole	1998	CP	28.31	2,194.75
Rex Sole	1999	CP	32.17	2,392.90
Rex Sole	2000	CP	12.14	2,700.10
Rex Sole	2001	CP	65.43	2,490.94
Rex Sole	2002	CP	55.64	2,618.59
total 1996-2002 harvest			321.75	20,037.15

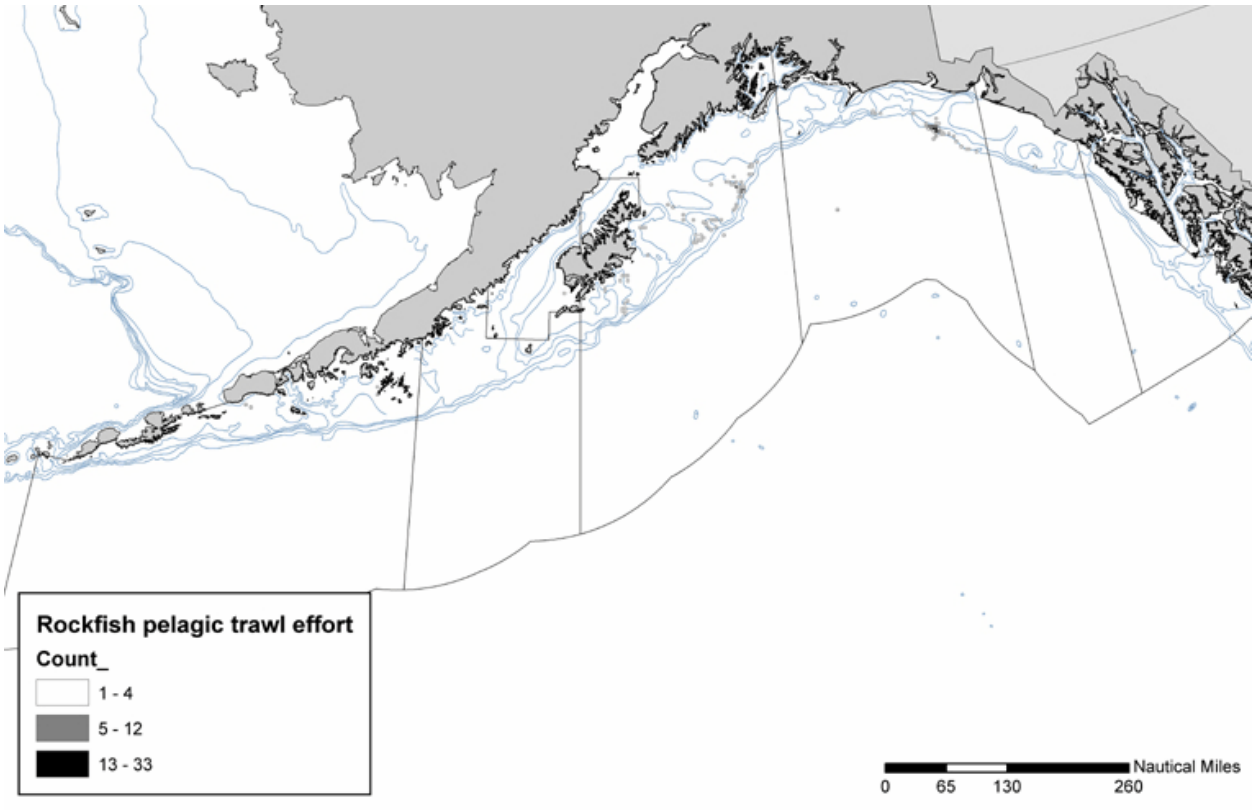
Species	Year	Sector	Sector harvest (mt.)	Total CGOA harvest (mt.)
Rex Sole	1996	CV	202.20	5,202.28
Rex Sole	1997	CV	52.29	2,437.59
Rex Sole	1998	CV	24.70	2,194.75
Rex Sole	1999	CV	116.00	2,392.90
Rex Sole	2000	CV	73.14	2,700.10
Rex Sole	2001	CV	151.66	2,490.94
Rex Sole	2002	CV	163.14	2,618.59
total 1996-2002 harvest			783.12	20,037.16

3.3.6. Benthic habitat and essential fish habitat

Section 303(a)(7) of the Magnuson-Stevens Act requires all FMPs to describe and identify Essential Fish Habitat (EFH), defined as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." In addition, FMPs must minimize to the extent practicable adverse effects of fishing on EFH and identify other actions to conserve and enhance EFH. To this end, the Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska (NMFS, 2004) provides a detailed analysis of the interactions between fisheries and EFH. Most of the controversy surrounding EFH concerns the effects of fishing activities on sea floor habitats. The analysis concludes that there are long term effects of fishing on benthic habitat features off Alaska. However, the EIS concludes that no fisheries currently managed under the FMP have an effect on EFH that is more than minimal and temporary. Based on the best available scientific information, the EIS concludes that the effects on EFH are minimal because the analysis finds no indication that continued fishing activities at the current rate and intensity would alter the capacity of EFH to support health populations of managed species over the long term. The analysis concludes that no Council-managed fishing activities have more than a minimal adverse effect on EFH, which is the regulatory standard requiring action to minimize adverse effects under the MSA. Notwithstanding these findings, the Council elected to adopt a variety of new measures to conserve EFH, which are scheduled to be implemented by August 13, 2006.

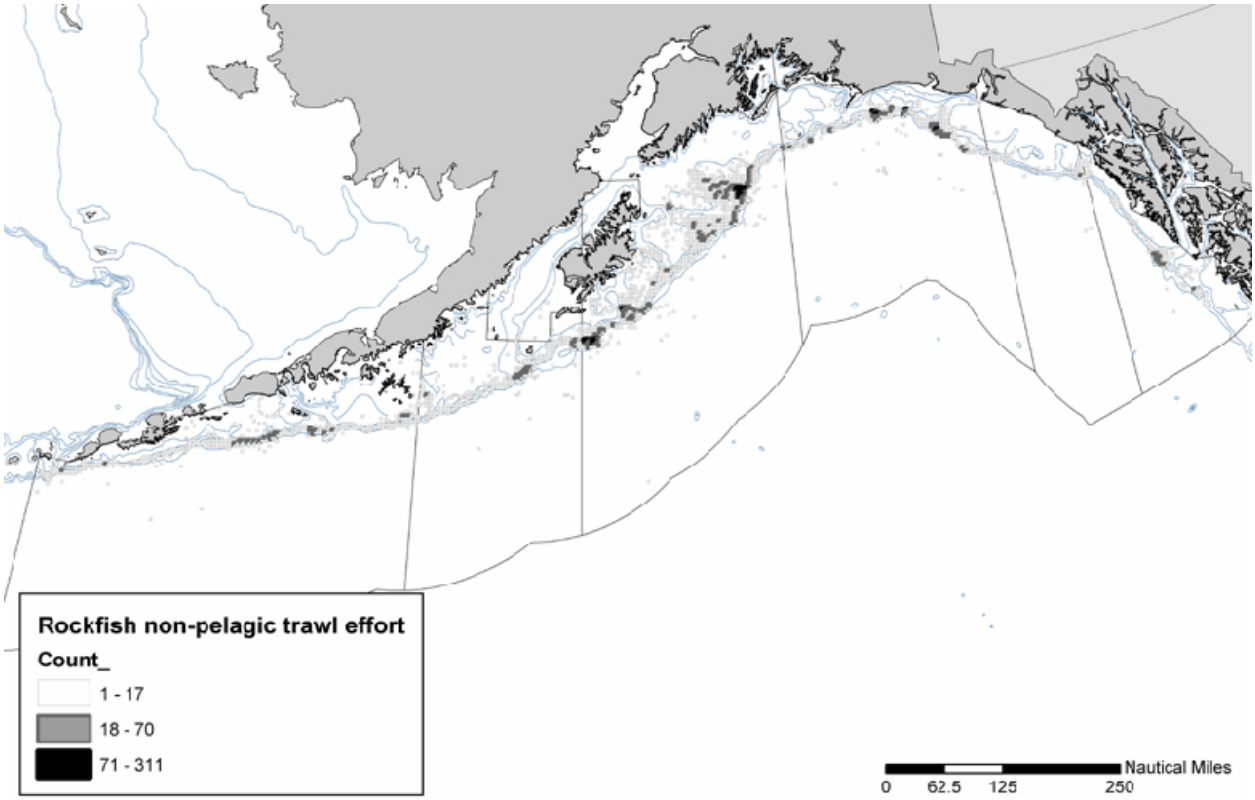
Figure 3 shows the concentration of observed rockfish pelagic trawl hauls from 1990 to 2002. The figure suggests that slope rockfish pelagic trawl fisheries (including all three of the CGOA target rockfish fisheries) occur at relatively low effort levels (fewer than 33 observed hauls/25 square kilometers from 1990 to 2002) in all locations in the Gulf of Alaska. The areas of greatest concentration are on the slope south of the Kenai Peninsula, with fewer areas of concentration south of Kodiak Island. Figure 4 shows the concentration of observed rockfish non-pelagic (bottom) trawl hauls from 1990 to 2002. The figure suggests that bottom trawl fishery for slope rockfish has taken place at relatively low effort levels all along slope areas. As with the pelagic trawl effort, concentrations of bottom trawl effort (more than 71 observed hauls/25 square kilometers from 1990 to 2002) in the Central Gulf have occurred south of Kodiak Island and south of the Kenai Peninsula. The Pacific Ocean perch fishery occurs over sand, gravel, and mud at depths of 90 to 200 fathoms. The northern rockfish and pelagic shelf rockfish fisheries occur over rock, gravel, and hard sand at depths of 40 to 80 fathoms. The analysis of the EIS provides detailed descriptions of EFH and the effects of fishing on EFH (NMFS, 2004).

Figure 3. Observed slope rockfish pelagic trawl effort (hauls/25 square kilometers), 1990 to 2002.



Source: Cathy Coon, NPFMC Staff, North Pacific Observer Program Data.

Figure 4. Observed slope rockfish non-pelagic (bottom) trawl effort (hauls/25 square kilometers), 1990 to 2002.



Source: Cathy Coon, NPFMC Staff, North Pacific Observer Program Data.

3.3.7. Endangered or threatened species

The Endangered Species Act of 1973, as amended [16 U.S.C. 1531 et seq; ESA], provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The program is administered jointly by the NOAA Fisheries for most marine mammal species, marine and anadromous fish species, and marine plants species and by the USFWS for bird species, and terrestrial and freshwater wildlife and plant species.

The designation of an ESA listed species is based on the biological health of that species. The status determination is either threatened or endangered. Threatened species are those likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]. Endangered species are those in danger of becoming extinct throughout all or a significant portion of their range [16 U.S.C. § 1532(20)]. Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NOAA Fisheries, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the USFWS, is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

In addition to listing species under the ESA, the critical habitat of a newly listed species must be designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas that are essential to the

conservation of a listed species and that may be in need of special consideration. Federal agencies are prohibited from undertaking actions that destroy or adversely modify designated critical habitat. Some species, primarily the cetaceans, which were listed in 1969 under the Endangered Species Conservation Act and carried forward as endangered under the ESA, have not received critical habitat designations.

Species listed as endangered and threatened under the ESA that may be present in the Federal waters off Alaska include:

Common Name	Scientific name	ESA status
Northern Right Whale	*Balaena glacialis*	Endangered
Bowhead Whale [1]	*Balaena mysticetus*	Endangered
Sei Whale	*Balaenoptera borealis*	Endangered
Blue Whale	*Balaenoptera musculus*	Endangered
Fin Whale	*Balaenoptera physalus*	Endangered
Humpback Whale	*Megaptera novaeangliae*	Endangered
Sperm Whale	*Physeter macrocephalus*	Endangered
Snake River Sockeye Salmon	*Oncorhynchus nerka*	Endangered
Short-tailed Albatross	*Phoebaotria albatrus*	Endangered
Steller Sea Lion	*Eumetopias jubatus*	Endangered and Threatened [2]
Snake River Fall Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Snake River Spring/Summer Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Puget Sound Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Lower Columbia River Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Upper Willamette River Chinook Salmon	*Oncorhynchus tshawytscha*	Threatened
Upper Columbia River Spring Chinook Salmon	*Oncorhynchus tshawytscha*	Endangered
Upper Columbia River Steelhead	*Oncorhynchus mykiss*	Endangered
Snake River Basin Steelhead	*Oncorhynchus mykiss*	Threatened
Lower Columbia River Steelhead	*Oncorhynchus mykiss*	Threatened
Upper Willamette River Steelhead	*Oncorhynchus mykiss*	Threatened
Middle Columbia River Steelhead	*Oncorhynchus mykiss*	Threatened
Spectacled Eider	*Somateria fishcheri*	Threatened
Steller Eider	*Polysticta stelleri*	Threatened

[1] The bowhead whale is present in the Bering Sea area only.
[2] Steller sea lion are listed as endangered west of Cape Suckling and threatened east of Cape Suckling.

Section 7 consultations with respect to the actions of the Federal groundfish fisheries have been done for all the species listed above, either individually or in groups. Additional information on endangered and threatened species appears in the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (NMFS 2004).

3.3.8. Forage fish

Forage fish are those species that are a critical food source for many marine mammal, seabird, and fish species. Biomass estimates of forage fish are uncertain because independent surveys for forage fish have not been implemented. Preliminary estimates from ecosystem models suggest that stocks of forage fish

are stable. Catch of forage fish by commercial fisheries is small and results in insignificant forage fish mortality. Additional detail analysis of the effects of commercial fisheries on forage fish appears in the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (NMFS 2004).

3.3.9. Marine mammals

Marine mammals not listed under the ESA that may be present in the BSAI and GOA include cetaceans [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp.*)] and pinnipeds [northern fur seals (*Callorhinus ursinus*) and Pacific harbor seals (*Phoca vitulina*)] and the sea otter (*Enhydra lutris*).

Direct and indirect interactions between marine mammals and groundfish harvest occur due to overlap in the size and species of groundfish harvested in the fisheries that are also important marine mammal prey and due to temporal and spatial overlap in marine mammal foraging and commercial fishing activities. A detailed analysis of the effects of commercial fisheries on marine mammals appears in the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (NMFS 2004).

3.3.10. Seabirds

Many seabirds occur in Alaskan waters indicating a potential for interaction with commercial fisheries. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murres, auklets, and puffins. These groups, and others, represent 38 species of seabirds that breed in Alaska. Eight species of Alaska seabirds breed only in Alaska and in Siberia. Populations of five other species are concentrated in Alaska but range throughout the North Pacific region. Marine waters off Alaska provide critical feeding grounds for these species as well as others that do not breed in Alaska but migrate to Alaska during summer, and for other species that breed in Canada or Eurasia and overwinter in Alaska. A detailed analysis of the effects of commercial fisheries on seabirds appears in the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (NMFS 2004).

3.3.11. The ecosystem

An ecosystem is a spatially explicit area that includes all organisms and components of the abiotic environment within its boundaries. The Gulf of Alaska is a large marine ecosystem, identified by its distinct geographical and biological features (see the Alaska Groundfish Fisheries Programmatic SEIS).

Three natural processes underlie changes in population structure of species in marine ecosystems: competition, predation, and environmental disturbance. Natural variations in recruitment, survivorship, and growth of fish stocks are consequences of these processes. Human activities, such as commercial fisheries, can also influence the structure and function of marine ecosystems. Fishing may affect ecosystems by altering energy flows, change predator-prey relationships and community structure, introducing foreign species, affecting trophic or functional diversity, alter genetic diversity, and alter habitat, and damage benthic organisms or communities. An assessment of the effects of commercial fishing on marine ecosystems off Alaska is contained in the Alaska Groundfish Fisheries Programmatic SEIS.

3.3.12. Environmental justice

Environmental justice requires that federal agencies address any disproportionately high, adverse environmental or health effects of a proposed action and its alternatives on minority or low-income populations. Environmental justice includes not only effects on the natural and physical environment, but also related social, cultural, and economic effects (see Executive Order 12898).

To assess the environmental justice of the alternatives, the demographics of the geographic areas affected by the action are examined to determine the extent of minority or low-income populations and the degree to which those populations could be affected. The connection of these populations to the fishery resource is examined to determine the degree to which the alternatives are likely to disproportionately affect those populations.

The city most affected by this action is Kodiak, where all of the eligible processors operate and several of the owners of eligible catcher vessels reside. The 2000 U.S. census estimated the population of Kodiak at 6,334. Of this population, approximately 30 percent are estimated to be of Asian descent, while another 10 percent are estimated to be Native American or Native Alaskan and slightly less than 10 percent are estimated to be Hispanic. An addition 10 percent are estimated to be of mixed race, making approximately 50 percent of the community minority or mixed race. The U.S census also estimated approximately 7.4 percent of the population to be at or below the poverty level (U.S. Bureau of the Census, 2000).

The Kodiak minority and low income population that is likely to be affected by the alternatives are employees of the processing facilities in the community. As recent as 2002, approximately 1,000 persons were estimated to be employed by Kodiak shore-based processing facilities. A large portion of this workforce is believed to be drawn from the local, minority populations (EDAW, Inc, 2005). Consequently, any differential impacts of the alternatives on processing employment are likely to have some environmental justice implications. Additional information concerning Kodiak-based processing can be found in the Comprehensive Baseline Community Profiles (EDAW, Inc., 2005). Although no crew specific data are available, if catcher vessel crews are assumed to mirror the local population demographics, Kodiak catcher vessels likely employ a substantial number of minority crew.

While most of the eligible catcher vessel and shore-based processing activity is based in Kodiak, a large portion of the eligible catcher processor fleet is based in Seattle. No specific minority or low population community is known to depend substantially on the catcher processor fleet for employment. As a result, no environmental justice considerations arise with respect to the Seattle-based catcher processor fleet.

3.3.13. Economic and socioeconomic factors

The current LLP Central Gulf of Alaska rockfish fisheries open early in July. Participants from both sectors race to catch as much fish as possible prior to catch of the TAC. In recent years, TAC and effort levels have resulted in the fisheries lasting only a few weeks each year. As a result of the race for fish, participants (particularly in the catcher vessels and processors in the shore-based sector) often sacrifice quality of landings and products to maintain their shares of the catch, dissipating rents in the fishery. Product choices are also limited for processors, as they attempt to keep pace with landings. In addition to harvest of the target rockfish, participants from all sectors also generate a substantial portion of their rockfish fishery revenues from species for which directed fishing is not permitted (i.e., Pacific cod, sablefish, shortraker rockfish, and rougheye rockfish). The current regulations permit retention of these

species in an amount relative to the harvest amount of target rockfish. In recent years, slightly more than 30 catcher vessels participate in the fisheries annually, while between 5 and 10 catcher processors participate. As the season for rockfish is relatively short, most participants rely on other fisheries for a substantial portion of their annual revenues. A comprehensive description of the social and economic of the fisheries is contained in 2.4 of the Regulatory Impact Review above.

3.4. Analysis of the alternatives

This section analyses each of the alternatives comparing the alternatives to each other and to the baseline condition in the fishery. Assessing the effects of the alternatives involves some degree of speculation. In general, the effects arise from the actions of individual participants in the fisheries under the incentives that arise under the different alternatives. Predictability of these individual actions and their effects is constrained by the novelty of the programs under consideration and incompleteness of information concerning the fisheries, including the absence of complete economic information and well-tested models that predict behavior under different institutional structures. In addition, unpredictable factors, such as conditions in different fisheries and of the different stocks and condition of the overall economy, could influence the responses of participants under the alternatives.

To examine the impacts of the alternatives, the analysis begins by considering the changes in practices and participation in fishing and processing that are likely to arise under the various management systems proposed by the different alternatives. These differences in fishing and processing practices, together with the management changes, drive environmental, economic, and socioeconomic impacts. Through this methodology, all of the different impacts are brought to light allowing the reader to determine the significance of impacts of the different alternatives.

3.4.1. Effects on Implementation, Management, Monitoring, and Enforcement

The current rockfish fisheries are managed at the fleet level. Managers monitor fleet harvests attempting to time their closure announcement with full harvest of the TAC, reserving a relatively minor amount of rockfish to support incidental catch of rockfish in fisheries later in the year. The allocations under most of the pilot program alternatives would require substantial change in this management.[73] Season timing and length will change to allow recipients to slow the rate of fishing and fish at different times than the traditional July season. Monitoring will need to be modified so that these allocations are monitored at the individual or cooperative level. In addition, observer requirements will also need to be modified to suit the new system of allocations.

In addition to the management of the various allocations in the primary fishery, a monitoring program will need to be developed for the entry level fishery. Since the entry level fishery will be conducted under the same regulations under all of the pilot program alternatives, the entry level fishery is analyzed independently after the other pilot program alternatives.

Lastly, under all of the pilot program alternatives, an incidental catch allowance (ICA) of target CGOA rockfish would be set aside prior to the allocations to the pilot program and the entry level fishery to

[73] The catcher processor sector allocation would be managed at a fleet level in a manner similar to the offshore sector allocation under the AFA.

support incidental rockfish catch in other CGOA fisheries. The determination of the ICA is also discussed below at the end of this section.

Status quo

Under its current management, the rockfish fisheries are conducted as a limited access race for fish. Non-trawl fishing in the rockfish fisheries begins on January 1st. The trawl season typically opens in early July and catch is monitored by managers with the closing timed to coincide with harvest of the TAC.[74]

Under the current management, observer coverage varies with vessel size. In general, vessels that are 125 feet or longer LOA are required to have 100 percent observer coverage. Vessels under 125 feet and 60 feet or greater in length are required to have 30 percent observer coverage. Vessels under 60 feet have no observer requirement. Shoreside and floating processors that process in excess of 1,000 metric tons of groundfish in a calendar month are required to maintain 100 percent coverage to observe landings. Shoreside and floating processors that process less than 1,000 metric tons and more than 500 metric tons of groundfish in a calendar month are required to maintain 30 percent observer coverage (CFR §679.50). No observer coverage is required for processors that process less than 500 mt in a calendar month.

Pilot program alternatives

The major components of catch accounting, observer coverage, and the application process for the various components of the fishery are described in the Table 50. The text provides supporting documentation and clarification.

Implementation issues.

If adopted, there will be several implementation issues associated with the rockfish pilot program that will need to be resolved before fishing can begin under the pilot project. These include: 1) processor development and NMFS approval of Catch Monitoring and Control Plans (CMCPs); 2) programming changes to the NMFS catch accounting system; 3) catcher processors selection and NMFS approval of one of three options to meet the requirement for an observer to view all the activities of crew in the bin; and 4) development of systems for and implementation of applications for quota, quota allocations and quota transfers allocations;

Approval of CMCPs

Processors will need time to develop and implement CMCPs, and NOAA Fisheries will need time to review and approve those plans before fishing starts. The CMCP standards allow processors to use a range of monitoring tools in meeting performance standards, so it is not possible to estimate the time needed for processors to develop and implement plans. NOAA Fisheries requires approximately 14 business days to review and approve a CMCP and an additional 10 business days to arrange for a plant inspection.

Programming changes to catch accounting software

The migration from a limited access to a quota fishery will require changes from a system under which catch is reported and monitored on a fishery-wide basis to one with a mix of cooperative quotas for allocated species and more general accounts for other species that are not allocated. Development,

[74] Additional information concerning current management appears in the description of the affected environment above.

implementation, and maintenance of the more complex catch accounting system will require significant NOAA Fisheries resources.

The NOAA Fisheries catch accounting system is currently organized so that each component of fisheries specified in the annual harvest specifications is described by species, area, season, and gear as a single, independent account. At this time, there are 240 primary accounts for the directed fishing allowances and PSC limits for the BSAI and GOA FMPs. There are also 429 secondary accounts that are subdivisions or sub-combinations of the primary accounts, including accounts for AFA sideboards, CDQ groups, and AFA cooperatives.

Approximately 45 catcher vessels and 15 catcher processors will be eligible to participate in the CGOA rockfish pilot program. There are 3 allocated primary targets (northern rockfish, Pacific Ocean perch, and pelagic shelf rockfish), 5 allocated secondary species (sablefish, shortraker rockfish, rougheye rockfish, thornyhead rockfish, and Pacific cod), and 1 allocated PSC species (halibut), for a total of 9 allocated species. The catcher processor fleet could have a range of 1 to 15 cooperatives (or individual allocations). At the maximum, this would create a total of 135 separate accounts. The catcher vessel fleet would have a minimum of 4 cooperatives based on the current use cap alternative, and a maximum of 12 cooperatives (based on the four LLPs per cooperative requirement) for a maximum of 108 separate accounts.

Additional accounts will be required for the management of sideboards including accounts for catcher vessel and catcher processor Pacific Ocean perch, northern rockfish, and pelagic shelf rockfish in the Western Gulf and West Yakutat and catcher vessel and catcher processor deepwater halibut accounts and shallow water halibut accounts for the Central Gulf of Alaska, Western Gulf of Alaska, and West Yakutat, and catcher vessel Pacific cod in the Bering Sea and Aleutian Islands. Additional tracking of landings (and possibly accounts) will be required for monitoring the activity of vessels that opt out and monitoring the 90 percent harvest threshold under the sideboard stand-down provisions.

An additional complication is that catch histories and allocations are based on LLPs. The catch accounting system is currently based on NMFS vessel permit (or identifiers). An extra layer would be required to establish the link between the LLP and vessel identifiers.

Establishment of new accounts is not a trivial matter. For example, the addition of CDQ to the accounting structure in 2005 added approximately 30 BSAI primary accounts, and the 6 individual CDQ groups added approximately 200 BSAI secondary accounts. The addition of these accounts required approximately 8 months for a programmer to add CDQ fisheries into the catch accounting system. The programmer was an expert on the separate CDQ system, the then current catch accounting system, and the fisheries were well-understood with established reporting requirements.

Leasing of catch history by cooperatives must be tracked in the accounting system. In addition, for all catcher processor shares transfers the lessor must be tracked after transfer, because the stand-down may prohibit the lessor from fishing in specific sideboarded fisheries until the 90 percent of all fish on the lessee's vessel are harvested. Leasing will require receipt of lease information, incorporation of lease information for reassignment, readjustment of accounts, and most likely reporting for both lessee and lessor.

The entry-level fishery will require annual receipt of applications, calculation of allocations and establishment of individual accounts. Separate accounts would be necessary for each vessel for northern

rockfish, Pacific Ocean perch, and pelagic shelf rockfish. The number of entries each year is unknown, and it will require a significant additional amount of time to create these annual accounts. However, under the Council's preferred alternative, this level of detail would not be required because individual allocations would not be made in the entry level sector.

Implementation issues associated with quota, quota transfers, and quota allocations.
Permitting and quota determination processes are also staff intensive. These processes include receiving applications for quota, calculating allocations based on history, accounting for catch history transfers, and distributing annual quota to cooperatives. Time would be needed for the completion of these processes prior to the beginning of fishing. The initial allocation process would be subject to requirements for appeals of disputed catch history claims.

Given the complexity of the program and the limited time period for its effectiveness, NOAA Fisheries intends to manage the fishery to reduce costs and the complexity of quota management. Several approaches are likely. First, the initial allocation process would be simplified. Eligible LLP holders would be provided with a summary of their catch history and would have an opportunity to dispute claims and present evidence to support their claims. NOAA Fisheries may provide a formal application period with a specific deadline, but this application process is likely to be shorter than that provided for other rationalization programs previously approved (e.g., BSAI Crab Rationalization).

Second, NOAA Fisheries intends to use the analytical database developed by the Council for determining catch history allocations. The Council data are the most recent available and represent the best available information for assessing catch history. Further, relying on these data will reduce confusion that may arise if NOAA Fisheries and Council data sources differ in their estimates of catch history by vessel. If necessary, concerns raised about the Council data source would require NOAA Fisheries to consult the Council data source and compare that to the original source data to resolve any potential discrepancies.

Third, cooperatives would be required to notify NOAA Fisheries annually which LLP holders are in a cooperative prior to the annual harvest specification process. We have proposed an October 15 deadline for this notification to provide adequate time to allocate catch history to specific cooperatives through the specification process. Those LLPs holders not in a cooperative would have their catch history assigned to the limited access pool under most of the options, or as an individual allocation, depending on the catcher processor alternative selected.

Fourth, for vessels subject to stand-down provisions, NMFS would impose check-in and check-out requirements for vessel operators to ensure adequate compliance with stand-down provisions.

Monitoring Issues

Share-based management programs can increase the incentive of participants to misreport and high grade catch, while at the same time increasing the burden on managers to provide highly defensible estimates of catch, especially when those estimates directly impact quota holders. NOAA Fisheries has dealt with these issues by clearly articulating goals for the management of share-based fisheries and imposing new and more stringent monitoring and observer requirements as these programs have been developed. All of these programs have been unique in terms of the fleet and fisheries rationalized, and interventions developed for the programs have varied as well. The Central Gulf of Alaska rockfish pilot program is no different in this regard and development of a suitable monitoring program will involve the development

of new tools to ensure defensible catch data is collected to minimize unreported discard of allocated species catch.

Major issues specific to the rockfish pilot program.
Availability of halibut PSC may limit participants' ability to fully harvest quotas. The rockfish pilot program will be allocated an amount of halibut mortality equal to the sector's historic use during the qualifying years, and that halibut PSC will be proportionally allocated to participants based on the amount of target rockfish to which they are entitled. To the extent that halibut bycatch mortality is higher than the average mortality encountered during the qualifying years, participants will not be able to fully harvest their rockfish allocations. Participants will have a strong incentive to reduce halibut bycatch and will probably take measures to do so (such as the use of midwater gear and avoidance of high bycatch areas). In this sense, this program is fairly similar to the allocation of offshore flatfish quotas in the Bering Sea under Amendment 80, and for the catcher processor sector, the required interventions would be similar. In other ways, this program could create different issues in the rockfish fishery.

For example, in the CGOA rockfish fishery the secondary species (Pacific cod and sablefish) are more valuable than the target rockfish. If quota holders believe that they will be forced to leave some of their quota unharvested, they will tend to harvest their Pacific cod and sablefish earlier in the season to ensure that the unharvested quota is the less valuable rockfish. In turn, this could increase incentives to illegally discard secondary species if halibut bycatch rates decline late in the season or incidental catch of secondary species is greater than anticipated in order to more fully harvest target species.

NMFS will be forced to rely on expanded estimates of halibut mortality rather than a full census. With the exception of some species and fisheries in the multispecies CDQ program, NOAA Fisheries strives to base quota accounting on a full census of the quota species rather than an estimate of catch. The experience with the multispecies CDQ program has been that these estimates have been the source of much of the controversy surrounding issues of quota catch accounting. In most cases, this controversy has been the result of a vessel or CDQ group either flagging an individual species-composition sample as having an anomalously high incidence of a given species or attempting to influence estimation protocol in ways that result in a systematic bias of catch estimates in favor of vessels. Unfortunately, these incidents are not identified systematically but only when industry perceives that a different estimate would be to their advantage. The greater the expansion of a given sample, the more likely it is that real or perceived errors in the sample will cause controversy. Also, as sample expansion increases, the benefit of hiding a small quantity of a limiting species such as halibut is expanded as well.

Observers in the catcher vessel fleet currently base their estimate of halibut PSC on 300 kilogram basket samples which are expanded to estimate halibut catch for the entire haul. The sampled hauls are then expanded to give an estimate of halibut for the unsampled hauls on a trip. NOAA Fisheries bases its estimates of total halibut catch on the halibut catch rate from only the sampled hauls to derive a halibut bycatch rate for each target. These rates are then applied to all deliveries to estimate total halibut mortality. Thus the degree to which a given quantity of halibut is expanded varies enormously depending on the fraction of observed vessels, the fraction of observed hauls on those vessels, and the fraction of sampled catch in the observed hauls. This issue is exacerbated by high spatial/temporal variability of halibut bycatch as well as the inherently lower precision of an estimate of an uncommon species (such as halibut) compared to an estimate of a more common species for a given sample size. Table 49 shows data from the summer rockfish fisheries in 2003 and 2004 illustrating the degree to which observer samples are expanded in the fishery.

Table 49. Expansion of observer samples in the 2003 and 2004 Gulf of Alaska rockfish trawl fisheries. Quantities for total delivered weight are from processor data.

	2004	2003
total delivered (mt)	11,749	12,698
total of sampled hauls (mt)	2,352	2853
total of unsampled hauls on observed trips (mt)	796	793
estimated total sample weight for sampled hauls (mt)	66	87

While reliance upon sampling for halibut is also an issue with the MS CDQ program and will become an issue under Amendment 80, the problem of sample expansion to unobserved hauls is generally not an issue. In the MS CDQ program, catcher vessel harvest in targets where halibut bycatch is problematic is minimal, and catcher vessels wishing to participate in the program are 100 percent observed. In the catcher processor sector, vessels generally carry two observers and almost 100 percent of the hauls or sets are observed. However, it is anticipated that Amendment 80 will not rely on the expansion of observed hauls to unobserved hauls. Unfortunately, without a change in operations or a requirement to carry two observers on each trip, NOAA Fisheries will be required to develop an accounting system for halibut quota based on some level of expansion of observed to unobserved hauls.

Multispecies nature of the allocations. This program will allocate five main species that may be targeted: Pacific Ocean perch, northern rockfish, pelagic shelf rockfish (primary species), Pacific cod and Sablefish (secondary species). Though the majority of the allocation will be to the "primary target" rockfish fisheries, the "secondary target" species are considerably more valuable per ton and cooperatives will wish to optimize the harvest of those allocations. At some point, however, the availability of one quota species will limit the full harvest of all other quota species. Ideally, cooperatives will harvest the majority of their target rockfish first and, to the extent that quota for the secondary species remains, they will then harvest the quota of secondary species. However, the desire to ensure that the allocations of secondary species are fully harvested may cause participants to harvest these quotas early and fail to reserve sufficient quantities to accommodate the actual bycatch needs of primary species allocations. Further, sablefish and Pacific cod caught incidentally to the harvest of rockfish will likely be in worse condition than sablefish or Pacific cod caught in small directed tows for those species. Both of these factors could create incentives for vessels to discard catch of secondary species when targeting rockfish.

Dramatic change in the duration of fishing. The summer rockfish fishery currently begins in late June or early July. Pacific Ocean perch generally closes in approximately one week, and fishing effort switches to northern rockfish, which normally closes in another one to two weeks. The Council's preferred alternative suggests consideration of a season between early March and mid-November, thereby expanding the duration of this fishery from its current three weeks to eight months. Because there has not been a trawl fishery for rockfish during much of this period, it is not possible to say to what extent this could change the nature and patterns of target species co-occurrence, or how it will affect halibut bycatch rates. However, halibut bycatch rates may be higher early in the year when halibut are in deeper water, which would exacerbate the potential for halibut to limit full harvest of quota species and increase the incentive for deliberate data fouling on the part of participating vessels. Further, NOAA Fisheries experience has shown that the management of new quota programs such as MS CDQ is very staff

intensive. Clearly, a fishery of this length would stress existing staff resources and would limit the ability of NOAA Fisheries to consider innovative monitoring approaches such as video monitoring.

Blending of quota-based species and non quota-based species under this program. The rockfish pilot program does not envision allocations of other groundfish species (arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, Atka mackerel and other rockfish) that are encountered when engaged in rockfish fishing. Rather, these species will be managed under the current MRA regulations. At this time, there is limited bycatch of these non-allocated species in the rockfish fishery. Further, there is no incentive for topping off on these species because either they are open for directed fishing at the same time or they are lower in value than rockfish. Under the current management regime, vessels engage in directed fishing for rockfish and top off on sablefish and Pacific cod. Under the rockfish pilot, they may engage in directed fisheries for the primary and secondary quota species and top off on non-allocated groundfish. As the relative values of various groundfish targets change across time, these top off fisheries could become significant. Depending on the nature of the top off activity, this aspect of the fishery could increase demands on available halibut PSC. For example, demand for arrowtooth flounder has increased dramatically in the past year as new markets have been developed. If participating vessels were allowed to top off at the current rate, they would be allowed to harvest an amount of arrowtooth flounder equal to 35 percent of their quota for rockfish. Given the high halibut bycatch associated with arrowtooth flounder, this would clearly increase the use of halibut PSC and create monitoring program challenges.

Five percent set aside for non eligible vessels. This program will set aside five percent of the rockfish allocations (but not the secondary species allocations) for harvest by vessels not eligible to participate in the pilot program. Half of this allocation will be made to trawl and half to non-trawl catcher vessels. The majority of trawl vessels that may choose to participate in the 2.5% set aside are close to or greater than 60 feet in length and the logistics of deploying observers on these vessels would probably not be substantially different than the logistics associated with those vessels that are eligible for the pilot program. At this time, there is no non-trawl rockfish fishery in the Gulf, though there has been speculation that a jig fishery for day boats may be viable. Such vessels would be more difficult to observe because of their small size, but observer programs for similar fleets appear to be successful in other parts of the country.

However, the nature of allocations to this fleet is significantly different than the allocations to the eligible vessels, because they will only be allocated the primary target species (POP and northern rockfish) and they will not be allocated either the secondary species or halibut PSC. Because the set asides will only be for rockfish, there will be less added incentive for these vessels to manipulate catch data for the catch of secondary species or halibut PSC and it may be reasonable to monitor this component of the pilot program with limited or no at-sea observer coverage. Accounting for target catch would be based on landings and the catch of other groundfish and halibut would be based on assumed rates. Alternatively, given that vessels wishing to participate in the set aside fishery would be required to deliver to a non-qualified processor, it may be possible to require the processor to develop a fishing plan and an associated monitoring program that encompassed the vessels as well as the processor and set forth how the fishery could be monitored.

Interventions appropriate to the fishery.

Catcher/processor sector. The rockfish pilot program is very similar in its monitoring demands to the program currently being developed under Amendment 80. Because of the similarities between the programs and because the vast majority of vessels that will be allocated quota under

the rockfish pilot program will also be participants in the Amendment 80 program, there is no apparent reason to develop different standards for the two programs.

Amendment 80 also proposes to implement harvest restrictions for multiple species while fishing in the GOA. Some of these species are the same as would be targeted under the GOA rockfish pilot program. Vessels subject to Amendment 80 could simultaneously harvest fish in the GOA under several different management programs, and it would be difficult to account for fish under each of these scenarios. For example, a vessel may choose to target fish subject to Amendment 80 sideboards, and then target fish subject to the GOA rockfish pilot program during the same trip. Each of these species groups could be subject to differing harvest limitations, including MRAs. This necessitates separate accounting of catch for each specific program and purpose. As stated above, NMFS must be able to ensure compliance with regulations governing the fishery and there must be an authoritative record of quota fish harvested. **To create an enforceable accounting of fish harvested under multiple management programs, vessels subject to Amendment 80 sideboards would need to be offload all fish from the vessel prior to it entering or exiting any fishery authorized under the GOA rockfish pilot program. Vessels subject to CGOA Rockfish Pilot Program sideboards must also maintain the increased monitoring standards discussed below.**

All vessels would be required to weigh all catch on NMFS-approved scales and provide an observer workstation. NMFS-approved scales would be inspected annually and tested daily when in use to ensure they are accurate. Because observer samples would be extrapolated to the entire haul, catch from each haul would be required to be weighed separately on the scale. To facilitate separate weighing, catch from each haul could not be mixed with other hauls. Vessels would also be required to provide an observer work station where an observer could work safely and effectively. Stations would meet specifications for size and location and be equipped with an observer sampling station scale, a table, adequate lighting, floor grating, and running water. Each observer sampling station would be inspected and approved by NMFS annually.

All hauls would available to be sampled by NMFS-certified observers. Typically, this would mean at least two observers per vessel. Each observer would work 12 hour shifts. Vessel fishing practices would be conducted in such manner that each observer could complete the sampling duties outlined in the Observer Program sampling manual (http://www.afsc.noaa.gov/refm/observers/Manual_pages/MANUAL_pdfs/-manual2005.pdf). To the extent that the number of hauls sampled would increase from the status quo, vessels may have to modify their fishing practices to accommodate these work restrictions. Regulations specific to equipment for catch weighing and sampling are found at 50 CFR 679.28. Observer requirements are found at 50 CFR 679.50.

Additional proposed requirements to facilitate observer sampling of unsorted catch. The following items describe proposed requirements necessary to facilitate the collection of unsorted species composition samples:

1. Vessels would be prohibited from having more than one operational line, or other conveyance device for the mechanized movement of catch between the scale used to weigh total catch and the location where the observer collects species composition samples. Many vessels in this fleet currently operate with two separate production lines. Because observer program sampling procedures assume an observer has access to all unsorted catch, dual sample collection points are unacceptable for catch accounting on a haul-by-haul basis. While vessels could continue to operate dual production lines, an observer must have access to all unsorted catch at a single location. Vessels fishing in CDQ and AFA fisheries are also subject to these restrictions. In

particular, many vessels in CDQ fisheries have devised creative solutions to comply with this requirement. For this reason, NMFS believes this requirement would not create an undue burden on vessels currently operating with dual lines.

2. The observer must be able to view all the activities of crew inside the bin locate prior to where the observer collects unsorted catch. This requirement would help the observer ensure his or her sample consists of unsorted catch, and that no presorting activities are occurring. The vessel would be required to choose, and have approved at the time of the observer sampling station inspection, one of three options to meet this requirement. These options are:

- **Limit tank access option.** No crew would be allowed inside the bin unless the flow of fish has been stopped between the tank and the location where the observer collects unsorted catch, and all catch has been cleared from all locations between the tank and the location where the observer collects unsorted catch, and the observer has been given notice that vessel crew must enter the tank. Also, the observer would be required to be given the opportunity to observe activities of the person(s) in the tank. H&G representatives are concerned that a total ban on crew entering the fish bin would prevent the flow of fish in rockfish fisheries or cases where mud prevents the natural flow of fish from the bin. Therefore, when informed by the observer that all sampling activities are completed for any haul, crew would be allowed to enter the bin without meeting the requirement of stopping the flow of fish and clearing catch between the tank and location where the observer collects unsorted catch. These requirements would allow observers to monitor activities within the bin or tank while maintaining sample collection protocols.

- **Line of sight option.** From the observer sampling station and the location from which the observer collects unsorted catch, an observer must be able to see all areas of the bin where crew could be located. This requirement may be accomplished by creating a viewing port inside the bin, and would be approved by NMFS during the observer sample station inspection.

- **Video option.** A vessel may provide and maintain cameras, a monitor, and a digital video recording system for all areas of the bin where crew could be located. The video data must be maintained and made available to NMFS upon request for no less than a 120 day period. This option would also be subject to approval by NMFS at the time of the observer sample station inspection.

If the Line of Sight Option or the Video Option fail to meet the standard of allowing the observer to view all the activities of crew in the bin (for example, if a camera system becomes inoperable during any fishing trip), then the vessel must revert to the Limit Tank Access Option.

3. Unsorted catch would be prohibited from remaining on deck outside of the codend without an observer present, except for fish accidentally spilled from the codend during hauling and dumping. NMFS feels fish that remain in a codend do not present a large opportunity for presorting activities. However, unsorted catch on deck outside of a codend could easily be subject to presorting.

Each vessel would be required to provide the opportunity for a pre-cruise meeting. Pre-cruise meetings would require notification by the vessel operator 6 hours prior to departure for a fishing trip for which they will be carrying a new observer. Pre-cruise meetings have three primary goals. The first goal is to establish a professional working relationship early in the observers' interactions with vessel personnel. The second is to clarify prior to disembarking on a fishing trip

what is expected of each participant according to regulations. The final goal is to provide both the observer and the vessel personnel an opportunity to discuss specific issues prior to those issues becoming problems. A pre-cruise meeting would include at least one NOAA Fisheries staff member, the vessel operator and the observer(s). NOAA Fisheries has offered pre-cruise meetings to vessels on a voluntary basis for the last 5 years and participants in these meetings have found them to be extremely beneficial.

Catcher/processor sector- Opt out vessels

As envisioned by the Council, vessels could choose to opt out of the CGOA Rockfish Pilot Program (Opt out vessels). Opt out vessels would not receive allocations of primary and secondary species. However, many of these Opt out vessels would be subject to sideboard limits under the Program. Sideboard fisheries would occur in July and take of target species would be monitored at the fleet level. However, in these sideboard fisheries, halibut PSC would be a limiting factor and thorough halibut PSC accounting is needed to manage the July sideboards. If halibut bycatch mortality is higher than the average mortality encountered during the qualifying years, participants would not be able to fully harvest their sideboard limits of the target species. Participants would have a strong incentive to reduce or underreport halibut bycatch. Catch composition data collected by an observer onboard a vessel is the best source of information for NMFS' accounting of PSC. For this reason, the monitoring tools appropriate to ensure observers are able to obtain quality samples of halibut PSC are warranted. These monitoring tools include:

100% Observer Coverage

NMFS currently uses both observer data and WPRs to account for catch on CPs. When observer data is available, it is used as the best record of catch. When it is not available, the WPR is used. NMFS considers the WPR to be an inferior tool for total catch accounting. CPs process all of their groundfish catch offshore and vessel operators report the production weight of groundfish catch on WPRs. To convert this production to an estimate of the round weight of fish, NMFS managers apply a published product recovery rate (PRR) to the production weights, and add an estimate of discard which is also reported on WPRs. NMFS considers observer collected data to be a better measure of total catch than self reported WPR data for the reasons described below.

- Observers undergo rigorous post cruise debriefings, where their sampling methods are assessed for consistency with observer program sampling policies and observer data is reviewed for errors and accuracy. Because observers are debriefed by NMFS in a consistent manner, observer collected data, in general, helps to create a level playing field for all vessels. Problems with observer data are addressed within NMFS in an efficient manner. NMFS Enforcement may audit WPRs for errors, but these activities are costly and are undertaken far less consistently that the observer debriefing process. Additionally, recourse for misreported data on WPRs is through enforcement actions. Occurrences of misreported WPR data could take considerable time to resolve.

- All CPs are required to provide computer hardware and communications devices for use by an observer to transmit data to NMFS in a timely manner. NMFS installs software which facilitates data entry, initial screening of the data for errors, and communicates with NMFS software at the observer program. For the most part, this data is available for use by inseason managers the day after data collection. In contrast, WPRs are reported on a weekly basis.

- Observers collect information on a finer scale than is available through the WPR reporting process. For example, vessels may fish in two or three separate reporting areas and

aggregate production by week and area. In contrast, observers collect haul by haul data and report locations for each haul, and species composition of sampled hauls.

• Observer data is more consistently reported. In 2005, 30 WPRs had not been received by NMFS as of November 3. In contrast, observer data is consistently available when an observer is onboard.

• As NMFS manages species on an increasingly finer scale as a result of more complicated management programs recommended by the Council, NMFS becomes more reliant on accurate speciation of catch. For example, the Council and NMFS are considering separating management of dusky and dark rockfish, which are sometimes difficult to differentiate. While many fishermen are experts at species identification, they are rarely formally trained. Observers undergo a minimum of 120 hours of training with considerable time spent on species identification. Every observer is tested on their ability to identify fish, and their identifications are verified by NMFS staff during the debriefing process.

• Observers sample for all species and this information is expanded to represent a proxy for total catch. In contrast, only retained and processed species are counted and reported on WPRs. Additionally, many CPs did not report some non-target species. These vessels may not have harvested these species. However, high abundance species commonly incidentally caught in these fisheries are unreported on WPRs but reported by observers. NMFS cannot verify the accuracy of incidentally harvested species reported on WPRs.

NMFS currently bases its calculation of halibut PSC for H&G vessels on approximately 300 kilogram basket samples, or less depending on the time and space available to the observer, which are expanded to determine halibut catch for the entire haul. The sampled hauls are then expanded to determine the quantity of halibut for the unsampled hauls on a trip. The Regional office then calculates the halibut catch rate from the sampled hauls for each target species. These rates are then applied to all unobserved vessels to determine total halibut mortality. The degree to which a given quantity of halibut is expanded varies enormously depending on the fraction of observed hauls and the fraction of sampled catch in the observed hauls. In order to reduce this expansion and thereby increase the reliability of halibut PSC rates, 100% observer coverage would be required aboard the Opt out vessels.

In order to generate reliable estimates of catch consistent across all catcher processors, NMFS would require 100% observer coverage on all vessels that opt-out of the Program.

Vessels would be prohibited from mixing hauls inside the bin.

Observers face many difficulties with sampling when hauls are not kept separate inside the bins. Observers must proportion their sample data to each individual haul because the NMFS catch accounting systems are designed around sampling the catch of individual hauls. Therefore, Opt out vessels subject to CGOA sideboard limits during the month of July would be prohibited from mixing hauls.

Additional proposed requirements to facilitate observer sampling of unsorted catch.

The following three items describe proposed requirements necessary to facilitate the collection of unsorted species composition samples for halibut PSC accounting for the Opt out vessels during July:

1. Vessels would be prohibited from having more than one operational line, or other conveyance device for the mechanized movement of catch between the scale used to weigh total catch and the location where the observer collects species composition samples. Many vessels in this fleet currently operate with two separate production lines. Because observer program sampling procedures assume an observer has access to all unsorted catch, dual sample collection points are unacceptable for catch accounting on a haul-by-haul basis. While vessels could continue to operate dual production lines, an observer must have access to all unsorted catch at a single location. Vessels fishing in CDQ and AFA fisheries are also subject to these restrictions. In particular, many vessels in CDQ fisheries have devised creative solutions to comply with this requirement. For this reason, NMFS believes this requirement would not create an undue burden on vessels currently operating with dual lines.

2. The observer must be able to view all the activities of crew inside the bin locate prior to where the observer collects unsorted catch. This requirement would help the observer ensure his or her sample consists of unsorted catch, and that no presorting activities are occurring. The vessel would be required to choose, and have approved at the time of the observer sampling station inspection, one of three options to meet this requirement.

These options are:

- **Limit tank access option.** No crew would be allowed inside the bin unless the flow of fish has been stopped between the tank and the location where the observer collects unsorted catch, and all catch has been cleared from all locations between the tank and the location where the observer collects unsorted catch, and the observer has been given notice that vessel crew must enter the tank. Also, the observer would be required to be given the opportunity to observe activities of the person(s) in the tank. H&G representatives are concerned that a total ban on crew entering the fish bin would prevent the flow of fish in rockfish fisheries or cases where mud prevents the natural flow of fish from the bin. Therefore, when informed by the observer that all sampling activities are completed for any haul, crew would be allowed to enter the bin without meeting the requirement of stopping the flow of fish and clearing catch between the tank and location where the observer collects unsorted catch. These requirements would allow observers to monitor activities within the bin or tank while maintaining sample collection protocols.

- **Line of sight option.** From the observer sampling station and the location from which the observer collects unsorted catch, an observer must be able to see all areas of the bin where crew could be located. This requirement may be accomplished by creating a viewing port inside the bin, and would be approved by NMFS during the observer sample station inspection.

- **Video option.** A vessel may provide and maintain cameras, a monitor, and a digital video recording system for all areas of the bin where crew could be located. The video data must be maintained and made available to NMFS upon request for no less than a 120 day period. This option would also be subject to approval by NMFS at the time of the observer sample station inspection.

If the Line of Sight Option or the Video Option fail to meet the standard of allowing the observer to view all the activities of crew in the bin (for example, if a camera system becomes inoperable during any fishing trip), then the vessel must revert to the Limit Tank Access Option.

3. Unsorted catch would be prohibited from remaining on deck outside of the codend without an observer present, except for fish accidentally spilled from the codend during hauling and

dumping. feels fish that remain in a codend do not present a large opportunity for presorting activities. However, unsorted catch on deck outside of a codend could easily be subject to presorting.

Flow scales and observer sample stations assist the observer in obtaining accurate haul by haul accounting of total catch. Because NMFS would be able to make closure decisions at the sector rather than coop level, flow scales and observer sample stations are not required for the July sideboards. NMFS would be able to rely on observer estimates of total catch for catch accounting. Inaccuracies associated with observer estimates as well as any inaccuracies that result from the observer not having a sample station, would be expanded to the fleet wide level and will average out over the fishery. Because observer sample stations would no longer be required, Opt out vessels would not be required to provide space for at least 10 observer baskets.

Catcher vessel sector. The rockfish pilot program is most similar to the existing MS CDQ program. While differences exist, the monitoring program for MS CDQ provides a logical framework for meeting the monitoring needs of this program. Specifically, a trawl catcher vessel greater than 60 feet harvesting MS CDQ catch must:

- retain all CDQ species and salmon PSQ
- retain all halibut until counted or sampled by an observer
- provide deck space for an observer to sort and store samples and a location to hang an observer sampling scale
- carry a level II observer on all CDQ trips
- deliver all catch to a processor that has a level 2 observer on duty and where all CDQ catch is sorted and weighed by species on a State approved scale.

Under all alternatives, participating vessels would be required to carry and use a VMS (Vessel Monitoring System) transponder. Use of VMS will allow NOAA Fisheries to monitor stand-down vessels, track harvest location, ensure that deliveries are made to participating processors and facilitate general enforcement. Generally, NOAA Fisheries has advocated the use of VMS as a means to track vessel operations, particularly where operations are limited to specific geographic boundaries, such as in this program. VMS can improve location of vessels during search and rescue operations.

With the exception of some vessels that may choose to participate in the entry level fishery, all of the vessels that are eligible for this program are currently required to use VMS during most of the fishing year. Vessels that are participating in the directed Atka mackerel, Pacific cod, and Pollock fisheries are required to carry VMS to comply with existing regulations implemented as part of the Steller sea lion reasonable and prudent alternatives (RPAs). All of the vessels believed to be eligible for this program have historic participation in those fisheries and would have VMS units installed. Some small additional operating costs may occur during rockfish trips, but these costs are likely to be insignificant.

A portion of the entry level fishery fleet may not currently be required to carry VMS units. Many of the trawl vessels that could participate in the entry level fishery are likely to also target Pacific cod and pollock and may be anticipated to already have VMS units onboard. Vessels that participate in the fixed gear portion of the entry level fishery are less likely to carry VMS units. Under existing Steller sea lion RPA regulations, vessels operating jig gear are not required to carry VMS units. Given the small allocation for this sector of the entry level fishery (2.5 percent of the TAC), the low harvest rate of the fleet, the standard of previously exempting jig gear from VMS requirements, the historically low levels of participation for these species by fixed gear vessels, and the potentially higher costs of operating a VMS unit relative to gross revenue,

exempting this portion of the fishery from VMS requirements is not likely to compromise enforcement.

Under all of the alternatives, participating catcher vessels would be required to install and maintain a computer for use by an observer when the vessel is meeting coverage requirements for the program. This would include all catcher vessels fishing for a cooperative or in the limited entry fishery. NMFS would install custom software on each of these computers. This software would allow the vessel's observer to enter and edit data, which could be transferred to a disk and sent electronically to NMFS from the plant observer's computer.

Currently, all vessels that carry an observer 100% of the time, and all shoreside and stationary floating processors required to have an observer present are required to maintain a computer for use by an observer as part of the Observer Communication System (OCS). The OCS was implemented in 1995 and is comprised of: 1) electronic hardware that meets NMFS specifications and is supplied by the vessel, shoreside, or stationary floating processor, and 2) dedicated software provided by NMFS. Together the hardware and software allow observers to communicate with, and transmit data to, NOAA Fisheries. Although a component of the OCS allows observers to communicate with and transmit data directly to NOAA Fisheries, all participating catcher vessels that are not currently required to carry an observer 100% of the time (those less than 125') would only be required to provide the computer component of the OCS. This is because these vessels make short duration trips and, at this time, the costs of requiring communications equipment outweigh the benefits of increased timeliness of data transmission. NOAA Fisheries anticipates that enabling observers to enter and send their data electronically will result in significant reductions in the time required to provide data to NOAA Fisheries and cooperative managers. Under this program, vessels and cooperatives will be required to monitor their catch and stop fishing when target and PSC allocations are reached. For catcher vessels, target species would be required to be retained and delivered to a shore-based processor where they can be weighed and accounted for on a trip by trip basis. Information on these species would be available within 2-3 days of delivery. However, halibut is required to be returned to the sea with minimal injury, and, as mentioned above, catch accounting would be based on expanded observer samples. Observer data from vessels without OSC is faxed to NOAA Fisheries, keypunched by NOAA Fisheries staff, and typically made available within a few days of being received. However, observers are often not able to fax their data from the current trip. Rather, their data is typically received by NOAA Fisheries staff one or two trips behind. Altogether, delays with faxing data could result in up to two weeks delay in making data available to cooperative and NOAA Fisheries managers. When seasonal catch amounts near allocation limits, this could delay vessels departures until halibut PSC data becomes available. While fishing under the program would slow as a result of rationalization, these delays could result in increased costs to vessels due to additional time spent in port.

Additionally, data entered by observers result in significant improvements to overall data quality. The custom software provided by NOAA Fisheries has several built-in data checking functions which will not allow some erroneous information to be entered, and automatically checks for likely keypunch errors. Additionally, NOAA Fisheries staff that identify data errors may be able to resolve these errors quickly by working with the observer.

Alternatives to requiring computers on catcher vessels participating in the program include allowing vessel observers to enter and send data on a shoreside computer and requiring observer providers to purchase computers to deploy with the observer. NOAA Fisheries considered and rejected these alternatives for the following reasons. First, allowing observers to enter data on a shoreside computer could result in significant departure delays for the vessel. An observer would

have to arrange a time when other vessel observers, or the plant observer, was not using the computer. Then they would have to enter and send their data. The time needed to complete these activities could take longer than the offload of catch. Second, because of the service delivery model used to procure observers, there are logistical issues with requiring observer providers to provide computers for observers. For example, who would be responsible for a computer that was accidentally dropped in the water while an observer was boarding a vessel? Questions such as this would need to be resolved prior to implementing such a requirement. Additionally, costs for a computer would mostly likely be passed on to vessels by the observer provider anyway.

Shoreside sector. With the exception of accounting for halibut PSC, catch accounting for quota species will take place shoreside. Thus, it is important for NOAA Fisheries to ensure that adequate measures have been taken to facilitate accurate catch accounting. In other recently rationalized fisheries where catch accounting takes place shoreside, NOAA Fisheries has required that processors operate under an approved CMCP. This plan is developed by the processor and approved by NOAA Fisheries. It details a series of performance based standards that ensure that all delivered catch can be effectively monitored by an observer, that the observer can effectively conduct their sampling duties, and that all catch is accurately sorted and weighed by species. The standards are:

- From the observation area[1], an observer must be able to monitor the entire flow of fish and ensure that no removals of catch have occurred between the delivery point[2] and a location where all sorting has taken place and each species has been weighed.
- All catch delivered to the plant must be sorted and weighed by species. The CMCP must detail the amount and location of space for sorting catch, the number of staff, devoted to catch sorting and the maximum rate that catch will flow through the sorting area.
- The observation point must be located where it is convenient to the observer work station. An observer in average physical condition must be able to walk between the work station and the observation point in less than 20 seconds without encountering safety hazards.
- The observer workstation must be located where the observer has access to unsorted catch.
- An observer work station for the exclusive use of the observer must provide: a platform scale of at least 50 kg capacity, an indoor working area of at least 4.5 square meters, a table, and a secure and lockable cabinet.
- A plant liaison, designated by name, that would be responsible for orienting new observers to the plant, ensuring that the CMCP is implemented, and assisting in the resolution of observer concerns.
- All deliveries made to shoreside processors under this project will have to be observed. This will require that an observer be on duty whenever program deliveries are made. Because observers will not be allowed to work more than 12 hours per day, processors that wish to take deliveries around the clock would be required to provide more than one observer. NOAA Fisheries also wishes to ensure that full coverage of rockfish deliveries does not adversely affect shoreside coverage for other fisheries that may be taking place

[1] The observation area is a location designated in the CMCP where an observer monitors the flow of fish during a delivery.

[2] The delivery point is the first location where fish removed from a delivering catcher vessel can be sorted or diverted to more than one location.

at the same time. In order to prevent this, observer coverage for rockfish deliveries will not count towards meeting a processor's observer coverage obligations in other fisheries.

Entry level fishery. Monitoring protocols would need to be in place for all participants in the pilot project, including the entry level fishery. Implementing a monitoring program that would require an equal share allocation and careful monitoring of individual vessel catch in the entry level fishery could include high costs relative to gross revenues. This would be particularly true for trawl vessels and may preclude participation by some eligible vessels. However, these measures would be necessary to adequately measure small levels of catch in a sector where there is a high potential for exceeding quota levels if each trawl vessel participating were allocated a vessel-specific portion of the quota.

Under the Council's preferred alternative, the entry level fishery would be managed as a limited access fishery. Because participants in the entry level fishery are allocated only primary species, NOAA Fisheries believes that existing observer coverage will be adequate for this fleet. Because catch accounting will take place shoreside, participating entry level processors will be required to meet the same standards as other pilot program processors. NOAA Fisheries would require that vessels register prior to participating in the entry level fishery. Based on expected harvest rates and the available TAC, NOAA Fisheries would open the entry level fishery for the trawl and fixed gear sectors based on expected harvest rates and the likelihood of maintaining harvests at or below the specific allocation. If the expected harvest rate exceeds the ability of managers to manage the fishery within a specific allocation, NOAA Fisheries may not open the fishery. Trawl vessels would also be required to carry and use a VMS system when participating in the entry level fishery.

Use of Alternative Monitoring Strategies.

Since the implementation of the MS CDQ program, there has been significant evolution of video monitoring technologies as well as the widespread implementation of VMS regulations. While NOAA Fisheries does not believe that video technology is sufficiently tested at this time, these developments may allow NOAA Fisheries to develop a monitoring approach that is less reliant on high levels of observer coverage at some point in the future. An alternative to the CDQ system of monitoring would have to satisfy several conditions before it could be supported by NOAA Fisheries. First, it would have to provide adequate tools for halibut quota accounting on unobserved trips. Second, it would have to provide adequate assurance that unobserved discard or highgrading of quota species is not occurring on unobserved trips. Third, it would have to be implemented at an acceptable cost to the agency.

If observer coverage is sufficiently evenly distributed through the fishing period, NOAA Fisheries can use a fleet rate for halibut catch accounting. Improved estimation of overall halibut mortality is not intrinsically necessary when the fishery moves from a limited access to a quota fishery. Rather, it is only necessary that there be a defensible and consistent way to debit quota holders for their share of the halibut mortality. As described above, the current catch accounting system is not suitable for a quota-based system, but, to the extent that industry is willing to live with a regulatory algorithm for the calculation of halibut mortality on unobserved trips, it may be possible to develop an alternative approach to 100 percent observer coverage. However, any such approach will likely be extremely staff intensive and may require shortening the overall length of the season. The current system of estimating halibut bycatch relies on rates from observed hauls on unobserved vessels. The fewer observed vessels supplying information, the more aggregated the rates become (e.g. if no vessel specific rates are available, fleet-wide rates must be applied). A chronic problem is the small amount of observer information available during certain periods, such as the beginning of a fishery, such that sometimes there is no information available from

which to derive an estimate during the first week or two of a fishery. If 100 percent observer coverage is not required, a system that insures few temporal reporting gaps could be employed (but would be staff intensive). To the extent that the length of the rockfish pilot season is limited and video monitoring becomes feasible for ensuring full retention of quota species, it may be possible to implement one of these options.

If NOAA Fisheries can implement reasonable safeguards to prevent discard of quota species on unobserved trips, it would be possible to fully account for harvest of quota species shoreside. Several demonstration projects in Canada and in the hake fishery off Oregon and Washington have shown that video monitoring has promise for compliance monitoring of a full retention requirement. In this fishery, however, it is unlikely that a full retention requirement would be acceptable because of the increased halibut mortality that would result. Further, the current preferred alternative envisions MRA-type management for non-quota groundfish species. A vessel exceeding that MRA amount would be required to discard the non-quota groundfish. Thus, an acceptable video system would be required to reliably differentiate between required discard of halibut and groundfish above an MRA amount, and the prohibited discard of quota species. With the exception of pollock, other rockfish, and Atka mackerel, however, all species that will be required to be discarded are flatfish, whereas all species that will need to be retained are roundfish. Thus, in most cases, the body morphology of the required retention species is very different than the body morphology of the required discard species, and it may be possible to use video to differentiate allowable from unallowable discard.

NOAA Fisheries, in cooperation with Pacific States Marine Fisheries Commission (PSMFC), will be investigating the possibility of using video for this application during the 2005 summer rockfish fisheries. NOAA Fisheries and PSMFC intend to deploy video systems on a representative subset of approximately nine of the vessels participating in the rockfish fishery and hope to determine whether this can be developed as a viable approach to ensure full retention of specified species.

In addition to the technical aspects of video monitoring for this application, several other issues related to video must be resolved. These include admissibility as evidence, the amount of staff time and resources that would be required to review video footage, and the degree to which video data can be considered confidential and protected from Freedom of Information Act requests. Until these issues are satisfactorily resolved, NOAA Fisheries would implement proven monitoring and catch estimation protocols that include retention requirements and extrapolated catch estimates from observer samples.

Table 50. Summary of Management and Monitoring Requirements for the Pilot Program.

	Qualified Processors	Entry Level Processors	Qualified Trawl Catcher Processors	Qualified Trawl Catcher Vessels	Entry Level Trawl Vessels	Entry Level Fixed Gear Vessels
1. Season	Cooperative Participants & Entry Level Participants (May 1- November 15). Limited Access Fishery Same as the current fishery (start in early July).					
2a. Vessels in Program **Target Rockfish Species Management**	N/A	N/A	For vessels in a cooperative, manage all target rockfish as an allocation to the cooperative. Vessels not in a cooperative: Alt. 2: may choose to receive an individual allocation of target rockfish or may "opt-out" of the program and be subject to sideboard restrictions during the first two weeks of July. Alt. 3: Vessels would be eligible to participate in the limited access fishery for target rockfish.	For vessels in cooperative, manage all target rockfish as an allocation to the cooperative. Vessels not in a cooperative would be eligible to fish in the limited access fishery for target rockfish.	Manage all rockfish as an allocation to the individual vessels that are applying. Council Preferred Alternative: Manage all rockfish as an allocation to the sector in a limited access pool.	Manage all rockfish as an allocation to the sector in a limited access fishery.

2b. Vessels in Program **Allocated Secondary Species Management**	N/A	N/A	For vessels in a cooperative, sablefish, shortraker, rougheye, and thornyheads would be allocated to the cooperative. Vessels not in a cooperative: Alt. 2: may choose to receive an individual allocation or may "opt-out" of the program and be subject to sideboard restrictions during the first two weeks of July. Alt. 3: Vessels would be eligible to participate in the limited access fishery in which sablefish, shortraker, rougheye, and thornyheads would be managed by MRA.	For vessels in a cooperative, sablefish, shortraker, rougheye, and thornyheads would be allocated to the cooperative. Vessels not in a cooperative: Vessels would be eligible to participate in the limited access fishery in which sablefish, shortraker, rougheye, and thornyheads would be managed by an MRA that is lower than the existing MRA percentage.	Sablefish, shortraker, rougheye, thornyheads and Pacific cod would be managed as an MRA based on the gear type.	Sablefish, shortraker, rougheye, thornyheads and Pacific cod would be managed as an MRA based on the gear type.

2c. Vessels in Program **Unallocated Species Management**	N/A	N/A	Arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, pollock, other species, Atka mackerel and other rockfish managed as an MRA to the gear type. During July, catch of these unallocated species is "sideboarded" to the amount of catch historically harvested by the sector.	Arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, pollock, other species, Atka mackerel and other rockfish managed as an MRA to the gear type. During July, catch of these unallocated species is "sideboarded" to the amount of catch historically harvested by the sector.	Arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, pollock, other species, Atka mackerel and other rockfish managed as an MRA to the gear type.	Arrowtooth flounder, deep water flatfish, shallow water flatfish, flathead sole, rex sole, pollock, other species, Atka mackerel and other rockfish managed as an MRA to the gear type.
2d. Vessels in Program **Halibut PSC Management**			For vessels in a cooperative, halibut PSC would be allocated to the cooperative. Vessels not in a cooperative: Alt. 2: may choose to receive an individual halibut PSC allocation or may "opt-out" of the program and be subject to sideboard restrictions during the first two weeks of July. Alt. 3: Vessels would be eligible to participate in the limited access fishery which would receive a halibut PSC allocation.	For vessels in a cooperative, halibut PSC would be allocated to the cooperative. Vessels not in a cooperative would be eligible to participate in the limited access fishery which would receive a halibut PSC allocation.	PSC would be derived from the general PSC pool for the gear type during that time period (by quarter). Managed according to PSC rates in the fishery.	PSC would be derived from the general PSC pool for the gear type during that time period (by trimester). Managed according to PSC rates in the fishery.

3a. Vessels in Limited Access **Rockfish Species Management**	N/A	N/A	Allocation is based on history of catcher processor limited access participants. If the allocation to the limited access pool is not sufficient, than NOAA Fisheries may not open that limited access fishery. Target fisheries are closed once the allocations are reached.	Allocation is based on history of catcher vessel limited access participants. If the allocation to the limited access pool is not sufficient, than NOAA Fisheries may not open that limited access fishery. Target fisheries are closed once the allocations are reached.	N/A	N/A
3b. Vessels in Limited Access **Allocated Secondary Species Management**	N/A	N/A	Managed as an MRA. The MRA would be based on the amount of secondary species available to catcher processor participants in the limited access pool.	Managed as an MRA. The MRA would be based on the amount of secondary species available to catcher vessel participants in the limited access pool. This MRA would be lower than the existing MRA for that target fishery.	N/A	N/A
3c. Vessels in Limited Access **Unallocated Species Management**	N/A	N/A	Managed as an MRA. The amount available would be based on the sector and gear allocations at current MRA levels.	Managed as an MRA. The amount available would be based on the sector and gear allocations at current MRA levels.	N/A	N/A
3d. Vessels in Limited Access **Halibut PSC Management**	N/A	N/A	Based on PSC rates for the sector and gear type and time period (quarter).	Based on PSC rates for the sector and gear type and time period (quarter).	N/A	N/A

4a. Processors and Vessels in Program **Observer Requirements** **Assuming Video Monitoring is <u>Not Feasible</u>.**	100 percent onshore observer coverage for all rockfish or secondary species landings. Landings must be fully observed.	100 percent onshore observer coverage for all rockfish or secondary species landings. Landings must be fully observed.	100 percent observer coverage of all hauls required for all rockfish or secondary species trips.	200 percent observer required for all rockfish or secondary species trips.	Observer coverage of 30 percent or greater for all trips of vessels less than 125' LOA (including vessels less than 60' LOA). If allocations are small, could effectively require 100 percent observer coverage. Under the Council's preferred alternative existing levels of observer coverage would apply.	No observer requirement, as rockfish and secondary species catch is determined using retained catch landed onshore.
4b. Processors and Vessels in Program **Observer Requirements** **Assume:** **Video Monitoring is <u>Feasible</u>.**	100 percent onshore observer coverage for all rockfish or secondary species landings. Landings must be fully observed.	100 percent onshore observer coverage for all rockfish or secondary species landings. Landings must be fully observed.	100 percent observer coverage of all hauls required for all rockfish or secondary species trips.	Alternative observer coverage requirements may apply. Video monitoring may be used to assess discards of non-allocated species. All rockfish and secondary species would be retained and delivered to onshore processors with observer coverage.	Alternative observer coverage requirements may apply. Video monitoring may be used to assess discards of non-allocated species. All rockfish and secondary species would be retained and delivered to onshore processors with observer coverage.	No observer requirement, as rockfish and secondary species catch is determined using retained catch landed onshore.

5. Vessels and Processors in the Limited Access Fishery **Observer Requirements**	100 percent onshore observer coverage for all rockfish or secondary species landings. Landings must be fully observed.	N/A	100 percent observer coverage of all hauls required for all rockfish or secondary species trips.	200 percent observer required for all rockfish or secondary species trips.	N/A	N/A
6. Trawl Vessels in Entry Level	Under the Council's preferred alternative existing levels of observer coverage would apply.					
7a. Application Requirements	Application as a Qualified Processor will be due by December 1 of the year preceding the fishery. Under Alternative 3, this application is due December 1 and must include the terms of the cooperative agreement for associated LLPs.	Application as an Entry Level Processor due by December 1 of the year preceding the fishery.	For cooperative members, an application for a rockfish cooperative (including terms of the cooperative agreement) will be due by December 1 of the year preceding the fishery. For non-members of a cooperative: Under Alternative 2, an Application for an individual allocation or an application to Opt-Out due by December 1 of the year preceding the fishery. Under Alternative 3, an application to participate in limited Access due by December 1 of the year preceding the fishery.	For cooperative members, an application for a rockfish cooperative (including terms of the cooperative agreement) will be due by December 1 of the year preceding the fishery. For non-members of a cooperative, an application to participate in limited Access due by December 1 of the year preceding the fishery.	Application as an Entry Level Vessel due by December 1 of the year preceding the fishery.	Application as an Entry Level Vessel due by December 1 of the year preceding the fishery.

7b. Additional Forms for Vessels in the Program **(Including Entry Level Participants)**	Declaration of Rockfish or Secondary Species Landing. Must be provided before landing.	Declaration of Rockfish or Secondary Species Landing. Must be provided before landing.	Declaration of Rockfish or Secondary Species Trip. Must be provided before departure from port.	Declaration of Rockfish or Secondary Species Trip. Must be provided before departure from port.	Declaration of Rockfish Trip. Must be provided before departure from port.	Declaration of Rockfish Trip. Must be provided before departure from port.

3.4.2. Effects on Fishing Patterns

Patterns and levels of harvester participation in the CGOA rockfish fisheries are likely to vary under the different alternatives. The following summarizes changes in fishing patterns that are pertinent to the analysis of this environmental assessment. Additional information on fishing patterns is contained in the RIR above.

Status quo

Under the status quo alternative, fishing patterns are likely to be similar to current patterns of fishing. Trawl catch is likely to dominate the fisheries, with that catch concentrated shortly after the early July opening. (Table 1 above lists season openings and closings for the rockfish fisheries.)

Catch of catcher vessels typically occurs close to port because of the need to offload harvests and return to the fishing grounds to maximize total catch. In addition, processors have demanded that fishermen limit trips to less than 72 hours as a means of ensure quality of catch. The limitation on fishing trip time effectively limits the spatial distribution of catch for catcher vessels. Since Kodiak processors process the great majority of catch from the rockfish fisheries, catch of the catcher vessel sector is concentrated in the grounds near Kodiak. While catcher processors are also subject to the time limitation of the season, their fishing activity is not spatially limited in the same manner as catcher vessel harvests, since they process their catch on board.

Participants are likely to continue to catch valuable secondary species (Pacific cod, sablefish, thornyhead rockfish, shortraker rockfish, and rougheye rockfish) at levels approaching the MRA. Catch of these species is likely to be limited because of the race for the target rockfish. Participants try to strike a balance of time harvesting target rockfish and valuable secondary species in an attempt to maximize their total revenues.

Pilot program alternatives

For the most part fishing patterns are likely to be similar under all of the pilot program alternatives, so those patterns are summarized in this single discussion.

The two most pronounced differences in fishing practices that are likely under the pilot program are the spatial and temporal distribution of catch. Because the programs allocate cooperative fishing privileges, which may be fished during an extended season, participants in the program are likely to slow their rate of harvest and distribute that harvest over greater time and a larger area.

Changes in activities across the two sectors are likely to differ somewhat because of operational requirements. Catcher vessels have typically been limited in the range of fishing activity by processor demands related to the quality of landings. Typical rockfish fishing trips last less than 72 hours. As participants in the pilot program alternatives strive to improve quality of landings, it is unlikely that fishing trips will lengthen. As a result, catcher vessel fishing is still likely to be concentrated in areas that are in relatively close proximity to Kodiak, where all of the qualified processors are located. Catcher processors, on the other hand, are not constrained by shore-based processing and may distribute their catch over larger areas of the grounds. The extent of this distribution of catch could be limited, if catcher processors perceive a cost reduction benefit to concentrating catch in one area. If catch is consolidated on a few catcher processors, concentration of landings temporally is more likely.

Both sectors should distribute catch over extended time periods, as the longer season allows. The extent to which catch is temporally distributed depends on both the operational needs of participants and bycatch considerations. Most participants are likely to schedule fishing to avoid conflicts with their participation in other fisheries. At a minimum, one would expect substantial fishing to occur prior to or after the traditional July season to allow participants to fish in other July fisheries. Catch may also be distributed throughout the season (by catcher vessels particularly) to attempt to develop markets for fresh fish. Other market demands and scheduling preferences are likely to occur, but depend on individual circumstances and cannot be predicted.

Bycatch considerations could also affect the temporal distribution of fishing effort. Participating fishermen will be strictly limited by allocations of the three rockfish species, three or four secondary species, and halibut PSC. All of the allocations are based on historic catch that occurred in the traditional July season. Attempting to fully harvest all of these allocations could be challenging if catch composition changes substantially outside of the traditional July season. One reason that the current opening is scheduled for early July is to avoid halibut bycatch. The extent to which participants will be able to harvest rockfish at other times and avoid halibut cannot be predicted. If participants find that halibut bycatch is relatively high outside of the traditional season, they are likely to restrict their fishing to times when halibut bycatch rates are low.

3.4.3. Effects on target rockfish stocks

Status quo

Current management of the fisheries and fishing patterns should continue under the status quo. Rockfish are conservatively managed under the current fishery to maintain havests below the TAC. However, Under this management a TAC can be exceeded, if managers have difficulty projecting when the fleet will have completed harvest of the TAC. Allowable biological catch limits are rarely, if ever, exceeded, and it can be expected that overfishing limits will not be exceeded.

Pilot program alternatives

The pilot program alternatives should have no negative impact on stocks of target rockfish populations. These species will continue to be managed by conservatively set TACs. Cooperative allocations in the fisheries should effectively limit catch to the TACs. More precise management of the TACs should be possible under the change in management, as individuals within a cooperative will be responsible for any overage.

Some potential benefit could arise, if participants distribute catch over larger areas or time periods. This would reduce any potential local depletion that could occur under the current management, in which effort is concentrated as a result of participants attempting to maximize their catch. Any beneficial effect from greater distribution of catch spatially is likely to be limited, if participants perceive a benefit to concentrating catch to reduce costs or increase revenues. For catcher vessels, concentration of catch in close proximity to processors could improve quality of landings, as needed to serve some high valued markets. For catcher processors, concentration of catch spatially and temporally could reduce costs, if consistent high catch rates are observed at particular times and locations.

In addition, under some of the alternatives, participants could elect to participate in a limited access fishery similar to the current management. Few participants are expected to elect to fish in this fishery, primarily because catch of secondary species will be constrained (see discussion in

3.7.2 below). Catch of target rockfish will be limited by the allocation to the limited access fishery, so, total harvest of target rockfish by rockfish fishery participants will be limited by the overall TAC. Harvests from a limited access fishery are likely to be concentrated similar to the catch in the current fishery, which does not have any negative impact on target rockfish stocks. In conclusion, no negative impacts to rockfish stocks are expected from any of the pilot program alternatives.

The May 1st opening date of the fishery could result in some harvests in the fishery prior to completion of rockfish reproduction. The exploitation rates for rockfish in the Gulf of Alaska are conservative, largely due to the lack of definitive biological information on many of the species. It is not likely that allowing the fishery to occur prior to larvae release would create a biological concern. However, all else being equal, it may be desirable to allow reproduction to occur prior to the season opening.

Reproductive characteristics of the Gulf of Alaska rockfish included in the rockfish pilot program (including Pacific Ocean perch, northern rockfish, pelagic shelf rockfish, shortraker rockfish, rougheye rockfish and thornyhead rockfish) are largely unknown. It is assumed that all of the species are viviparous (having internal fertilization and incubation of eggs) but that is not known with certainty. The timing of spawning and release of larvae is also uncertain, but generally considered to be in the spring. An overview of parturition (completion of larvae release) times for Pacific Ocean perch (Lunsford, 1999) provides a range of dates for completion of larvae release, but no definitive conclusion concerning the timing of larvae release. In addition, the overview cites two studies that suggest that parturition for Pacific Ocean perch in the Gulf of Alaska may lag one to two months behind British Columbia, where reproduction has been observed to be largely completed by the end of April. Other studies cited suggest that there is a general trend for rockfishes to spawn later in higher latitudes and report the peak period for parturition for nearshore *Sebastes* species in southeast Alaska occurs in April to May. Based on these studies, the overview concludes that parturition for Pacific Ocean perch is almost certainly completed by July, since no fertilized or ripe specimens were found in July samples. Given the ranges suggested, an opening date in May or June may ensure that most of the reproductive activities for the various rockfish species will be concluded.

3.4.4. Effects on allocated secondary species and prohibited species catch

Four or five "secondary species," depending on the sector, are allocated under the rockfish pilot program. Those species are Pacific cod, sablefish, shortraker, rougheye, and thornyheads. In addition, halibut mortality will be allocated under the pilot program alternatives. This section briefly examines the effects on the stocks of those species.

Status quo

Under the status quo management, catch of secondary species in the target rockfish fishery will continue to be limited by MRAs and by TACs that limit overall catch from all fisheries. Incidental catch of Pacific cod and sablefish in the rockfish fishery are approximately 2.5 and 10 percent of the respective TACs of those species in the Central Gulf of Alaska. Incidental catch of thornyheads by the rockfish fisheries during the qualifying years was approximately 25 percent of the Central Gulf total catch, while incidental catch of shortraker/rougheye (under the combined TAC) was over half of the total harvest from the Central Gulf. Although this catch is substantial, each of these species is managed under conservative TACs. Retained catch in the rockfish fishery is limited by MRA, with total catch limited by the current system of putting species on PSC status if the TAC is reached, and closing fisheries that incidentally catch the species, if the allowable

biological catch is reached. In addition, separate TACs for shortraker and rougheye will be established in 2005 to ensure the integrity of their independent stocks.

Halibut is managed as PSC in the CGOA rockfish fisheries. Catch of halibut is required to be discarded and is accounted for against the deep-water complex PSC allocation. Although halibut PSC has occasionally required the closure of the target rockfish fisheries (see Table 1), the fishery does not have negative effects on halibut stocks.

Pilot program alternatives

Similar to the target rockfish stocks, no negative effects on secondary species stocks are expected to occur under the pilot program alternatives. Catch of these species will be limited by either cooperative allocation, which are more restrictive than the current MRAs, or reduced MRAs.[75] In addition, discards are not permitted for these species under the pilot program. Management of these allocations should contribute to more precise management of stocks under the program. Overall harvests will continue to be limited by TACs that apply to total catch from all fisheries.

As noted above, some rockfish participants could elect to participate in a limited access fishery. Secondary species harvest from any such limited access fishery will be limited to the allocation to participants in the limited access fishery using reduced MRAs. These reduced MRAs should be a substantial disincentive for participation in the limited access fishery. In any case, harvests of secondary species will be limited to the allocation, which should ensure that overall TAC is not exceeded. Depending on the season opening and closing dates, harvests in the fishery could take place prior to completion of rockfish reproduction. Information concerning reproduction of secondary species rockfish is limited. A complete discussion of the issue and potential effects of season opening date choices on rockfish reproduction is contained in 3.4.3.

The pilot program alternatives will be prosecuted with cooperative allocations of halibut mortality. These allocations will constrain halibut bycatch and will prohibit participants in the program from fishing in excess of their halibut allocations. Although some fishing could take place out of the traditional July season (when halibut bycatch has been observed to be low), mortality will be constrained by the allocations of halibut mortality. Some participants have suggested that they intend to use pelagic gear and possibly experiment with gear modifications in an attempt to reduce halibut bycatch. The success of these efforts cannot be predicted. Notwithstanding, the allocations of halibut are based on historic halibut mortality usage in the fisheries and will not allow overall halibut mortality in Central Gulf of Alaska fisheries to exceed historic levels. Although some participants in the pilot program could elect to participate in a limited entry fishery under some of the alternatives, these limited access fisheries will be prosecuted under strict limitations on halibut mortality, which are also based on historic halibut mortality in the rockfish fisheries. As a result, the limited access fishery should not increase halibut mortality in the rockfish fisheries. Overall, the pilot program alternatives should have no negative impact on halibut stocks.

[75] For the catcher processor sector an MRA will apply to Pacific cod harvests that will limit catch to 4 percent of the harvest of target rockfish. In addition, catcher vessel harvests of shortraker and rougheye rockfish will be limited by a 2 percent MRA. This MRA could allow greater catch of these species than the allocation. Managers, however, would continue to manage these species using “PSC status” and closing fisheries, if necessary to limit the catch of the species. Appendix 7 contains an analysis of the various options for management of shortraker and rougheye and the impacts of those options on participants in the program and participants in other fisheries.

3.4.5. Effects on stocks of unallocated prohibited species catch

In the current rockfish fishery, prohibited species harvests are not at levels that raise concern. Fishing patterns are not expected to differ under any of the alternatives (including the status quo and the pilot program alternatives) in a manner that will affect prohibited species catch. Consequently, no adverse effects on prohibited species catch are expected under any of the alternatives.

Additional information is presented concerning salmon bycatch, as additional concern has been expressed concerning potential effects of the alternatives concerning that issue. The primary species of concern for trawl salmon bycatch are Chinook salmon (*Oncorhynchus tshawytscha*) and chum salmon (*O. keta*). Other salmon appear in the trawl bycatch in much smaller numbers than Chinook and chum and generally are not a bycatch concern (NPFMC, 2005). For the period from 2000 through 2004, the average bycatch of salmon for all groundfish trawl fisheries in the Gulf of Alaska was 17,643 Chinook and 7,252 chums (see Table 51 below). This is well below the 1990-2004 average bycatch levels of 19,733 Chinook and 17,572 chums, indicating a declining trend for bycatch of salmon in the GOA trawl fisheries in recent years.

Table 51. Bycatch of Pacific salmon in Gulf of Alaska groundfish trawl fisheries, by species, 1990-2004.

	Numbers of Fish				
Year	**Chinook**	**Chum**	**Coho**	**Sockeye**	**Pink**
1990	16,913	2,541	1,482	85	64
1991	38,894	13,713	1,129	51	57
1992	20,462	17,727	86	33	0
1993	24,465	55,268	306	15	799
1994	13,973	40,033	46	103	331
1995	14,647	64,067	668	41	16
1996	15,761	3,969	194	2	11
1997	15,119	3,349	41	7	23
1998	16,941	13,539[a]			
1999	30,600	7,529[a]			
2000	26,705	10,996[a]			
2001	14,946	5,995[a]			
2002	12,921	3,218[a]			
2003	15,860	10,400[a]			
2004	17,785	5,650[a]			
Average (1990-2004)	19,733	17,572[b]			
Average (2000-2004)	17,643	7,252[b]			

Source: NPFMC, 2005

[a] Coho, sockeye, and pink salmon are combined with chum salmon.

[b] Average chum salmon bycatch includes chum, coho, sockeye, and pink salmon.

Most salmon bycatch in the Gulf of Alaska occurs in the CGOA management area. For the period from 2000 through 2004, for example, the average annual bycatch in the CGOA was 13,882 Chinook (78.6 percent of the Chinook bycatch for the entire GOA) and 5,311 chums (73.2 percent of the chum bycatch for the entire GOA – including an unknown small bycatch of other salmon species).

Chinook salmon bycatch in the Gulf of Alaska trawl fishery are harvested from the start of the pollock fishery in January, with the first peak period from mid-February through late March (NPFMC, 2005). The second peak activity period in the bi-modal bycatch pattern for Chinook starts around the first of September and extends through the end of October. The first peak bycatch period is well outside of the proposed season starting date for the rockfish pilot program; therefore, an earlier opening should have little effect on Chinook bycatch. The proposed ending dates for the rockfish pilot program extend as late as November 15th, and therefore would encompass the second peak activity period for Chinook bycatch. However, the rockfish trawl fishery is most likely to occur prior to October since fish begin to move into deeper water as temperatures cool. Even if the fishing pattern associated with the rockfish pilot program resulted in shifting some effort into September and October, the overall Chinook bycatch should remain a small portion of the overall trawl bycatch in the Gulf of Alaska due to the relatively small size of the fishery.

The pattern for chum salmon bycatch is considerably different than for Chinook. Chum bycatch appears to remain at very low levels until approximately the first week of June. It increases markedly around the middle of August and then stays at relatively high levels through September and into October (NPFMC, 2005). An earlier season starting date for the CGOA rockfish pilot program will likely have very little effect on chum salmon bycatch. Extending the rockfish trawl season until November 15th would potentially increase chum salmon bycatch since effort in the fishery would shift from the current pattern of fishing in July, when chum abundance is low, to the mid-August to mid-October time period, when chum salmon abundance is higher. The extent to which trawl fishing would shift is uncertain and will depend upon individual choices by vessel operators.

The magnitude of increase to salmon bycatch initiated by extending the trawl rockfish season in the CGOA is uncertain, but should be relatively modest. By fishery, the largest portion (57.7 percent) of the 2000-2004 Chinook salmon bycatch occurred while trawling for pollock (NPFMC, 2005). Chinook bycatch estimates for the rockfish and sablefish trawl catch in the Gulf of Alaska over the same time period average 928 Chinook (5.2 percent of the 17,643 average annual bycatch). Based on this respective contribution to total bycatch, the trawl CGOA rockfish fishery appears to have had a very minor role in Chinook bycatch but a more specific accounting of Chinook bycatch is not available. Even if the rockfish pilot program extends fishing into September and October, the overall level of salmon bycatch is likely to remain low due to the relatively small size of the fishery.

The pollock and flatfish fisheries contribute the largest share of ‘other salmon’ bycatch in the Gulf of Alaska. Over the 2000-2004 period, an annual average of 3,603 ‘other’ salmon were taken in the pollock fishery (49.7 percent of the total), while an annual average of 2,848 ‘other’ salmon (39.2 percent of the bycatch by all trawl fisheries) were taken in the flatfish fishery. The combined rockfish/sablefish catch of ‘other’ salmon averaged of 650 annually, or 8.9 percent of the bycatch for all trawl fisheries. Although the rockfish/sablefish bycatch of ‘other’ salmon bycatch is higher than the catch of Chinook salmon, it is still a relatively small amount compared with the total bycatch of ‘other’ salmon.

As a part of the analysis of comprehensive rationalization of the Gulf of Alaska groundfish fisheries, the impact of all trawl groundfish fisheries on the prohibited species catch will be examined.

3.4.6. Effects on stocks of other unallocated species

Fishing patterns are not expected to differ under any of the alternatives (including the status quo and the pilot program alternatives) in a manner that will affect catch of unallocated species. Consequently, no adverse effects on prohibited species catch are expected under any of the alternatives.

3.4.7. Effects on benthic habitat and essential fish habitat

Status Quo

Maintaining the current management will perpetuate current fishing practices and concentrate fishing for rockfish temporally and spatially. Effort levels are considered low and occur in areas of less sensitive habitat (rock, gravel, mud, and sand). The current fishing practices may have long term effects on benthic habitat, but minimal and temporary effects on essential fish habitat (NMFS, 2005). These effects are likely to continue, if current management is maintained.

Pilot program alternatives

Under the pilot program alternatives rockfish fishing could be distributed over a longer season and may disperse spatially, as a result of the removal of time constraints by the cooperative allocations. The relatively low effort levels of this fishery along slope areas are likely to continue. Concentrations of bottom trawl effort in the Central Gulf could be reduced to some extent, but the need for catcher vessels to keep short trip lengths to maintain quality is likely to result in some continued concentration in the area of Kodiak Island. Overall, the rockfish fisheries are likely to continue to have minimal effects on essential fish habitat. No negative impacts to essential fish habitat are likely under the pilot program alternatives.

3.4.8. Effects on endangered or threatened species

None of the alternatives are expected to have negative impacts on endangered or threatened species beyond those identified in previous consultations under section 7 of the Endangered Species Act. Some spatial and temporal dispersion of rockfish catch could occur under the pilot program alternatives. This change in the distribution of catch is expected to be minor and is not expected to have any affect on any endangered or threatened species.

3.4.9. Effects on forage fish

Catch of forage fish is expected to be unaffected by any of the alternatives. Consequently, no impacts on forage fish are expected under any of the alternatives.

3.4.10. Effects on marine mammals

Direct and indirect interactions between marine mammals and harvests from the rockfish fisheries are not expected to differ under any of the alternatives, as total catch is expected to be the same under all of the alternatives and the distribution of catch is not expected to differ in a way that will affect interactions.

3.4.11. Seabirds

Direct and indirect interactions between seabirds and harvests from the rockfish fisheries are not expected to differ under any of the alternatives, as total catch is expected to be the same under all of the alternatives and the distribution of catch is not expected to differ in a way that will affect interactions.

3.4.12. Effects on the ecosystem

Effects of fishing on the Gulf of Alaska marine ecosystem are analyzed in detail in the Alaska Groundfish Fisheries Programmatic SEIS. Although some temporal and spatial dispersion of catch in the rockfish fisheries could occur under the pilot program alternatives, none of the alternatives are expected to have a negative effect on the Gulf of Alaska marine ecosystem.

3.4.13. Effects on the economic and socioeconomic factors

The current LLP Central Gulf of Alaska rockfish fisheries open early in July. Participants from both sectors race to catch as much fish as possible prior to catch of the TAC. In recent years, TAC and effort levels have resulted in the fisheries lasting only a few weeks each year. As a result of the race for fish, participants (particularly in the catcher vessels and processors in the shore-based sector) often sacrifice quality of landings and products to maintain their shares of the catch, dissipating rents in the fishery. Product choices are also limited for processors, as they attempt to keep pace with landings. The proposed alternatives to the status quo are intended to address these issues, by allocating shares to cooperatives and ending the race for fish. Several small entities (as defined by the RFA) participate in these fisheries and experience these effects.

Under the two catcher processor alternatives, eligible members of the sector would be permitted to join cooperatives that would receive annual allocations based on member catch histories. A cooperative's allocation would be fished in accordance with a cooperative agreement negotiated by its members. The change in management would likely benefit members of this sector, by providing cooperatives with an exclusive allocation of rockfish. These exclusive allocations, together with the coordination of fishing in cooperatives, will allow participants to determine their effort in a manner that reduces costs. Vessels may be removed from the fishery and the rate of catch may be slowed, allowing for reduced costs and possible increases in revenues. Potential revenue improvements are uncertain for this catcher processor fleet, as their product outputs are subject to operational limitations. Modification of vessels to produce higher value products is likely to be cost prohibitive for most members of the sector.

Under both catcher vessel alternatives, production efficiency by the shore-based sector should increase substantially with the slowing of the race for fish. Product quality should improve and output should shift to higher valued products. Overall participants in both the catcher vessel and processing sectors should be at least as well off under the two pilot program alternatives as the under the status quo. The effects of the two alternatives on these different sectors are not the same.

Harvesters should benefit more under the alternative with limited processor entry, because catcher vessels will have substantially greater negotiating leverage under that alternative's flexible cooperative structure. As a result, catcher vessel entities should realize the greatest benefit under that alternative, while processing entities would benefit less. Under the alternative with cooperative/processor associations, processors should have substantially greater negotiating leverage because of the specific processor association that a catcher vessel must accept to enter the rationalized fishery. As a result, processors should benefit more than catcher vessels under the alternative with cooperative/processor associations.

Under both of the alternatives, the distribution of benefits will vary within each sector. In addition, some participants could be disadvantaged. Under either alternative, catcher vessel entities that receive small allocations could be disadvantaged, if holders of large allocations are able to draft cooperative terms that favor holders of large allocations over holders of small allocations. Since catcher vessel participants can freely form cooperatives under the alternative

with processor limited entry, the potential of recipients of small allocations to be disadvantaged is reduced.

Qualified processors with less historic participation in the rockfish fishery would be better situated to increase their landings from the rockfish fishery under the processor limited entry alternative, because the limit on entry allows all qualified processors to compete for landings. On the other hand, processors with greater historic participation would not be constrained by the processing time pressures of the race for fish and may be in a better position to compete to increase their share of rockfish processing.

A more detailed summary of the economic and socioeconomic impacts of the alternatives is contained in the Regulatory Impact Review in Section 2 above.

3.4.14. Effects on environmental justice

The status quo alternative is expected to continue current trends in the fisheries. No negative impacts on minority or low income populations have been identified currently. No negative impacts are expected under continuation of the current management.

Under the pilot program alternatives, some consolidation of fishing activity could occur in the rockfish fisheries. This consolidation could affect income for participants on vessels that no longer participate in the rockfish fishery. This consolidation is unlikely to result in the removal of vessels from all fisheries and could lead to some of the vessels that leave the rockfish fisheries increasing their activities in other fisheries (to the extent permitted by sideboard limitations and cooperative agreements). As a result, the impacts to vessel owners and crewmembers may not be negative, even if rockfish fishing activity decreases. In addition, the degree to which any impacts will affect minority or low-income vessel owners or crewmembers cannot be determined because demographics of vessel owners and crewmembers are not available. If employment and vessel ownership of Kodiak resident owned vessels mirrors the local population a substantial number of minority crew could be affected by this action. The overall affect of the action, however, is likely to be beneficial, as returns from the fishery are expected to improve. In addition, the program is likely to provide some additional stability to crew employment in the fishery.

Kodiak-based processing crews, which include a substantial number of minority employees, are also likely to be affected by this action. In general, the effects of the pilot program alternatives are expected to be beneficial to these workers. The pilot program alternatives are likely to result in the distribution of landings over a longer period of time, particularly when shore plants are not processing catch from other fisheries. This distribution of landings could result in a loss of some seasonal positions, but will also result in greater stability for crews that are year round processing workers. This additional stability in employment is likely to benefit the minority population that is employed by the processing facilities.

3.4.15. Cumulative effects

This section describes the cumulative effects of the various alternatives. Cumulative effects of an alternative are the impacts on the environment resulting from the incremental effect of the alternative when added to other past, present or reasonably foreseeable future actions.

Categorizing effects as direct, indirect, or cumulative is often imprecise because most effects typically have some components that arise in part from the way the action interacts with other actions. For example, the negotiating leverage of the participants in the rockfish fisheries under the alternatives depends, in part, on interactive effects that arise from their participation in other

fisheries. Understanding even the direct effects of the action requires consideration of those interactive effects. Earlier sections of this analysis describe the effects of the alternatives, given the current management of other fisheries.

In addition to those interactive effects, a few other factors are worthy of consideration as cumulative effects. In 2005, for the first time, shortraker and rougheye rockfish are being managed under separate TACs. The specific effects of this division of the TAC are uncertain because of some of the uncertainty concerning catch composition across the various fisheries and gear types. Appendix 7 and sections 2.5.2 and 3.3.3 of this analysis summarize the existing information concerning catch composition and the effects of the TAC division.

A second interactive effect that could cause cumulative impacts is the possible division of management of dusky rockfish. Currently, both light and dark dusky rockfish are managed under the federal FMP. Most of the dusky rockfish catch of the CGOA rockfish fishery is light dusky rockfish. Small amounts of dark dusky rockfish are caught by hook-and-line and jig fishermen in State waters. It is possible that management of dark dusky rockfish could be separated from management of light dusky rockfish. The effect of this possible division of management is likely to be very minor, as little of the current catch is believed to be dark dusky rockfish.

A third action currently under consideration that could have some interactive effect with this action is Amendment 80 to the Bering Sea and Aleutian Island Groundfish FMP. Under Amendment 80, non-AFA catcher processors would be eligible to join cooperatives, which would receive exclusive allocations of several groundfish species (excluding Pacific cod). These allocations could obviate the need for the Bering Sea and Aleutian Island stand-downs that are proposed under the catcher vessel sideboards in this action. Additional economic benefits could arise for participants in the two programs, as the exclusive allocations under the Amendment 80 and this action could allow for the realization of greater economic efficiencies through the coordination of harvest activities across the fisheries governed by the two actions.

One additional set of actions that have affected most of the participants in this program are the management actions taken in recent years to limit any potential affects of commercial fishing on Steller sea lions in the Gulf of Alaska, Bering Sea, and Aleutian Islands. These actions collectively have increased the costs of harvesting for participants in the fisheries and may have disadvantaged small vessels as fishing grounds are more distant from ports. The exclusive allocations created under the pilot program alternatives should decrease the cost to participants of meeting the Steller sea lion management measures and could also mitigate the differential effects of those measures on small vessels to some extent.

From reviewing available biological data on the CGOA rockfish species that make up the secondary species allocations under the rockfish pilot program it is clear that more accurate accounting of catch by species would be a strong asset to management of the fishery. Under the status quo, without the rockfish pilot program, it is likely that uncertain species identification, particularly for shortraker and rougheye rockfish, will continue to be a problem. At their meeting in November 16th, 2004, the Gulf of Alaska Plan Team noted that improved species identification is necessary at the plant level as species are not being identified shoreside. The team discussed the need for quantification of discard catch and improved shoreside identification to a species level and noted that part of the pilot program would encourage species identification at the plant level.

Implementation of the rockfish pilot program is likely to increase the rate of development of the shoreside species identification program. Therefore, an indirect or cumulative benefit from the

rockfish pilot program will likely accrue from improved species identification of the harvest levels for shortraker, rougheye and other rockfish, which should also improve management of stocks of individual rockfish species.

4. Consistency with other applicable laws

This section of the analysis examines the consistency of the rockfish pilot program alternatives with respect to the National Standards and Fishery Impact Statement requirements in the Magnuson-Stevens Act and Executive Order 12866.

4.1. National standards

Below are the ten National Standards as contained in the Magnuson-Stevens Act, and a brief discussion of the consistency of the proposed alternatives with each of those National Standards, as applicable.

National Standard 1

Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery.

Nothing in the proposed alternatives would undermine the current management system that prevents overfishing. The proposed alternatives would result in annual allocations to cooperatives. In the current race for fish, management to a specified TAC can prove difficult. Managers attempt to regulate harvests to the TAC by timing the closure of the fishery with the harvest of the rockfish TAC. The use of annual allocations is likely to result in catch levels that are closer to the specified TACs in the fisheries.

National Standard 2

Conservation and management measures shall be based upon the best scientific information available.

The analysis draws on the best scientific information that is available concerning the CGOA rockfish fisheries (Clausen and Heifetz, 2003, Clausen et al., 2003, Hanselman, et al., 2003, NMFS/NPFMC, 2003, 2004, 2005. The most up-to-date information that is available has been provided by the managers of these fisheries, as well as by members of the fishing industry.

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.

The various stocks that are affected by this action are each managed as separate stocks. All interrelated stocks are managed as a unit or are managed 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 U.S. 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.

The proposed alternatives would treat all participants in the rockfish fisheries the same, regardless of their residences. The allocations in the fisheries would be based on historical catch in the fisheries without discrimination among participants.

The total annual allocation in each fishery will be based on the fishery management plan that is developed to promote conservation of the resource. Any changes in a fishery, as a result of the pilot program that impact conservation of the resource will be taken into account when setting the TACs in a year. No changes are expected.

Limits on cooperative holdings, individual holdings or usage of allocations, and processing would prohibit any individual from acquiring an excessive share of harvest privileges or controlling an excessive share of processing in the fisheries.

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.

The preferred alternative is proposed to improve the efficiency of utilizing the CGOA rockfish resources. Given the current race for fish in these fisheries, concern has been expressed that both the harvest and processing sectors operate in an inefficient manner. While the allocation of quota under all of the alternatives would have economic consequences, the primary goals are to increase efficiency and equitably distribute interests in each of the fisheries. Additional benefits would be realized through the direct allocation of catch of eight species under the program. No discards of these species would be permitted, which should have the effect of allowing more precise management of catch and could contribute to reductions in bycatch and discards.

National Standard 6

Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Under all of the pilot program alternatives, changes in the availability of the rockfish fishery resources each year would be addressed through changes in annual allocations. These changes in allocations will be used to ensure conservation of the resource in the future.

National Standard 7

Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The pilot program alternatives would substitute for existing LLP management of the rockfish fisheries and would not duplicate any other laws. The costs of managing the fisheries may increase under the pilot program alternatives. The costs would be due to administration of annual allocations to cooperatives and an increased need for in-season monitoring of harvests and observer coverage that are necessary to ensure realization of other benefits from the pilot program alternatives.

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 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.

Implementing the pilot program alternative is likely to have impacts on fishing communities. The pilot program alternatives, however, should have primarily positive impacts on communities. Presently, benefits to communities from the fisheries are decreased because of inefficiencies of the race for fish under the current management. Quality of landings and products from the fisheries are decreased as participants in both sectors race to maximize shares of the catch. The pilot program alternatives are intended to address these inefficiencies, which could result in more total profits generated from the fishery. Community participation in the fisheries is unlikely to change under the pilot program alternatives. Kodiak has historically been home to processors that have processed almost all of the rockfish landings. Under the pilot program alternatives, this should continue.

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.

The rationalization of the fisheries should reduce bycatch levels. Currently, participants in the fishery are governed by MRAs that limit their retention of non-target species. Under the pilot program alternatives, allocations of four or five species (depending on the sector), in addition to the target rockfish, will be made. Full retention of these species will be required, with the allocation operating as a hard cap. This will require participants to stop fishing when any allocation is fully harvested. This measure should reduce bycatch in the fisheries. In addition, slowing the race for fish should increase the ability of crews to handle bycatch carefully to decrease bycatch mortality.

National Standard 10

Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The pilot program alternatives should reduce the incentives for rockfish fishermen to fish in inclement weather or fish in a manner that compromises safety. The removal of time pressures of the race for fish could reduce fishing activity in bad weather and may result in improved safety in the fisheries. Safety concerns should also be addressed through other means while working closely the U.S. Coast Guard.

4.2. Section 303(a)(9) - Fisheries impact statement

Section 303(a)(9) of the Magnuson-Stevens Act requires that any management measure submitted by the Council take into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries. The impacts of the pilot program alternatives on both participants in the rockfish fisheries and participants in other fisheries have been discussed in previous sections of this document. Under the pilot program alternative, rockfish allocations to cooperatives would be based on historical participation of eligible members of the cooperative. Persons without the qualifying history necessary to receive allocations could be negatively impacted.

Less obvious impacts from the pilot program alternatives could accrue to participants in 'adjacent' fisheries. The impacts would be in terms of "spillover" effects as rockfish fishery participants are able to increase effort in other fisheries after removal of the time pressures of the

race to fish. Sideboard limitations included in the pilot program alternative will limit rockfish pilot program participants to their historic participation in federal Gulf of Alaska, Bering Sea, and Aleutian Island groundfish fisheries, which are most likely to receive additional effort as a result of the implementation of the pilot program. These sideboards should almost fully mitigate any negative spillover impacts in those fisheries.

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