

## **BROADENING THE BENEFITS FROM QUOTA-BASED MANAGEMENT IN ALASKA COMMERCIAL FISHERIES**

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### **ABSTRACT**

Four commercial fisheries off Alaska's coast are managed by transferable quota systems. Implementation of each quota program was controversial, and two programs were mandated by federal legislation rather than standard rulemaking procedure. Pacific halibut and sablefish are managed by individual harvest quota programs, which were designed to maintain a predominantly owner-operated fleet of small vessels. Quota programs for the industrial Walleye pollock and crab fisheries encourage the formation of harvesting cooperatives to provide efficiency gains.

The halibut and pollock quota systems provided economic benefits beyond expectations. Information gathered since the crab program implementation suggests similar results. Consolidation within the halibut and pollock harvesting and processing sectors produced dramatic efficiency gains. Gross revenues increased as processors shifted to higher-value product forms.

After implementing the harvester-only halibut quota program, policy makers aimed to broaden the distribution of benefits among fishery participants in the development of subsequent quota programs. The pollock program requires processor linkages for harvester cooperative participation and the crab program includes a separate pool of transferable quota for processors.

Despite efforts to broaden the distribution of benefits from implementation of quota programs, critics cite windfall profits to initial recipients, unlimited quota duration, and absentee ownership as justification to avoid additional quota-based fishery programs in Alaska. This paper examines some tools under consideration for future programs, such as harvest privileges of limited duration, quota fees, and community quota pools. While these tools will decrease the economic benefits of quota-based management systems, they might be necessary additions to gain broad-based support.

The views expressed in this paper do not represent official state of Alaska policy.

**Keywords:** transferable fishing quota, ITQ, IFQ, fishery rationalization

### **INTRODUCTION**

Commercial fisheries in Alaska are managed by two government agencies. The state of Alaska manages fisheries in the waters zero to three miles from shore. The National Marine Fisheries Service manages federal fisheries in the Exclusive Economic Zone (EEZ), which extends three to 200 miles from shore. The North Pacific Fishery Management Council (Council) develops policy and management guidelines for the federal fisheries in Alaska. The Council is one of eight regional bodies created by the Fishery Conservation and Management Act of 1976, which was updated as the Magnuson-Stevens Fishery Conservation and Management Act (MSA) in 1996. Alaskan representatives hold the majority of the voting Council seats, and the Commissioner of the Alaska Department of Fish and Game represents the state of Alaska. The states of Washington and Oregon are also represented on the Council by a number of designated seats since there is significant fishery participation by residents of these states.

The state of Alaska has three general principles for fisheries management: (1) achieve optimum sustained yield while minimizing bycatch and enhancing profitability; (2) provide economic opportunity and

community stability for those involved; and (3) help Alaskans capture the greatest share of the economic value of those resources. The third principle has proven to be the most problematic for state policy makers with regard to federal fisheries. Federal policy makers and managers must maximize net national benefits, which includes potential economic, environmental, public health and safety benefits as well as distributive impacts and equity for all U.S. citizens [6]. In addition, the MSA directs fishery management councils to develop management measures that do not discriminate between residents of different states [12].

This conflict between federal and state management goals has intensified as Alaska's federal fisheries moved toward management with individual transferable quotas (ITQs). In 1995, an individual fishing quota (IFQ) system was implemented for the Pacific halibut and sablefish fisheries. Almost immediately, the Council began to receive feedback from participants concerned about the distributional impacts of IFQ management. As the Council began work on the next ITQ program, it aimed to use these lessons learned to more broadly distribute the benefits of ITQ management among harvesters, processors and fishery-dependent coastal communities.

The debates concerning how to provide the appropriate balance among these groups were contentious since limited information is available to quantify ITQ distributional outcomes. In fact, the next two ITQ programs in Alaska were implemented by Congressional mandate owing to the controversial nature of certain program elements. The federal Walleye pollock and crab fisheries came under ITQ management in 1998 and 2005, respectively.

Examination of available fisheries information reveals that several Council and congressional objectives were achieved for the halibut, sablefish and pollock programs. Information is limited for the crab fisheries since ITQs were implemented less than one year ago, but some fundamental goals appear to have been achieved for that fishery as well. In general, Alaska's ITQ programs can be considered successful. However, some state residents and policy makers are dissatisfied with the distribution of ITQ program benefits to Alaska residents and communities. Although it is true that ITQ management resulted in increased state and community tax revenues and generally improved the economic situation for remaining fishery participants, critics cite lack of opportunities for participants who were excluded or unable to continue under ITQ management and severe and sometimes insurmountable barriers for new entrants. Severe market challenges and price declines in Alaska's salmon industry, the mainstay for most Alaska resident fishermen, have exacerbated the perceived negative effects of ITQ implementation.

The Council is currently developing an ITQ program for a multi-species groundfish fishery in which a significant number of Alaskans participate. State of Alaska policy makers recognize the management and economic benefits from ITQs, but would like to achieve an even broader benefit distribution than in previous programs. Clearly, program elements to achieve this goal will reduce the degree of efficiency gains and economic benefits from ITQ management, but may make the plan more acceptable to some Alaska resident fishery participants.

The next section of the paper provides an overview of Alaska's federal ITQ programs. The following section provides a general discussion of ITQ lessons learned from the state of Alaska's perspective. The final section presents four concepts the state is proposing for consideration in future quota programs to address the perceived negative consequences of ITQ management.

## **THE EVOLUTION OF ITQ MANAGEMENT IN ALASKA**

### **Halibut and Sablefish IFQ program**

Fishermen from Canada, Washington, Oregon and California pioneered the Alaska commercial halibut and sablefish fisheries in the early 1900s. The current halibut fishery is prosecuted primarily with longline gear [9]. Sablefish are caught in the Alaska federal fisheries with longline, trawl and pot gear [16 and 21]. The 2004 ex-vessel value of the halibut fishery was around \$170 million US and the ex-vessel value of the federal sablefish fishery was \$73 million US [16]. Although the halibut and sablefish fisheries developed differently in terms of foreign and domestic participation, both fisheries were experiencing classic overcapitalization symptoms by the mid- to late 1980s.

The halibut and sablefish IFQ program was implemented in 1995 amid much controversy. During program development, the Council identified several objectives, including resource utilization and management concerns such as allocation and gear conflicts; deadloss due to lost gear; and discard mortality of halibut and other retainable species in the halibut fishery. The Council also recognized problems with excess harvesting capacity, product quality as reflected in prices and economic stability in the fishery and affected communities. Concerns about harvester safety and the desire to develop a small-boat fishery of coastal Alaska residents rounded out the list [23].

The Council wanted to gain the efficiency benefits of IFQ management but was concerned that the program might result in drastic changes to the fleet structure and harm communities dependent upon the fisheries. There was also a strong desire to maintain the traditional small vessel owner-operated character of the halibut and sablefish fisheries. Quota was initially issued only to vessel owners and the Council established restrictions on quota ownership and transfer. Catcher vessel quota may only be transferred to or used by (1) initial QS recipients or (2) "IFQ crewmembers" i.e., those who qualify by working for 150 days on the harvesting crew in any U.S. fishery. In addition, the Council instituted an "owner on board" policy, in which the quota share holder must be on board the vessel when the quota share is used, i.e., no quota leasing. Initial quota recipients were exempt from the no leasing provision. The Council anticipated that over time, as initial quota share recipients left the fishery, all catcher vessel quota would be held by owner-operators [2, 17].

The Council adopted further rules and regulations in an effort to constrain fleet changes, likely making it one of the most restrictive ITQ programs in the world. The program included restrictions on quota ownership and use, quota segmented by vessel size, transfer restrictions across quota categories and requirements that some quota holdings to be transferred as a single aggregated "block" [2].

The Council's final objective for the IFQ programs was to help develop a small-boat fishery for rural Alaska coastal residents. A portion of the halibut and sablefish total allowable catch (TAC) was awarded to community entities as Community Development Quota (CDQ). Proceeds from harvest of the allocations were intended to provide local financial benefits and enhance resident participation in the fisheries. The CDQ Program had been established in 1992 to provide western Alaska communities an opportunity to benefit from the Bering Sea and Aleutian Islands fisheries. Sixty-five eligible communities formed six regional organizations called CDQ groups. The CDQ groups initially received 7.5 percent of the inshore pollock quota for their exclusive use. Participation in the pollock fishery required significant capital investment, so the CDQ groups partnered with active catcher-processors who harvested the quota in return for royalty payments to the groups. With IFQ implementation, the Council significantly enhanced the program by establishing a CDQ allocation for halibut and sablefish. CDQ groups were awarded anywhere from 20 to 100 percent of the halibut and sablefish IFQ in some management areas of the Bering Sea and Aleutian Islands.

### **Walleye pollock – The American Fisheries Act**

The Bering Sea and Aleutian Islands (BSAI) pollock fishery is the largest fishery in the United States. Since 1976, pollock harvests have averaged 1.1 million metric tons annually. In recent years, the BSAI pollock fishery has accounted for about 30 percent of all U.S. seafood landings by weight, and annual ex-vessel values have ranged from \$300 to \$350 million US [16].

Beginning in the 1950s and continuing until the early 1990s, commercial harvest of groundfish in the Bering Sea was carried out almost completely by foreign fleets from Japan, Korea, Poland and the USSR [20]. In the 1980s, the U.S. government implemented policies to increase domestic harvesting capacity and gradually phase out foreign fishing in the North Pacific EEZ. Federal loans, loan guarantees, and tax deferral programs stimulated the purchase, repair, and refitting of fishing vessels and several new catcher vessels and catcher-processors were built in the United States [25]. Around the same time, Norwegian business enterprises built several catcher-processors to add to the Bering Sea pollock fleet. As a result, the Bering Sea catcher-processor fleet increased from a handful of vessels in 1984 to a fleet of 65 vessels in 1993 [7]. As catcher vessel harvesting capacity increased, onshore processing companies also expanded to utilize the vast amount of EEZ pollock resources. By 1990, the last year in which foreign fleets participated in Alaska fisheries, the pollock fishery had turned into an overcapitalized race for fish by a fleet of industrial trawl vessels.

Throughout the 1990s, pollock harvesters and processors continued to increase capacity in an effort to maximize their share of the catch. The overcapitalization generated allocation disputes between the inshore sector (catcher vessels and the shoreside processors to whom they delivered) and the offshore sector (catcher-processors or factory trawlers). In the mid 1990s, the pollock biomass declined and commercial quotas were reduced, creating economic hardships for most participants. In addition, the continuing economic recession in Japan resulted in steep price declines for surimi, which was the primary product produced from pollock [5].

Although the Council began developing an ITQ program for the BSAI pollock fishery in 1995, negative reports regarding distributional outcomes from the halibut and sablefish IFQ program stalled efforts. In particular, the processing sector argued that halibut harvesters disproportionately benefited from the transition to higher-value product forms. Processors objected to an IFQ program for pollock, arguing that awarding harvester-only pollock IFQ would further damage the processing sector and communities dependent on processing activity. In 1996, Congress mandated a four-year moratorium on IFQ programs partially based on the perception that while IFQ programs solved some of the fishery management problems associated with overcapitalization, awarding harvester-only quota may have unintended distributional consequences.

After the Council abandoned development of a pollock ITQ program, industry participants came together to work out a plan to limit overall participation in the pollock fishery and close a loophole in federal fishery law that allowed foreign-built vessels to participate in the Bering Sea pollock fishery. Ultimately, the participants negotiated the details of an innovative transferable quota system utilizing fishery cooperatives. The plan, called the American Fisheries Act (AFA), was introduced by Alaska Senator Ted Stevens, passed by Congress and implemented in 1999. It was an interesting series of events; the ITQ program for the largest fishery in the United States had completely bypassed the Council development process.

The AFA split the overall pollock allocation between offshore factory trawlers and the inshore catcher vessel sector. An industry-funded buyout of nine factory trawlers reduced capacity in the offshore sector [5]. The AFA also facilitated formation of cooperatives in both sectors by identifying certain participants and limiting participation to those named vessels.

Under the inshore AFA cooperative structure, participating harvesters may receive privileges to a fixed share of the TAC only if they join a cooperative associated with a particular processing plant. Cooperatives may form only if an annual contract is signed by the owners of 80 percent or more of the qualified catcher vessels and the processor to whom they delivered the majority of their pollock in the previous year. Harvesters likely agreed to this requirement since most pollock catcher vessels had previously coordinated deliveries with their onshore plant owing to unique processing requirements for surimi. Harvesters may fish in a limited access fishery without a guaranteed share if they choose not to join a cooperative. The intent of associating processors with the cooperative was to provide a structure for processors to share in the expected economic benefits of ITQ fishing, including shifts to higher value products and improved pollock utilization.

Community concerns were addressed by increasing the CDQ allocation from 7.5 to 10 percent. The increased royalty revenues provided funding for resident education and training programs. CDQ communities also began developing infrastructure for fisheries-related businesses.

### **Bering Sea and Aleutian Islands Crab Rationalization**

Japanese fishermen established the BSAI crab fishery prior to World War II, and the fishery was dominated by foreign operators until the U.S. government undertook measures to “Americanize” the fleet in 1976 through passage of the MSA. The ex-vessel value of the crab fisheries has ranged from \$60 to \$81 million US in recent years, but the harvest volumes are just 15 percent of catches in the boom years of the late 1970s and 1980 [3]. The U.S. Bering Sea and Aleutian Islands crab fleet developed as an industrial fleet of larger boats. Most of these vessels entered the fishery when massive harvests and high prices made crab fishing an attractive opportunity. Effort continued to pour into the fishery until red king crab stocks crashed in the early 1980s, which was followed by an opilio (snow) crab stock decline in the 1990s.

Short fishing seasons, management problems, safety concerns, and economic distress topped the list of concerns as the Council developed an ITQ program for the BSAI crab fisheries. Building on previous experience, the Council charged itself to “achieve equity between the harvesting and processing sectors, including healthy, stable and competitive markets” [18]. Cooperative harvest management emerged as the preferred ITQ mechanism, primarily based on experience under the halibut and sablefish IFQ and AFA programs. The AFA fishing cooperatives required less intensive in-season management and were less costly to administer than the IFQ fisheries. However, the AFA model was not a good fit since crab harvesters and processors had not historically coordinated deliveries. In the end, IFQs were allocated to harvesters, but a separate pool of processor quota (PQ) was issued to participating processors. Although the Council developed the details of the crab rationalization plan, Congress ultimately mandated implementation since the National Marine Fisheries Service needed explicit authorization to issue PQ and execute other novel program elements.

Harvesters (vessel owners) were allocated 97 percent of the crab quota and three percent was allocated to vessel skippers based on their historical performance. Participating processors were allocated PQ for 90 percent of the harvesting quota based on their processing history. Processor quota does not have a direct link to an individual harvester’s IFQ, but harvesters must sell 90 percent of their crab to a processor holding PQ. Ten percent may be sold to any legal processor [22]. The crab rationalization program exempted harvesting cooperatives from vessel use caps, so there was a strong incentive for harvesters to consolidate to achieve operating efficiencies.

As in the AFA, the CDQ crab allocation was increased to 10 percent of the rationalized fishery. But community protection mechanisms went quite a bit further in the crab program. Non-CDQ communities

with crab processing history may also purchase IFQ and lease it to residents. The Council was also concerned about protecting remote communities close to the fishing grounds that had made significant investments in processing capacity under the derby fishery. Under a slower IFQ fishery, harvesters would likely shift landings away from these remote communities to lower cost processors in other areas. To prevent this, crab rationalization included regionalization, or zoning, in which harvester and processor quota shares were assigned to one of two zones based on landing history. Harvesters may only deliver their zoned IFQ to processors with PQ in the same zone.

To further soften the transition for communities, PQ earned in a community may not be used outside of the community during the first two years of the program. Following this transition period, crab processing communities have the first opportunity to purchase PQ and retain it for the community should a processor choose to exit.

## **LESSONS LEARNED FROM ITQ IMPLEMENTATION**

### **Increased efficiency through consolidation**

Fleet consolidation through exiting vessels and quota stacking on remaining vessels was an explicit goal in each ITQ program, but many Alaskans consider the degree and rate of consolidation excessive in the halibut and crab fisheries. The halibut fishery lost approximately 1,500 participants over a 10-year period [2] and an early study of the crab fisheries indicates approximately 900 skipper and crew jobs were lost in the red king crab fishery in the first year of the program [10]. The swift transition to a smaller fishing fleet stranded labor and support businesses that developed around fast-paced derby fisheries. The effects seemed to be amplified in remote coastal communities close to the fishing grounds. Nevertheless, it is important to consider the situations in other fisheries in which Alaska resident skippers and crew participated. For example, although the halibut program clearly caused economic disruption to the fleet, changes in world markets for Alaska salmon contributed to economic hardship for many harvesters and processors who participated in both fisheries.

As ITQ proponents projected, skipper and crew income stabilized and even increased for those who remained active in the fisheries after rationalization. In the first ITQ crab fishery, skippers and crew generally earned more total income over the entire season, but had lower earnings per day fishing. For vessels fishing stacked (leased) quota, the share of ex-vessel value paid to skippers and crew declined and the share paid as lease royalties was relatively high [10].

Community effects from the rationalization plans have been difficult to isolate, but a few can be identified. The most obvious example was the shift in halibut and sablefish landings from remote communities close to fishing grounds to those communities with more reliable transportation to fresh markets. In addition, quota share has migrated out of rural Alaska fishing communities since IFQ implementation [19], indicating a decline in fisheries participation by those residents. This result was counter to Council intent, which was to promote the development of fishery operations in small coastal communities.

One feature of the halibut IFQ program does appear to have worked reasonably well. The transfer restrictions on “second generation” quota may have provided skippers and crew with a good opportunity to advance within the fishery. Since the program began in 1995, nearly 2,500 skipper and crew have been able to purchase approximately 25 percent of all available quota with the help of a loan program [15].

Some positive community effects were identified as well. The pollock ITQ program has provided significant economic benefits to those communities with participating onshore processors through tax

revenue increases and longer fishing seasons. This outcome is likely an anomaly since the onshore fleet has not yet consolidated to a significant degree. The AFA allocated the sector approximately 40 percent more of the TAC than it historically caught.

### **Product quality and development**

The fishing seasons expanded to varying degrees after ITQ implementation. The most striking example was the halibut fishery, which shifted from three 24-hour openings in some areas to just over eight months in length. The longer seasons provided harvesters with additional operational flexibility, such as avoiding fishing in bad weather, but there are limits. Market demands and management restrictions continue to control harvest timing to a great degree. In addition, longer seasons increased costs for all participants, particularly for processors, so seasons typically expanded to lengths that optimized production capacity.

Longer seasons provided a better balance of harvesting and processing effort, and distributed processing activity more evenly over time compared with the previous pulse fisheries. Consolidation has reduced the total number of processing jobs, but the remaining jobs are generally more stable and last longer during each calendar year [10, 24].

The extended seasons have also provided opportunities for product and marketing innovation. Although the distribution of benefits between the harvesting and processing sectors continues to be debated, gains have clearly accrued from reduced costs, increased product recovery and higher value product forms. The percentage of halibut going to the fresh instead of frozen market has more than doubled from pre-ITQ days, and the production of pollock fillets and other specialty products has also increased dramatically [8, 24]. Some new product forms were also developed in the first ITQ crab fishery, and the fresh, cooked crab market experienced a jump in production.

### **Conservation and management**

ITQ programs provided conservation and management benefits in terms of more controlled harvest management and less lost fishing gear. Slower fisheries also have provided greater flexibility to respond to management changes such as time and area closures implemented to protect endangered sea mammals. ITQs also provided a potential for improved bycatch management with longer seasons and cooperative behavior, but results are mixed thus far.

Onboard observer coverage is limited for the halibut fleet, so changes in fleet bycatch management after ITQ implementation are not well-documented. Rationalization of the pollock fleet initially resulted in decreased bycatch and significant product utilization improvements, but the pollock fleet is currently struggling with record levels of salmon bycatch. Finally, it is unclear after the first rationalized crab fishery whether the anticipated increase in on-bottom sorting from longer pot soak times actually occurred, since discards of legal crab was eight times higher than for any of the previous six complete fishing seasons [4]. While it cannot be proven that harvesters were “high-grading” crab, state scientists found that crab retention in the fishery was highly correlated with shell condition and it is well known that consumers prefer new-shell condition crab. Although efforts have been made to increase onboard observer coverage with each ITQ program, cost and logistical constraints often limit coverage increases.

It has also been difficult to quantify or even make general statements about the economic effects on participants from the ITQ programs owing to a limited amount of publicly available economic information. A comprehensive socio-economic data collection protocol was implemented with the crab program to address this problem. The collection of historical and ongoing participation, revenue and cost

information should enable a quantitative evaluation of the costs, benefits and distributional effects of the program. The Council is also in the early stages of examining whether and how to implement a comprehensive economic data collection for all fisheries, particularly those under ITQ management.

## **Quota**

In each ITQ program, harvesting quota was issued to a subset of vessel owners who participated during a selected time period. The crab program also issued history-based fishing quota to skippers and there was a separate pool of processing quota issued to historical processors. Quota was explicitly defined as a privilege that may be limited or revoked without compensation [12], but there has been no indication that the Council is considering rescinding or significantly changing the nature of quota privileges. It is unclear if defining quota as a privilege rather than a right has diminished program benefits or introduced uncertainty for business planning purposes. All quota privileges were issued at no cost to the recipients. Second generation participants must buy quota to enter the fishery, which is often prohibitively expensive for new entrants, particularly for those who did not benefit from previous rationalization programs. No-cost initial allocations provided a tremendous benefit to initial recipients and have created some barriers to entry.

None of the programs contained an active participation requirement for initial quota recipients. This may have encouraged absentee ownership of quota, which often resulted in income and spending leakages outside of Alaska.

Although quota ownership caps were instituted in each rationalization program, it appears that some individuals and entities may have developed creative business arrangements to circumvent caps and other restrictions on excessive consolidation.

Finally, history-based quota allocations may have resulted in a “race for history” in fisheries not yet managed with ITQs. For example, some crab vessel owners continued to participate in the fishery at an economic loss because they knew the Council was developing a history-based quota program. Beneficiaries of previous ITQ programs may also have a competitive advantage over non-rationalized participants in an open or limited access fishery. Although total harvest by rationalized boats is limited in other fisheries by regulation, all participants have an incentive to “race for history” if they anticipate future implementation of a quota-based management system resembling earlier rationalization programs in the region.

## **Bargaining leverage**

There is considerable uncertainty and disagreement regarding the bargaining leverage between harvesters and processors in Alaska’s ITQ programs. Academic studies indicate that following IFQ implementation, halibut harvesters captured up to 90 percent of the wholesale price gains from IFQs [8] and the processing sector lost revenues in excess of variable costs relative to the pre-IFQ period [14]. Anecdotal evidence suggests that cooperation among pollock harvesters and processors resulted in tremendous financial returns and profit sharing between harvesters and processors. However, critics maintain that providing processors with additional bargaining leverage (pollock) or quota (crab) resulted in restricted processor competition and lower ex-vessel prices for harvesters. Lower ex-vessel prices were not completely attributable to Alaska’s ITQ programs as world markets certainly played a factor, but the effects have not been quantified.



## POTENTIAL CONCEPTS FOR FUTURE ITQ PROGRAMS

The state of Alaska is currently proposing several concepts for consideration in the development of future ITQ programs to address some of the perceived negative distributional effects. Analysis of these concepts must determine to what degree they will decrease the economic benefits of ITQ management and if they are too administratively burdensome and costly given the overall value of the fishery.

### Limited duration privileges

Several negative distributional outcomes are thought to derive from allocating privileges that have become, in effect, permanent rights. The state has identified several potential advantages of limited duration privileges, but the primary motivation is that permanent allocations may not be necessary to address the problems associated with derby fishing and overcapitalization. Assigning each participant a catch amount for one season may provide the necessary structure for harvesters and processors to slow down and maximize the value of the harvest, thus it may not be necessary to make the catch allocation permanent. In addition, permanent allocations appear to provide windfall gains to some initial quota recipients [11]. Anecdotal evidence suggests that many initial recipients earned tremendous economic benefits based on the value of their quota. Some state policy makers consider windfall gains from a public resource inappropriate and think limiting quota duration may be an appropriate tool to moderate economic returns.

A second related reason for granting limited duration privileges is to avoid literally or effectively locking in the existing set of participants. For example, the AFA legislation named eligible harvesters by vessel. If the policy goal is to provide current participants with some stability during the transition to a market-based management scheme, it seems counterproductive to grant privileges permanently. Instead, a more appropriate approach might be an initial quota award of limited duration to recognize current participant investment and history.

Finally, limited duration privileges may hold the quota value down to provide new entrants improved access to the fisheries. If quota price reflects the present value of expected revenue streams, quota with a limited, rather than permanent, duration may have a lower value.

When considering limited duration, state policy makers must determine the economic and social tradeoffs. The perceived benefits from shortening the quota duration period must be balanced with the need to provide a reasonably stable harvesting privilege. Quota must be secure enough to support long-term investments, be useful as loan collateral and encourage participants to undertake sustainable fishing practices.

### Paying for fishing privileges

It is unclear to state of Alaska policy makers why historical participants should receive exclusive access to a public resource at no cost. The state is increasingly interested in establishing a mechanism for participants to pay for quota through auctions, lotteries or other bidding mechanisms. Since the cost of managing ITQ fisheries can be high depending on the complexity of the program, Alaska policy makers are proposing that some portion of quota fees paid by participants be used to cover the costs of managing the fisheries. Quota fees may also be passed to communities to either (1) mitigate losses incurred from ITQ implementation or (2) enhance resident participation in the fisheries. It is unlikely that a straight auction would be the preferred mechanism since this would tend to advantage those with the greatest economic resources. Some sort of royalty bidding system could be used, which would be paid at the time of landing rather than in advance.

### Entry level set-aside

Segmented harvesting privileges could provide opportunities for new entrants into ITQ fisheries. A separate pool of quota set aside for entry-level harvesters would address two perceived problems. First, many ITQ critics believe crew member contributions should be recognized in quota allocations. While there are practical constraints to providing history-based quota for crew, general eligibility requirements likely could be established for crew to receive entry-level quota from a dedicated pool. Second, new entrants would not necessarily have to compete with other more established participants to gain privileges. For example, the new entrant quota pool could require that participants may receive and use harvesting privileges from the new entrant pool only if they hold no other privileges.

### Enhanced community benefits

The CDQ program has exceeded all expectations for the amount of royalty revenues and economic development provided to the community groups. CDQ revenues increased 61 percent from 1998 to 1999, which directly followed AFA implementation. In 2004, the CDQ groups generated over \$133 million US in revenues. The CDQ program has been successfully contributing to fisheries infrastructure in western Alaska by funding docks, harbors, and the construction of seafood processing facilities. Revenue generated from the program has allowed CDQ groups to acquire equity ownership interests in the pollock, Pacific cod, and crab sectors, which provide additional revenues to fund local in-region economic development projects, education and training programs [1].

Although the Alaska CDQ program is considered a great success in many respects, dissatisfaction remains with the fact that residents in the participating communities do not generally actively participate in the fisheries. The state of Alaska is considering carrying forward the CDQ allocation model in subsequent programs, but changing the focus from receiving royalties from fishery operations to enhancing local resident participation in the fisheries.

### CONCLUSION

Following implementation of the halibut and sablefish IFQ program, state of Alaska fisheries policy goals evolved to more fully include processor and community interests. This was a relatively straightforward policy decision in that the next two rationalized fisheries contained limited Alaska resident participation in the harvesting sector. There is little doubt that the overall revenues to the state of Alaska treasury, some coastal communities, remaining participants and CDQ groups have increased following implementation of ITQ management in four federal fisheries. Nevertheless, as the Council develops an ITQ system for a fishery in which a much larger percentage of Alaskans participate as harvesters, the optimal distribution of benefits is less clear.

State of Alaska policy makers are working to find a plan to gain the benefits from ITQ management without creating windfalls and permanent privileges to current participants. Given the incomplete information on harvesting and processing cost structures, it is unclear whether limiting the duration of privileges or reserving some pool of harvest privileges for entry level opportunity will negate rationalization benefits or beyond an acceptable level.

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