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SOLVING EQUITY OBJECTIVES VIA COMMUNITY QUOTAS:

ALASKAN CDQ'S

Ralph E. Townsend
University of Maine and University of Iceland

Permanent address:
Department of Economics
University of Maine
Orono, Maine 04469-5774
USA
207/581-1854
fax: 207/581-1953
E-mail: RALPHT@MAINE.MAINE.EDU

Temporary address, August 1, 1996-December 15, 1996
University of Iceland
Department of Economics and Business Administration
Oddi v/ Sturlugata
101 Reykjavik
Iceland
354-525-4653
fax: 354-552-6806
E-Mail: RALPH@RHI.HI.IS

ABSTRACT

Fisheries management often is paralyzed by debate over equity objectives. The question of what is an equitable distribution of the benefits from a fishery is inherently difficult to resolve. An obvious response to this paralysis is to separate the equity objectives from other objectives. An increasingly frequent suggestion is to have a central government (through its fishery agency) determine "scientific" questions like the optimal quota, while distributional questions are made separately by local communities or by local groups of fishers. In its management plans, the U.S. North Pacific Fishery Management Council has partially adopted such a strategy. For Alaska walleye pollack and for halibut and sablefish in the Bering Sea, 7.5% of the quota was allocated to coastal villages under "community development quotas" (CDQs). This paper provides some preliminary evidence on how the CDQs affected both fisheries management objectives and economic development objectives. From a fisheries management perspective, the CDQs in pollack have become a "community ITQ" in an otherwise open access fishery, while the CDQs in halibut have become a local open access fishery within an otherwise ITQ-managed fishery. In general, the CDQs have had little effect upon fisheries management and have had some modest effect on economic development. The interesting question, still open to speculation, is whether CDQs or some variation on CDQs could have application beyond the specific circumstances of Western Alaska.

SOLVING EQUITY OBJECTIVES VIA COMMUNITY QUOTAS:

ALASKAN CDQ'S

Introduction

The issue of multi-objective management is driven largely by the conflicts that fishery scientists often witness between scientific objectives and social objectives. In particular, fisheries management often is paralyzed by the inability of the political process to make allocation decisions. The determination of who will be allowed to catch fish is an issue not only in direct allocations (such as individual quotas) but also in indirect allocations (such as closed seasons and gear restrictions). Even when there is general agreement about the need for the overall objectives of management (such as reduced catches), implementation of management is often delayed or blocked entirely by the inability to find satisfactory answers for the distributional issues.

An obvious response to this paralysis is to design management mechanisms that separate the equity objectives from other objectives. An increasingly frequent suggestion is to have a central government (through its fishery agency) determine scientific questions like the optimal quota, while distributional questions are made separately by local communities or by local groups of fishers. This approach would seem to permit fishery scientists to focus on science-related questions, while the political questions of distribution to a political process.

In its management plans, the U.S. North Pacific Fishery Management Council has partially adopted such a strategy. For Alaska walleye pollack and for halibut and sablefish in the Bering Sea, 7.5% of the quota was allocated to coastal villages under "community development quotas" (CDQs). This paper provides some preliminary evidence on how the CDQs affected both fisheries management objectives and economic development objectives after three years of operation.

Background[1]

The walleye pollock fishery in the Bering Sea is the largest single fishery in the world, landing approximately 1.3 million metric tons of fish per year with a landed value in excess of $200 million per year (E3 Consulting, 1994). A large industrial fleet uses the relatively low-valued species to produce roe, surimi, and fillets, primarily for export. That fishery went through a rapid evolution during the post-1976 period, when the fishery came under federal jurisdiction due to the Magnuson Fisheries Conservation and Management Act. In 1976, the fleet was entirely foreign. Management of this

fleet was initiated by the North Pacific Fisheries Management Council ("the Council") under the Fishery Management Plan for the Groundfish Fishery in the Bering Sea and Aleutian Islands Area. This management caused conversion of the fleet to joint venture operations between U.S. catcher vessels and foreign processors over the period 1979-1987. The entry of U.S. catcher-processors and the establishment of shore-based processing in the Aleutian Islands resulted in the conversion of the joint venture fleet into an entirely U.S. fleet by 1991. The fleet became significantly over-capitalized. The season was divided into an "A" roe season (January 1 to April 15, with 45% of the non-CDQ quota) and a "B" non-roe season (August 15-December 31 with 55% of the non-CDQ quota). The results of this over-capitalization were predictable: the A-season quota for 1994 was caught in 29 days. This short, Olympic fishery caused particular problems for the on-shore processors, who experienced a reduction in their share of the catch and began to lobby for sectoral allocations.

The Council responded with Amendments 18 and 23 to the Fishery Management Plan. These amendments were built around a compromise, known as the inshore-offshore allocation, which allocated 35% of the available quota to vessels that serve shore-based plants and 65% to catcher-processors (Milon 1993). As part of these changes, limited entry was implemented. During the debate over the inshore-offshore allocation, representatives from Western Alaska successfully argued that the evolving division of the resource should consider the interests of the coastal communities of Western Alaska. The result was the allocation of 7.5% of the overall TAC to "community development quotas".[2] This translated into approximately 100,000 tons of pollock in each of the first four years of operation of the CDQ program.

The Council extended the community development quota to halibut and sablefish in Amendment 15 to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area in 1993. This amendment also created individual transferable quotas (ITQs) for the non-CDQ halibut and sablefish fisheries. The mechanics of the halibut CDQ were adjusted slightly to accommodate the allocation areas of the International Pacific Halibut Commission (IPHC), but otherwise followed the structure of the pollock CDQs. For halibut, the following shares of IPHC quota were allocated to CDQs (approximate allocation in pounds based upon 1994 quotas):

- 20% of IPHC area 4B (Western Aleutians, 420,000 lbs.)
- 50% of IPHC area 4C (Pribilof Islands, 350,000 lbs.)
- 30% of IPHC area 4D (Eastern Bering Sea, 100,000 lbs.)
- 100% of IPHC area 4E (Northwest Bering Sea, around St. Lawrence Island, 210,000 lbs.)

For sablefish, 20% of the fixed gear allocations in the Bering Sea (BS) sub-area and in the Aleutian Islands (AI) sub-area were allocated to CDQs.

In 1995, the Council announced guidelines that would set aside 7.5% of all remaining federal Bering Sea resources, including crab and all remaining groundfish species, for CDQs.

Details of these expanded CDQ allocations are still under development.

The communities of Western Alaska are very remote, have limited economic resources, are predominately (78%) Native American (Aleuts, Yup'ik Eskimos, and Inupiat Eskimos), and have significant social problems. There are no roads that connect Western Alaska to the rest of the state. All commercial links are by air or water. Most personal income is in the form of government employment or transfer payments. Subsistence fishing and other subsistence activities are very important for a large part of the population. For example, per capita consumption of fish in this region is 437 pounds per year (E3 Consulting, 1994). Only 13 of the 55 communities have piped water and sewer available to at least half of the homes (E3 Consulting, 1994). Substance abuse is a widely recognized problem. In sum, this area faces extreme social and economic circumstances.

State and federal efforts to promote economic and social development in Western Alaska are generally regarded as having been of limit success. There has been a large amount of government-sponsored construction of schools, roads, airports, port facilities, and utilities. Regional and village corporations were created to manage assets obtained in the Alaska Native Land Claims Settlement Act. The success of these Native Corporations has varied widely. A few corporations have managed investment portfolios that yield significant annual dividends to shareholders. But the corporations have had few successes in creating new economic opportunities within Western Alaska.

The community development quotas have been an effort at a very different kind of economic development. A specific set of resources are bestowed upon the communities of Western Alaska, to be used as the basis of economic development. While the resource being bestowed is federal, the primary authority for running the program is vested with the State of Alaska. In the implementation of the CDQ program, the State of Alaska has tried consciously to avoid the problems that have limited the effectiveness of the land claims corporations and previous economic development programs.

Implementation of CDQs

Administratively, the CDQ program is essentially a state granting process to local economic development agencies. This state activity takes place within a federal structure that is defined by the management plans of the North Pacific Fisheries Management Council and the implementing regulations of the National Marine Fisheries Service (NMFS).

For pollock, the North Pacific Fisheries Management Council determines an overall TAC. In the allocations for 1992-93, 1994-95, and 1996-98, the Council set aside 7.5% for community development quotas. The Council rules determined that a Western Alaskan community was eligible to apply for this quota if the community:

(a) is within 50 miles of the Bering Sea;
(b) is an Alaskan Native Claims community;
(c) has residents who conduct 50% of their commercial or subsistence fishing activity in the Bering Sea; and
(c) did not already have significant pollock activity.

This last requirement excluded Dutch Harbor/Unalaska and Akutan.[3]

Fifty-five communities qualified under these definitions. The Council also set some policy guidelines that have the effect of requiring that CDQ funds be used for fishery-related development. The National Marine Fisheries Service promulgated regulations in 1992 that implemented the Council actions. These regulations set up an application process that include "community development plans" (CDPs), in which each CDQ group proposes a level of CDQ allocation and describes the activities that would be supported from that allocation. The regulations also established auditing and reporting requirements. These regulations were amended in 1994 to clarify certain elements of both the application and reporting requirements. Further clarifying amendments are likely in 1996.

The 55 eligible communities were responsible for organizing themselves into groups. The results were six CDQ groups of varying sizes: Aleutian Pribilof Island Community Development Association ("APICDA"), Bristol Bay Economic Development Corporation ("Bristol Bay"), Central Bering Sea Fishermen's Association ("Central Bering Sea"), Coastal Villages Fishing Cooperative ("Coastal Villages"), Norton Sound Economic Development Corporation ("Norton Sound"), and Yukon Delta Fisheries Development Association ("Yukon Delta"). Table 1 lists the member communities of each CDQ group. Coastal Villages is organized as a for-profit corporation; the remaining five have been granted non-profit status. Some of these five have for-profit operating subsidiaries. As part of its pollock CDP, each group is required to identify a partner to fish for pollock. These fishing partners are listed in Table 2.

The State of Alaska was given the authority to recommend how the available CDQ quota would be divided among the six groups. Thus far, NMFS has accepted all state recommendations for these allocations, which are summarized in Tables 3 and 4. The Governor of Alaska designated a shared responsibility for decision-making on CDQs among the Commissioners of Commerce and Economic Development, of Community and Regional Affairs, and of Fish and Game. The State of Alaska is not required to explain the reasons for its allocations, nor has the state promulgated policy guidelines beyond requiring compliance with application and reporting requirements. For that reason, the basis for state allocations of CDQs can only be inferred from its decisions and from the statements of various government officials. The three agencies have somewhat different perspectives on the objectives of the CDQ programs, which reflect the various missions of the three agencies. To some extent, the CDQ groups are left to evaluate for themselves how

these different perspectives will be applied to the evaluation of their CDPs.

The State of Alaska went to some lengths to avoid the problems that have plagued previous economic development activities in Western Alaska. In its process of reviewing CDQ plans, the State made clear that it did not want dividend-granting corporations created and that it did not want to create yet another granting agency for local pet projects. The State insisted upon CDQs that create business and employment opportunities in fisheries.

The State of Alaska has conferred a broad blanket of confidentiality upon CDQ groups. Essentially any data that a CDQ chooses to label as confidential is treated as confidential by the State. The six CDQ groups have varied widely in how they use this discretion. At one extreme, Yukon Delta has stated that its records are completely open to the public. But other groups have labelled all financial data and some non-financial data as confidential. In one CDQ group, there has already been expensive litigation over the degree to which information should be public.

The broad claims of confidentiality over use of a federal resource make public accountability difficult. The public cannot assess the performance of the individual CDQ groups. That is solely the role of the state agencies (and perhaps NMFS). But if the state agencies have vested interests or special agendas, this oversight may be inadequate.

(Because of these claims of confidentiality, all financial data in this report is aggregated.)

Table 3 summarizes the pollock allocations for all three allocations rounds: 1992-93, 1994-95, and 1996-98. The initial 1992-93 allocations were made roughly (but not entirely) in proportion to the population of each CDQ group. The allocations for 1994-95 differed from the 1992-93 allocations only for two CDQ groups. Central Bering Sea had its allocation reduced from 10% to 8%, while the Yukon Delta allocation was increased from 5% to 7%. The reduction in the Central Bering Sea allocation was apparently due at in large part to the state's displeasure with compliance with program requirements by Central Bering Sea.[4]

In the allocations for 1996-98, the State made several changes in the allocations to CDQ groups. The allocation for Central Bering Sea was further reduced, from 8% to 4%, again apparently because of the state's dissatisfaction with compliance with program guidelines by that CDQ group. The 1996-98 decisions also reduce the Coastal Villages allocation from 27% to 25% and the APICDA allocation from 18% to 16%. The public record does not provide any clear indication of the reason for these changes. Norton Sound saw its allocation increase from 20% to 22% and the allocation for Yukon Delta went from 7% to 13%. Yukon Delta and Norton Sound have both implemented economic development strategies that are widely regarded as models for what the State seeks from this program (see below).

When CDQs were expanded to halibut and sablefish, beginning in 1995, essentially the same application and

allocation process was required. Because the allocation of halibut was for geographic areas defined by the International Pacific Halibut Commission, some realignment of CDQ communities occurred. The Pribilof Island Fishermen group, which included both St. Paul and St. George (which is a member of APICDA for pollock allocations), was formed for IPHC area 4C. Atka Fishermen's Cooperative formed a group for IPHC area 4B. The remaining five CDQ groups--APICDA, Bristol Bay, Coastal Villages, Norton Sound, and Yukon Delta--applied for and shared the halibut allocations for IPHC areas 4D and 4E and also the sablefish allocations. See Table 4 for a complete summary of halibut and sablefish allocations. Halibut allocations were made largely to the communities within the IPHC areas. This resulted in a very large allocation of halibut to Atka and smaller, but still significant, allocations to Pribilof Islands and Norton Sound. Allocations to the other three groups were small. The total allocation of sablefish was small, so this aspect of the problem is relatively unimportant.

Fisheries Rents

Pollock CDQs. Unambiguously, the pollock CDQs have generated very significant economic rents for the CDQ groups. Royalty payments to CDQ groups were $20 million in 1992. The value of the pollock CDQs has remained at roughly $20 million in each year since. (Royalty payments for leased quota has decreased since 1992 because Imarpiqamiut Partnership, the Coastal Villages joint venture, has used more of its quota on its catcher-processor, the *Browns Point*.)

The different CDQ groups have had slightly different lease arrangements. Some groups receive a flat payment per ton for CDQ for the entire year. Other groups have a payment that differentiates between quota in the roe season and quota in the non-roe season. (The roe product is more valuable than surimi or fillets.) Still other groups have payments based upon profit-sharing or product yield. The net effect is to generate royalties of between $150 and $225 per ton, with a weighted mean value of about $200 per ton. For purposes of comparison, the landed value of non-CDQ pollock as reported by NMFS has been roughly $200 per ton. This would seem to yield the surprising conclusion that the lease value of pollock quota is approximately equal to its landed value!

There are two possible explanations for this result. First, the landed value is based upon deliveries of fish by catcher vessels to shore-based processors. (Landed value on catcher-processor vessels can not be directly observed.) There are a limited number of large shore-based processors, and they may have monopsony power that depresses prices. Second, the pollock in the CDQ seasons may be more valuable than pollock in the Olympic seasons. Some economies of operation may be possible outside the time pressures of the Olympic season. The ability to supply markets over a longer period may have some value. (The filleted and surimi products are frozen, so this advantage may be in form of lower

inventory costs.) Some catcher-processors also use CDQ allocations to "tune up" their vessels for the Olympic fishery.

The scarcity of the CDQ quota (only 7.5% of overall quota) makes it more valuable. If the remaining 92.5% of this fishery were to converted to individual transferable quotas (ITQs), it is virtually certain that both CDQ and ITQ lease values would be less than $200 per ton. (Some CDQ groups informally indicated that their long-range plans assume some reduction in the value of their quota if ITQs are implemented.)

Coastal Villages' fishes a large portion of its quota through its joint venture, Imarpiqamiut Partnership. At $200 per ton, the Coastal Villages allocations for 1994-95 were worth just under $5.5 million. Whether Coastal Villages has realized a return on the quota that equals or exceeds the lease value cannot be determined from public records. Moreover, because of start-up costs, it may be too early to assess the long run implications of the decision to invest in a catcher-processor. But the Coastal Villages situation raises an important question for the entire CDQ program. CDQ groups could make investments in catcher-processors that result in *de facto* subsidies for these catcher-processors. The economic rents from the CDQ quota might be used to subsidize fishing operations that are less efficient than competitors (who could pay the lease value of the quota and still earn a profit).

State policy might push CDQ groups in the direction of subsidizing catcher-processors from CDQ allocations. Various statements and actions by state officials could be interpreted as favoring direct fishing participation by CDQ groups. This position is not at all surprising, because Alaska has long resented that "foreign" fishing boats from the state of Washington catch a large part of Alaska's annual fisheries landings. Because the State allocates quota among CDQ groups, its opinions carry great weight. For example, Coastal Villages has received the largest allocation of CDQ quota (27%) in both the 1992 and 1994 allocations processes. During the development of CDP proposals for the 1996-98 allocations, some CDQ groups did consider investments in catcher-processors. Because the pollock fleet is over-capitalized, the current environment for catcher-processor investments is not especially good, and no new CDQ catcher-processor investments were ultimately proposed. Several of the groups have, however, invested in fishing vessels that could be used in a variety of fisheries (but probably not pollock). In the 1996-98 allocations, the State reduced the Coastal Villages allocation from 27% to 25%. This action is might be interpreted as an expression of the State's dissatisfaction with the relatively low stream of benefits that Coastal Villages has provided for the residents within its area. Whatever its reasons, this action by the State has probably allayed concerns within CDQ groups that they should invest in catcher-processors in order to increase their allocations.

But ancillary concerns over diverting pollock revenues into catcher-processor investments should not obscure a clear overall conclusion: the CDQ groups have captured very significant rents from their pollock quotas.

Halibut and Sablefish CDQs. The CDQ groups received quota for halibut and sablefish in 1995. Because the halibut is or can be caught by local vessels, it presents a very different political situation for the CDQ groups. While pollock lease revenues were earned from vessel owners from outside Western Alaska, local fishers are potential users of any halibut quota. Consequently, all CDQ groups simply gave the halibut quota to local fishers through local Olympic fisheries.

Sablefish are not a traditional target species for local residents, so they could be more easily treated like pollock by the CDQ groups. However, the sablefish CDQ allocations were very small, and finding a market for these small quotas has presented some problems. Several of the CDQ groups are discussing some kind of joint activity to use their collective sablefish quotas. But sablefish are really inconsequential to the overall CDQ program.

Both economic theory and the initial reports from the 1995 halibut CDQs suggest that the economic effect of halibut CDQs will vary among the groups in relation to the ratio of halibut quota to local population. At one extreme, Atka Fishermen's Association and the Pribilof Islands Fishermen received relatively large quotas that create a kind of local limited entry program that will probably generate significant economic rents. At the other extreme, the small quotas allocated to Bristol Bay and Coastal Villages were little more than administrative nuisances.

The Atka Fishermen's Association received a very large quota (420,000 pounds) in relation to its population of less than 100. APICDA will invest some of its pollock earnings into infrastructure in Atka to support harvest and processing of this halibut resource. The value (after local processing) of this catch will probably be between $600,000 and $800,000 per year, or $6000-$8000 per capita. While direct evidence of economic rents is not available, this allocation essentially creates a local limited entry fishery with limited fishing effort in relation to the resource. Such programs have very frequently generated large economic rents, and this economic stimulation may fundamentally reshape the Atka economy (Townsend 1990).

The Pribilof Islands Fishermen are in a somewhat similar situation. A quota of 350,000 pounds was allocated to communities with a population of about 850. While significant economic rents are almost certain in the short run, the Pribilof Islands probably will have to worry about the effect of overcapitalization of halibut harvesting by local residents in the longer run.

Yukon Delta and Norton Sound have tried to integrate their halibut allocations into their broader economic development plans. Yukon Delta can use its halibut quota to keep its fleet of multi-purpose vessels operating around the

year. Norton Sound uses its IPHC 4D halibut allocation to create an economic opportunity for fishers on the remote island of Savoonga.

The IPHC area 4E quota allocated to Bristol Bay (30,000 pounds) and to Coastal Villages (70,000 pounds) was little more than a management nuisance. Those two CDQ groups had to implement a monitoring program for halibut (because NMFS did not monitor individuals landing under CDQs), and they realized no income from the halibut quotas to fund the monitoring.

Somewhat ironically, the pollock CDQ created essentially a "community ITQ" within an otherwise open access fishery, while the halibut CDQ created a community open access fishery within an otherwise ITQ fishery. For those communities where the resource allocated is large relative to potential fishing effort, there may be some economic benefit even from community-wide open access.

Economic Development Benefits

Having raised very substantial revenues from the lease of pollock CDQ allocations, the CDQ groups have faced the question of how best to use those funds to improve the welfare of local residents. Although there are some common elements across the six CDQ groups, they have pursued fundamentally different approaches to local economic development.

All six groups have encouraged employment of local residents on the catcher-processors. See Table 5 for data on 1994 employment on catcher-processors. Some of this employment is directly attached to the harvest of CDQ quota, but residents of the CDQ communities have also become more active in non-CDQ harvesting as well. APICDA and Central Bering Sea have placed less emphasis on creating jobs on catcher-processors relative to Bristol Bay, Coastal Villages, Norton Sound, and Yukon Delta. Several factors may explain this difference. Most obviously, there are ethnic differences between the Aleuts in the Aleutian-Pribilof areas and the Yup'iks and Inupiats of the other four groups. Economic conditions are somewhat better in the Aleutian-Pribilof area, so the "slime line" jobs on processing vessels are less attractive. There are already major pollock and groundfish activities in Dutch Harbor/Unalaska and in Akutan, so Aleuts are generally familiar with this industry. In particular, they know that "slime line" jobs are widely viewed as so unattractive that processors must bring in foreign workers.

All six groups have used their economic development activities as a carrot to reduce alcohol and drug abuse. Alcohol and drug abuse is widely recognized as an important impediment to improving the lives of residents of Western Alaska. Employment on catcher-processors requires pre-employment testing and a drug-free work environment. Enrollment in training programs has the same requirement. Yukon Delta proposed to fund treatment activities targeted at fishers as part of its 1996-98 CDP.

All six groups use funds generated to support post-secondary education and technical training programs. Five of

the six groups use some of their funds for post-secondary scholarships; Yukon Delta is the exception. Table 6 summarizes the funds used for scholarships by each group. Bristol Bay has also supported a major effort to promote General Equivalency Diplomas (GEDs) in its region.

Beyond the common decisions to pursue employment on catcher-processors and to fund scholarships, the six groups have had very different approaches to economic development. To some extent, these differences reflect differences in local conditions and opportunities. But the differences also reflect some very different ideas about what development strategies and philosophies to pursue.

APICDA invested heavily in port infrastructure in the 1992-95 period. This infrastructure was directed at local needs, such as supporting existing near-shore fleets. In its 1996-98 investment plans, APICDA has indicated that it will shift from infrastructure development to investment in marine-related businesses, such as supplying goods and services to fishing fleets.

Bristol Bay has an explicit strategy of investing 70% of its earnings in the fishing industry, spending 20% on investments in human capital for local residents, and spending 10% on scholarships. Bristol Bay has been very cautious in making investments and most of the 70% investment funds were still held as financial investments in 1995.[5]

Bristol Bay has undertaken three interesting initiatives in local fisher development. After targeting technical training as an important skill development activity, Bristol Bay found that many of its potential trainees lacked basic skills. It therefore developed General Equivalency Diploma (GED) programs that resulted in 325 GEDs in 1994. Bristol Bay has also developed an income-tax assistance program for fishers. The focus of that program is to keep local fishers from falling behind in taxes and thus being forced to sell permits and vessels to cover the tax liability. Finally, Bristol Bay established a local brokerage for state fishing permits. The Bristol Bay brokerage does not limit permit transactions to favor sales to area residents. Rather, the brokerage has adopted the philosophy that better information about the market for permits will benefit area residents and will facilitate programs that assist local residents in permit acquisition and financing.

The Bristol Bay initiatives with respect to state fisheries permits highlight important issues about financing of permits by any of the six CDQ programs. Although Western Alaska is remote, most of its fishing resources are already fully exploited. To increase local resident participation in the small-scale fisheries of greatest interest to area residents, a state or federal permit (or ITQ) must be acquired. In state waters, there are limited entry permits that are specific to regions, species, and gear type. For example, there are permit classes for Bristol Bay salmon trollers and for Norton Sound herring gillnetters. The primary state-regulated species are salmon, herring (for roe), and crab. State permits cannot be used for collateral in

financing by commercial banks or other commercial entities. The Commercial Fisheries and Agriculture Bank and the Department of Commerce and Economic Development can provide financing that uses the permit as collateral (Karpoff 1984).

Public concern in Alaska about effects of redistribution of permits through market transactions has resulted in a series of studies, including Koslow (1979), Langdon (1980), Schelle and Muse (1986). These studies have generally found that transfers of permits to out-of-state owners have been limited, which has allayed a major concern. But these studies have also found that permits have tended to be transferred from rural areas in Alaska to the more urban areas, notably Anchorage.

If this flow of permits out of rural areas is a concern, economic development agencies like the CDQ groups might consider assistance in financing the return of permits to rural areas. But under existing state law, CDQ groups face the same restriction on encumbering permits as banks. A change in state law that would allow CDQ groups to collateralize the permits and also to encumber financed permits with a "local sale only" requirement would seem like a reasonable policy change. CDQ groups are ambivalent, however, about being given the authority to finance permits. Some local officials believe that state permits sell at values that substantially exceed their potential for economic return, and additional low-cost financing would simply add fuel to these inflationary pressures. Karpoff (1984) showed that a state program to assist in the financing of permits had exactly this effect. Moreover, CDQ officials are very reluctant to be placed in a position where they might be forced to foreclose on permits held by local residents. In the small and close-knit communities of Western Alaska, such foreclosures would be very awkward.

The first two investment plans for Central Bering Sea targeted investments in port infrastructure, on the assumption that appropriate infrastructure on the island of St. Paul could attract processing and harvesting-support services for groundfish (including pollock) in the Bering Sea. Central Bering Sea invested in large-scale port development and utility construction, which generated significant employment. The assumption that St. Paul could attract large-scale fishing activity has been viewed somewhat skeptically by others in the industry. The 1996-98 investment plan for Central Bering Sea backs off from this assumption. The State of Alaska has signalled its dissatisfaction with Central Bering Sea activities through two decreases in allocations, from 10% in 1992-93 to 8% in 1994-95 and to 4% in 1996-98.

Coastal Villages committed virtually all of its resources to two joint ventures, the Imarpiqamiut Partnership and Coastal Villages Fishing Corporation. Imarpiqamiut Partnership operates the *Browns Point*, a pollock catcher-processor. Coastal Villages Fishing Corporation (which should not be confused with the parent Coastal Villages Fishing Cooperative) operated the *Lucky Buck* for salmon buying and processing in 1993-94. The right to use the Coastal Villages

pollock quota was transferred to Imarpiqamiut Partnership as the contribution of Coastal Villages to the joint venture. Golden Age (the partner in the joint venture) contributed its financial interest in the *Browns Point*. In retrospect, Coastal Villages seems to have severely underestimated the value of its contribution of quota. Boats similar to the *Browns Point* have been selling for $10 to $15 million. The present value of the Coastal Villages quota in 1992 (the date of the creation of the joint venture) would depend upon the interest rate and the time horizon assumed for CDQ allocations. At an 8% interest rate, a $200 per ton lease value, and a four-year planning horizon (*i.e.*, using only the quota allocations for 1992-93 and 1994-95 which were relatively certain), the Coastal Villages CDQ was worth about $20 million. Using the same interest rate and lease value, but assuming that the Coastal Villages CDQ would continue in perpetuity, would yield a value of nearly $70 million. Moreover, because Coastal Villages chose to become a for-profit corporation, it has incurred and will continue to incur tax liabilities that reduce the resources available for local development activities. (The other five CDQs have avoided taxes on the CDQ lease values, although some CDQ groups have taxable operating subsidiaries for investments.) To date, the benefits received by local residents of Coastal Villages communities have been substantially lower than in other CDQ groups because the combined profitability of the *Browns Point* and the *Luck Buck* operations have been limited. The two major benefits to local residents have been employment opportunities on the *Browns Point* (which created 40 jobs and $177,000 in income in 1994) and approximately $150,000 in scholarships. The future of Coastal Villages rests largely on how profitable the *Browns Point* becomes. The State of Alaska did initiate some changes in the 1996-98 allocations that will diversify Coastal Villages activities somewhat and help Coastal Villages make more local investments in the short run. Coastal Villages also saw its allocation in 1996-98 decrease from 27% to 25%.

Norton Sound has pursued a very mixed strategy towards economic development. Norton Sound acts somewhat like a traditional economic development agency that funds proposals for various economic development projects proposed by its member communities. For example, Norton Sound has invested in local port infrastructure and a processing plant in Nome, in a processing plant in Unalakleet, and in a halibut buying station in Savoonga.

The single most successful CDQ project is probably the pink salmon development project by Norton Sound and its fishing partner, Glacier Fish. Norton Sound is the northernmost CDQ group; its geographic location makes market development for fisheries resources difficult. Norton Sound identified very large underutilized resources of pink salmon (especially the even year runs) in its area, and asked Glacier to assess market development. In 1994, Glacier used a pollock catcher-processor to buy pink salmon from local fishers and process them into "deep-skin blocks". The pink salmon can be

processed on the same automated machines that process pollock into fillets. These blocks can then be used for processing into uniform portions, analogous to the familiar "fish burgers" made from cod and other whitefish. Glacier expects a significant new market with implications for pink resources throughout Alaska from this product. In 1995, both Glacier (with two vessels) and several other companies were in Prince William Sound to process pink salmon into deep-skin blocks.

The odd-year runs of salmon in Norton Sound are too small to provide the volume required for deep-skin block processing on a pollock vessel. To ensure a steady market for local fishers, Glacier and Norton Sound entered into a joint venture to operate a combination longliner/processor vessel, the *F/V Norton Sound*, which will buy and process pink salmon in odd years for roe and for frozen fillets. This project is emblematic of the synergy that supporters of CDQs envisioned from this program. In the 1996-98 allocations, the State of Alaska signalled its endorsement of this approach with an increase in Norton Sound's allocation from 20% to 22%.

Yukon Delta has embarked on an aggressive program of developing small scale fisheries. The traditional fisheries in the Yukon Delta region are salmon and herring, both near-shore fisheries. To develop a distant water fishing tradition is the ambitious goal of the Yukon Delta development strategy. Its best know effort was the construction and operation of eight multipurpose 32' aluminum vessels. Those vessels were designed by Kvichuk Marine Industries (of Seattle). Six vessels were built by Kvichuk, which also provided training and employment in Seattle for one Yukon Delta resident. The materials for the other two vessels were cut in Seattle and shipped to the Alaska Vocational Technical Center in Seward for assembly by students. Yukon Delta also purchased an additional 4 boats. These 12 vessels fish throughout the Bering Sea, including for crab in Norton Sound, for halibut and groundfish off the Aleutian Islands, and for salmon and herring in the Yukon Delta and Norton Sound region.

The six CDQ programs reflect different approaches to economic development. Central Bering Sea and APICDA have emphasized the role of enabling infrastructure investments. Bristol Bay has emphasized the importance of human capital and long-term capital accumulation. Yukon Delta has invested in small-scale "learning by doing" projects. Coastal Villages has invested in a single large project. Norton Sound operates like a traditional economic development agency, working with local interests to identify and develop projects that fit local objectives.

Fisheries Conservation

Somewhat paradoxically, CDQs have very little to do with traditional fisheries management. The primary purpose of the fisheries development quotas is to provide the financial basis for locally-directed economic development in Western Alaska.

All responsibility for pollock management remains with the federal government.

The CDQ groups make three types of decisions that have implications for fisheries management: (1) the enforcement of CDQ allocations, (2) by-catch regulation of fishing partners, and (3) investments in harvesting capacity.

In the initial year of CDQ fishing, the National Marine Fisheries Service became concerned that the fishing partners were attempting to exceed their CDQ allocation by manipulating the observer process (Loefflad and Bearden, 1993). Moreover, the CDQ groups had taken no steps to regulate this activity by their fishing partners. This should not have been a surprise. The fishing partner was paying the CDQ group for a predetermined allocation. If the fishing partner could catch more than the allocation without paying the royalty on the extra fish, it would increase its profits. But the CDQ group could only lease its predetermined allocation. Closer monitoring of a fishing partner would not increase a CDQ group's revenues. NMFS responded by promulgating regulations to require around-the-clock observer coverage, which meant two observers instead of one on each vessel. For political reasons, some CDQ groups voluntarily adopted the two-observer rule in advance of the implementation date of the regulation.

There is an obvious analogy here between CDQs and ITQs. A major challenge for an ITQ program is effective enforcement. Because failure to report landings generates a profit equal to the value of the ITQ not used, there is a strong incentive for fishers to underreport ITQ landings. Aggressive enforcement is required to maintain the integrity of an ITQ program. Exactly the same incentives are created under CDQs.

The halibut/sablefish CDQ turned the responsibility for monitoring CDQ catches over to the local CDQ groups. This monitoring was not an especially popular activity for the CDQ groups. Monitoring was not an activity that meshed well with the existing activities of most of the CDQ groups, and the monitoring techniques tended to be *ad hoc*. However, NMFS seems satisfied with the results of the halibut/sablefish monitoring by CDQ groups.

By-catch and discards have become a very large political issue in Alaska. The focus on by-catch in Alaska is driven both the growing national and international concern over the issue and some special local issues. By-catch of important commercial species, including salmon, halibut, and crab, by the factory processors is often perceived as "foreign" boats reducing the income of local fishers. The shear volume of pollock harvested (1.3 million metric tons) means that even a relatively small percentage of discards of pollock is absolutely a very large volume of fish.

In Western Alaska, salmon by-catches are politically very sensitive. This is especially true in Bristol Bay, which is the site of a very intense salmon fishery. Publicly, several of the CDQ groups have made strong affirmations of their intentions to reduce salmon by-catch by their pollock partners. However, in examining the operating contracts with fishing partners, only two of the five contracts have any

mention of salmon by-catch. (Recall that the sixth group, Coastal Villages, is a joint venture partner in a pollock boat.) Even in those two contracts, the language is essentially "fishing partners should try to reduce by-catch of salmon"; there are no penalties for exceeding any particular standard on by-catches. These contracts would indicate concern over by-catch as a politically sensitive issue rather than by-catch as an economic issue.

Lind and Terry (1995) have examined the by-catch and discard data for vessels that participated in both CDQ and open access pollock fisheries in the 1993 and 1994 seasons. They found that by-catches of crab were higher in open access fisheries, the by-catches of herring were higher in CDQ fisheries, and that by-catches of salmon and halibut were very similar in the two fisheries. They also found that pollock and groundfish discards were lower in CDQ fisheries than in the open access fishery.

The CDQ groups invest not only in harvesting/processing of walleye pollock, but also in harvesting and processing of salmon, herring, halibut, and crab. Although these other fisheries are pursued in remote areas, they are already subject to significant fishing pressure. Virtually all crab and herring stocks are fully exploited. The two most valuable salmon species, sockeye and king, are fully exploited. In more remote areas, runs of the lower value pink and chum salmon are not always fully exploited, because markets for these fish often do not exist.

For the CDQ program, an important economic question is whether CDQ funds will be used to overcapitalize fisheries that are already fully exploited. Bristol Bay has addressed this question directly in its investment principles. Bristol Bay has stated that its CDQ funds will not be used to overcapitalize fisheries in Western Alaska. The unique position of Bristol Bay Economic Development Corporation, whose territory includes the very overcapitalized Bristol Bay salmon fishery, allows it to see clearly the costs of overcapitalization. Unfortunately, the State of Alaska and most of the CDQ groups are not averse to using CDQ funds to fund overcapitalization. The state of Alaska has always chafed at the "foreign" boats from Washington and Oregon that catch a large share of "Alaska's" resources. Using CDQ funds to increase Alaskan participation is perceived by many state officials as a benefit, even if the net effect is overcapitalization.

The CDQ program has some built-in incentives to overcapitalize fisheries. Because the CDQ program is part of a fisheries management plan, a political decision was made to limit investments to fisheries-related activities. Because most Alaskan fisheries are already fully exploited (and subject to state or federal regulation), such investments must either buy out existing capacity or result in overcapitalization. To give these communities the opportunity to use their funds effectively and to minimize negative impacts on fisheries, the CDQ groups probably should be given

wider discretion in investments. This will be a politically thorny issue.

At least one case of competitive over-capitalization has occurred in the small crab fishery in Norton Sound. Yukon Delta and Norton Sound funded competitive overcapitalization by fishers from their respective regions. When Yukon Delta boats began fishing for king crab from Nome, in the center of Norton Sound's area, fishers from the Norton Sound area convinced Norton Sound to fund both gear and processing investments. The State of Alaska has since announced the creation of a limited entry plan for this fishery.

The failure of CDQ groups to pursue fishery management objectives is consistent with the structure of the program, which is focussed on economic development. However, there is a troubling undercurrent to this story. The CDQ groups have made no effort to use their authority directly or indirectly to exercise any management responsibility. Only one group, Bristol Bay, has even addressed the fundamental concern about overcapitalization. The arguments for community-based management assume that as management is devolved to communities with a direct stake in the fishery, communities will find cooperative solutions to fisheries management problems. This argument finds no support in the present circumstances. The boards of these corporations are entirely Native Americans, and many board members really heavily on subsistence fishing. The communities that they represent retain strong traditional components. Yet there is no evidence of any effort to exercise either the direct (but clearly limited) authority available under the CDQ plan or the indirect influence available through participation in state or federal management structures.

Extensions of the CDQ concept

For those interested in the traditional issues of fisheries management, the CDQ experience has been something of a non-event. The CDQ program was not intended to foster local fisheries management, and that result has not arisen spontaneously. The CDQ experience does suggest a model for a "community ITQ". A community quota--whether designated for development or not--might generate the same rents as ITQs, but with distribution of the rents to a broader community. The primary obstacle to adoption of ITQs has been the thorny issue of income distribution, so community ITQs may provide an attractive compromise. But under a community ITQ, the issue of how to distribute the benefits among community members remains. In the extreme case, open access fishing of a community ITQ would be indistinguishable from any other open access fishery.

The Alaskan CDQ experience does offer some important options for management under the Magnuson Fisheries Conservation and Management Act (MFCMA). Although the MFCMA currently does not allow collection of economic rents by the federal government, the Alaskan CDQ approach would allow some

other agency to collect the economic rents. This collection could be accomplished by state or local governments, as well as special districts like CDQs. This seems to be the effect in at least one fishery, the spiny lobster fishery in Florida. The authority to manage the federal portion of the fishery is delegated to the State of Florida, which collects a per trap fee (currently $.75) that could not be collected under a federal management plan.[6]

If a lower level of government or some type of community organization can be assigned the ability to collect some or all of the economic rents, an obvious step would be to require that agency to finance enforcement, administration, and research. It might also use the revenues to finance license buy-backs. ITQs in particular require relatively expensive enforcement activities, and the cost of that enforcement is an obstacle to widespread adoption of ITQs. Creation of a special enforcement organization, with the ability to generate revenues by taxing ITQ holders, would be one way to transfer enforcement costs to ITQ holders and stay within the strictures of the Magnuson Act. (Canada has in fact done exactly this to get around similar restrictions in its legislation. See McCay *et al.* [in press].)

Conclusions

From the narrow economic perspective of traditional fisheries economics, the CDQ program has been both a success and a failure. The pollock CDQ successfully created a community ITQ within an otherwise open access fishery. But in the halibut fishery, CDQ allocations created a community open access fishery within an otherwise ITQ fishery.

But evaluating the CDQ program from the broader perspective of whether the program has been successful at economic development is much more difficult. Most obviously, the program has only been operational for three years, and no economic development program can be fully assessed after that short period. Much of the information required for detailed evaluation of individual programs is non-public because of excessively broad state confidentiality standards. Programs such as Yukon Delta's ambitious effort to develop a distant water fishing culture will be impossible to assess for many years. The breadth of different approaches to economic development embodied in the various community development plans complicates any assessment. There have been obvious successes, as with Norton Sound's pink salmon ventures. There have been some serious concerns, as with the administrative issues surrounding Central Bering Sea and the foresight shown in the Coastal Villages decision to transfer in perpetuity its quota to Imarpiqamiut Partnership.

Overall, the CDQ program is a financially modest effort ($20 million per year) in a geographic area that has seen more failure than success at economic development. In that context, a preliminary assessment of the economic development activities would have to be positive.

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TABLE 1

MEMBER COMMUNITIES OF CDQ GROUPS

Name	Member Communities	
APICDA	Atka	False Pass
	Nelson Lagoon	St. George
	Nikolski	
Bristol Bay	Alekngik	Pilot Point
	Clark's Point	Port Heiden
	Dillingham	South Naknek
	Egegik	Togiak
	Ekuk	Twin Hills
	King Salmon/Savonoski	
	Manokotak	Ugshik
	Naknek	
Central Bering Sea	St. Paul	
Coastal Villages	Cherfornak	Newtok
	Chevak	Nightmute
	Eek	Platinum
	Goodnews Bay	Quinhagak
	Hooper Bay	Scammon Bay
	Kipnuk	Toksook Bay
	Kongiganak	Tuntutuliak
	Kwigillingok	Tununak
	Mekoryuk	
Norton Sound	Brevig Mission	Shaktoolik
	Diomede/Ignaluk	St. Michael
	Elim	Stebbins
	Gambell	Teller
	Golovin	Unalakleet
	Koyuk	Wales
	Nome	White
Mountain	Savoonga	
Yukon Delta	Alakanuk	Kotlik
	Sheldon Point	Emmonak

TABLE 2

POLLOCK FISHING PARTNERS OF CDQ GROUPS

Name	Fishing Partner(s)
APICDA	Trident Seafoods and Starbound Partnership
Bristol Bay	Oceantrawl, Inc. (1992-1995) Arctic Storm, Inc. (1996-1998)
Central Bering Sea	American Seafoods Company, Inc.
Coastal Villages	Golden Age Fisheries
Norton Sound	Glacier Fish Company, Ltd.
Yukon Delta	Golden Alaska Seafoods

TABLE 3

SUMMARY OF CDQ POLLOCK ALLOCATIONS

	Pollock Allocations		
Name	1992-93	1994-95	1996-98
APICDA	18%	18%	16%
Bristol Bay	20%	20%	20%
Central Bering Sea	10%	8%	4%
Coastal Villages	27%	27%	25%
Norton Sound	20%	20%	22%
Yukon Delta	5%	7%	13%
	100%	100%	100%

TABLE 4

SUMMARY OF CDQ HALIBUT AND SABLEFISH ALLOCATIONS

	1995 Halibut Allocations		1995 Sablefish Allocations	
Name	Area	Share	Area	Share
APICDA	--	none	AI	10%
Atka Fishermen's Assn.	4B	100%	--	none
Bristol Bay	4D 4E	23% 30%	AI	25%
Coastal Villages	4D 4E	24% 70%	AI	25%
Norton Sound	4D	20%	AI BS	30% 25%
Pribilof Island	4C	100%	--	none
Yukon Delta	4D	33%	AI BS	10% 75%

TABLE 5

1994 POLLOCK EMPLOYMENT DATA FOR CDQ GROUPS

Name	Processor Vessel Employment (number)
APICDA	5
Bristol Bay	88
Central Bering Sea	26
Coastal Villages	40
Norton Sound	85
Yukon Delta	39

TABLE 6

1994 SCHOLARSHIP AND TRAINING ACTIVITIES BY CDQ GROUPS

	Scholarships		Technical Training
Name	Number	Value	Number
APICDA	15	$30,000	29
Bristol Bay	8	$40,000	111 (325 GEDs)
Central Bering Sea	27	$66,333	43
Coastal Villages	4	$37,548	10
Norton Sound	68	$68,000	53
Yukon Delta	none	--	66

FOOTNOTES

1. Ginter (1995) and Tryon (1993) have previously described the historical evolution of the CDQ program and the details of its implementation. Readers interested in greater detail are referred to those materials.

2. In its initial regulation of the foreign fleet, the Council had set aside 15% of the TAC as a conservation reserve. This 15% reserve was continued under subsequent plans. The 7.5% allocated to CDQs was actually half of the 15% reserve. An additional 7.5% remains as a reserve.

3. A proposal to allow Akutan to qualify as a CDQ community may be recommended to the Council by the State of Alaska in the near future.

4. The situation is complicated by some specific past history. The Pribilof Islands once relied heavily on fur seal harvesting for economic activity. Residents of these islands insist that the federal government promised economic development activity in compensation for the ban on fur seal harvesting. (See Young [1981] for a discussion of the background for this claim.) In its CDPs, Central Bering Sea has repeatedly and pointedly asserted that it is owed large

pollock allocations as compensation for the ban. This attitude has colored the view of Central Bering Sea that its activities ought not to be subject to scrutiny by the state and federal governments. Conversely, the government agencies seem weary of being lectured about owing allocations to a group that seems uncooperative.

5. All of the groups except Coastal Villages sought non-profit status. The State of Alaska required that 40% of CDQ lease revenues for these five non-profit groups be held in reserve until the IRS ruled on the non-profit status. Consequently, these five groups have all had significant reserves until mid-1995, when the non-profit designations were finalized.

6. The spiny lobster case might be distinguished from the Alaskan pollock by the fact that the federal fishery is simply an extension of the state fishery. The pollock fishery is strictly a federal fishery, and the right to allocate the CDQs is still given to the state.