

The Chignik Salmon Cooperative

G. Knapp

Institute of Social and Economic Research

University of Alaska Anchorage

3211 Providence Drive

Anchorage, Alaska 99508, United States of America

Gunnar.Knapp@uaa.alaska.edu

1. INTRODUCTION

The Chignik salmon fishery is a major Alaska sockeye salmon fishery with approximately 100 limited entry permit holders. In January 2002, responding to a proposal from a group of permit holders, the Alaska Board of Fisheries passed regulations that provided for an allocation of part of the Chignik harvest to a voluntary harvesting cooperative (the “Co-op”). The allocation was based on how many permit holders chose to join the Co-op. Other permit holders could harvest the remaining fish in a competitive “independent fishery”, which would receive the remaining allocation of the sockeye harvest.

Over the following four years, from 2002 to 2005, more than three-quarters of Chignik permit holders joined the Co-op. The Co-op hired about 20 members to fish the Co-op’s catch allocation. All Co-op members were paid equal shares of the Co-op’s profits. By greatly reducing the number of vessels participating in the fishery, the Co-op achieved significant cost savings and changed the fishery in many other important ways. The Co-op was highly controversial and was vigorously opposed by a minority of permit holders. The Co-op ended in 2006 after the Alaska Supreme Court ruled that it violated a provision of Alaska law requiring that permit holders operate their own vessels. This paper describes the Co-op’s origins, operations and effects, and provides lessons about the opportunities and challenges of this form of voluntary transition to fisheries self-governance.

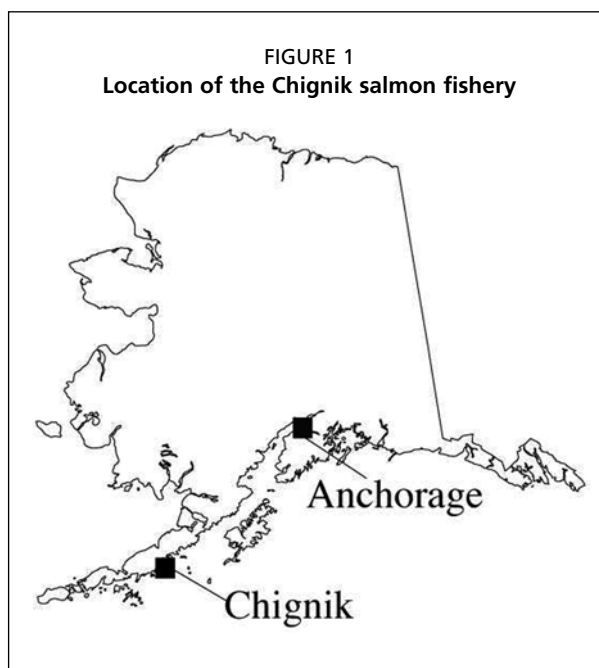
2. FISHERY AND MANAGEMENT HISTORY

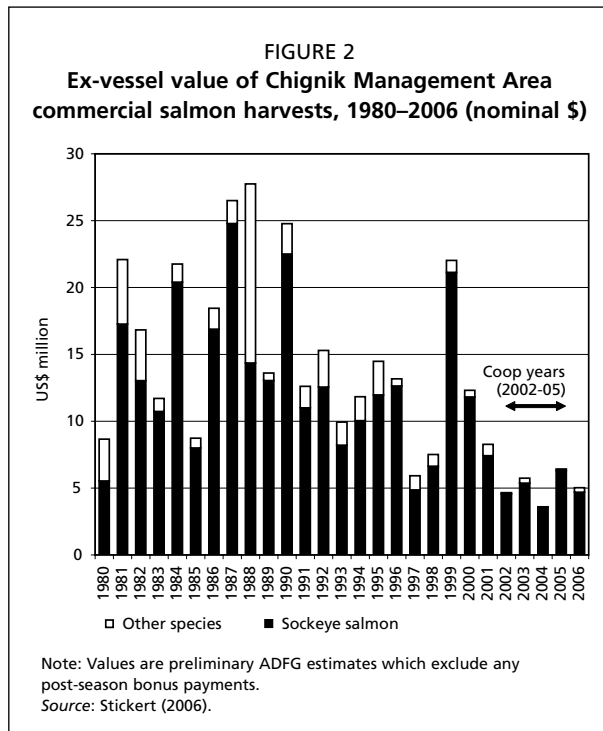
2.1 Description of fishery

The Chignik salmon fishery is a major Alaska salmon fishery located in a remote area of southwestern Alaska, on the south side of the Alaska Peninsula accessible only by boats and small planes. Harvests occur from early June through early September. Fish are harvested using seine gear. Most fish are delivered from fishing boats to two local processors using tender vessels. Most fish are processed into frozen or canned salmon for sale to markets in Japan, Europe and the United States; only a small share is sold fresh.

Between 1990 and 2005, annual harvests in the Chignik salmon fishery averaged 6 900 t with an annual average ex-vessel

FIGURE 1
Location of the Chignik salmon fishery





value of \$11.3 million. Between 1990 and 2005, sockeye salmon (*Oncorhynchus nerka*) accounted for 90 percent of total ex-vessel value in the fishery (Stickert, 2006). Other species of salmon are also harvested, but in smaller volumes and for lower prices. Except where otherwise noted, the discussion in this paper refers to the sockeye salmon fishery only.

Historically, Chignik sockeye harvests have varied widely from year to year, but have commonly been between one and two million fish. After peaking in 1987 and 1988 at more than \$25 million, the ex-vessel value of the Chignik salmon harvest trended downwards to an average of \$5.0 million for the four Co-op years of 2002–05 (Stickert, 2006). In all but one of the Co-op years, ex-vessel value was less than any year of the preceding two decades – without adjusting for inflation. The dramatic decline in value was the combined result of a decline in

catches and a decline in ex-vessel prices. Factors contributing to the decline in prices, which occurred across all Alaska salmon fisheries, included: competition from the growing world supply of farmed salmon; record Alaska sockeye salmon harvests during the early 1990s; a prolonged economic slump in Japan; and stagnant consumer demand for canned sockeye salmon (Knapp, Roheim and Anderson 2007).

2.2 Fishery management

All Chignik sockeye return to the Chignik River, which flows into Chignik Lagoon, a shallow protected bay approximately two miles wide and six miles long, which provides ideal conditions for salmon seining. Historically, the majority of the sockeye have been caught in the lagoon, although some fishing occurred along the coast outside the lagoon, intercepting sockeye returning to the lagoon. As in other Alaska salmon fisheries, Alaska Department of Fish and Game (ADFG) manages the Chignik fishery to achieve seasonal “escapement” goals for the number of sockeye salmon that “escape” the commercial fishery and enter the river to return to two large lakes where they spawn. During the season, managers periodically “open” the fishery for commercial harvesting by the salmon fleet and “close” the fishery to allow more fish to “escape” through the lagoon and into the river. They attempt to schedule openings and closures to keep cumulative escapement as of any given date within a guideline target range for that date.

As with other Alaska salmon fisheries, the Chignik salmon fishery is managed under a limited entry system established in the mid-1970s. There are approximately 100 permits in the fishery, with slight annual variations in the number of permits issued (CFEC, 2007a). Only seine vessels with a permit holder on board may participate in the fishery. A variety of restrictions on vessel size, gear, and participation in other fisheries are intended to promote an owner-operated small-boat fishery (see Photo 1). Costs have increased as permit holders have invested in larger and more powerful boats. For example, between 1990 and 2001, the average horsepower of Chignik boats increased from 392 to 500 (CFEC, 2007b).

Permits were initially distributed for free to individuals with a history of participation in the fishery and are transferable by gift or sale. About 30% of current permit holders



PHOTO 1
Chignik salmon seining

received their permits at no cost in the initial distribution (CFEC 2007d). Because of the historical profitability of the fishery, prices paid for Chignik permits have been the highest of any Alaska salmon fishery. Chignik permit prices reached a peak of \$417 000 in 1990 but then declined dramatically as ex-vessel prices fell to \$186 000 in 2001 (CFEC 2007a).

For permit holders who have bought into the fishery, the cost of the permit is the highest cost of participation. In addition, permit holders pay an annual permit fee which has risen gradually over time to \$600 in 2007 (CFEC 2007e). In 2007, annual vessel license fees were \$60, and crewmembers paid annual crewmember license fees of \$60 (\$175 for non-Alaska residents) (CFEC 2007e; ADFG 2007a).

In the competitive fishery prior to the Co-op, there were wide differences among Chignik permit holders in annual gross earnings. For example, in 2001, the highest-earning nine permit holders had average gross earnings of \$227,000, while the lowest-earning forty-two permit-holders had average gross earnings of \$50,000 (CFEC, 2007c). As earnings declined and costs increased, participation in the Chignik fishery was becoming unprofitable for some permit holders, as indicated by the fact that some permits were not fished by the late 1990s. Almost all permits were fished between 1980 and 1996. In contrast, 15 permits were not fished in 1998, nine permits were not fished in 1999 and six permits were not fished in 2001 (CFEC, 2007a).

3. ESTABLISHMENT OF THE CO-OP

As the value of the Chignik salmon fishery declined during the 1990s, interest grew among permit holders in forming a harvesting cooperative. Experience gained during price strikes, when a few boats fished on behalf of the fleet, had shown that a small number of boats could catch large volumes of sockeye salmon in Chignik Lagoon. Discussion of forming a cooperative was facilitated by the Chignik Seiners Association (CSA), a permit-holder lobbying and price-bargaining organization (Quimby and Owen, 1992; Anderson, 1994; McCallum, 1997; Ross, 2002a).

Initially, permit holders envisioned a cooperative formed by contractual agreement among permit holders, without any involvement by fishery managers. However, partly because of wide variation in investment and catches, they were not able to reach agreement over how such a cooperative would share profits. In general, highliners (those who caught the most fish) argued for distribution based on “historical shares” of the catch, while others argued for “equal shares.”

To overcome this impasse, the CSA executive director suggested the concept of allocating part of the harvest to a voluntary cooperative that would share profits equally, with the allocation based on how many permit holders chose to join. The remaining “independent” permit holders would fish a separate allocation competitively in separate openings. A proposal incorporating this concept was considered by the Alaska Board of Fisheries, a seven-member citizen board that sets policy for Alaska

fisheries, at its January 2002 meeting. Prior to the meeting, 42 CSA members voted to support the proposal, with 22 opposing and 10 abstaining (Ross 2002a). In heated public testimony before the Board, supporters argued: that a cooperative was urgently needed to address an economic crisis in the fishery; that a co-op would dramatically lower costs and improve quality; that the proposed “equal shares” allocation to a co-op was both fair and legally required; and that the Board had the authority to make such an allocation. Opponents argued that the proposal was unfair, not necessary and beyond the authority of the Board.

The Board unanimously voted to adopt an amended version of the proposal, which allocated the Co-op only 0.90 percent of the catch a member, rather than 1.00 percent as originally proposed (except that the allocation would increase to 1.00 percent per member if 85 or more permit holders joined). In subsequent yearly meetings, the Board reviewed experience with the Co-op and rejected proposals to end it or to change it significantly.

4. OPERATIONS OF THE CO-OP

Following the January Board meeting, Co-op organizers formed a non-profit corporation, the Chignik Seafood Producer's Alliance (CSPA) to apply for a co-op permit under regulations established to implement the allocation. By the 15 April deadline, 77 permit holders had joined the Co-op, which thus qualified for an allocation of 69.7 percent of the 2002 catch (Table 1). The number of members stayed the same in 2003, increased to 87 in 2004 and fell to 76 in 2005.

The CSPA was governed by a nine-member Board of Directors, elected for staggered three-year terms, with at least one member from each of the five Chignik-area villages. Three Board members did most of the administrative, marketing and fleet management work for the Co-op and were later paid “bonuses” of between \$10 000 and \$16 000 each for a total of \$42 000 in 2002. In 2003, total bonuses increased to \$71 000 as the CSPA recognized that it could not rely on voluntary work by Board members to the extent that it had initially.

The CSPA bylaws established procedures for contracting with members to harvest and tender salmon for the Co-op, with preference given for knowledge and experience fishing Chignik Lagoon, ability to work with other harvesters, condition of vessel and gear, residence in the Chignik area and willingness to hire local crew, among other factors. Of 44 members who applied to fish for the Co-op in 2002, 18 were hired as harvesters, while others were hired to operate their boats as tender vessels for the Co-op. Harvesters that fished all season were paid \$47 000, in addition to their regular

TABLE 1
Co-op and independent fleet allocations

		2002	2003	2004	2005
Allocation formula if total Co-op members is:	50 or fewer	No co-op allocation			
	51-84	0.90% per member*			
	85 or more	1.00% per member**			
Number of permits holders	Co-op	77	77	87	76
	Independent	22	24	13	23
	Total	99	101	100	99
Allocation of sockeye harvest	Co-op	69.3%	69.3%	87.0%	68.4%
	Independent	30.7%	30.7%	13.0%	31.6%
Allocation per permit	Co-op	0.90%	0.90%	1.00%	0.90%
	Independent	1.40%	1.28%	1.00%	1.37%

Note: Table excludes one independent permit holder who did not fish in 2002.

*For 2004 and 2005, the formula was 0.95% per co-op member if the number of members was between 80 and 84.

**The table assumes 100 permit holders. Technically the allocation was “one prorated share” per member if the Co-op had 85 or more members.

Source: Bouwens, 2005; CFEC, 2007a.

TABLE 2

Chignik Salmon Producers Association revenues, expenses and dividends: 2002–2004

		2002	2003	2004
Sockeye harvest volume (pounds)		4 969 261	4 873 914	3 873 448
Number of CSPA members		77	77	87
Total	After-tax revenues	\$4 070 519	\$4 303 586	\$3 191 874
	Harvesting	\$971 370	\$1 158 717	\$1 079 023
	Tendering	\$419 825	\$618 538	\$515 312
	All other expenses	\$523 324	\$381 882	\$292 540
	Dividends	\$2 156 000	\$2 144 450	\$1 305 000
Per sockeye pound	After-tax revenues	\$0.82	\$0.88	\$0.82
	Harvesting	\$0.20	\$0.24	\$0.28
	Tendering	\$0.08	\$0.13	\$0.13
	All other expenses	\$0.11	\$0.08	\$0.08
	Dividends	\$0.43	\$0.44	\$0.34
Per CSPA member	After-tax revenues	\$52 864	\$55 891	\$36 688
	Harvesting	\$12 615	\$15 048	\$12 403
	Tendering	\$5 452	\$8 033	\$5 923
	All other expenses	\$6 796	\$4 960	\$3 363
	Dividends	\$28 000	\$27 850	\$15 000

Source: Author's estimates based on CSPA Financial Reports and ADFG harvest data. Note that a small share of revenues (less than 2%) were from species other than sockeye. 2004 revenue and dividends include projected \$261 000 in post-season adjustments over and above amounts reported in financial statement.

Co-op share. Harvesters' and tenders' fuel and insurance were paid by the CSPA, while harvesters were responsible for paying for their crew, groceries, maintenance and repairs (Kopun, 2002). By the 2004 season, full-season contracts provided for payments of \$60 000 for harvesters and \$51 875 for tenders, with additional bonus payments based on the size of the CSPA patronage dividend (CSPA, 2004a).

Following each season, after payment of harvester and tender contracts and other expenses, the remaining revenues were distributed to Co-op members on an equal share basis. Table 2 provides an overview of CSPA revenues, expenses and dividends for the years 2002–2004. In 2002 and 2003 – which had similar catches, revenues and Co-op membership – about half of CSPA revenues were distributed as dividends of about \$28 000 a member. In 2004, although more permit holders joined the Co-op and the Co-op's allocation increased, the Co-op's sockeye harvests fell by 21 percent because of a 29 percent decline in the total sockeye harvest. CSPA revenues fell more sharply than costs, causing the annual dividend to decline to \$15 000 a member.

5. EFFECTS OF THE CHIGNIK CO-OP

5.1 Overview

The Chignik Co-op had wide-ranging effects on the Chignik salmon fishery, which were more extensive and complex than can be discussed in detail here. Below we briefly discuss selected effects of the Co-op. Note that our ability to quantify these effects is limited both by lack of data and also by the fact that we do not know how the Chignik fishery might have changed in the absence of a co-op. Note also that during the Co-op years (2002–2005), salmon runs were low and market conditions for sockeye salmon were depressed. Under different run and market conditions, different numbers of permit holders might have joined the Co-op and fishing by both the Co-op and the independent fleets might have been different.

5.2 Harvesting costs

The Co-op significantly reduced harvesting costs in the Chignik fishery by greatly reducing the number of boats participating in the fishery. Between 1980 and 2001, the

lowest number of permits fished was 85 (in 1998). In all but three of these years, 98 or more permits were fished. In contrast, during the first three Co-op years, a total of 41, 43 and 32 permits were fished—of which 19 were Co-op permits and the remainder were independent permits. The reduction in the number of boat-days fished was even greater, because at any given time only the Co-op boats or the independent boats were fishing.

As an example of the change in harvesting efficiency, during the first two Co-op years, the Co-op fleet used an average of 16 boats to catch daily volumes of between 100 000 and 150 000 pounds of sockeye in Chignik Lagoon during June and July. The independent fleet used an average of 17 boats to catch daily volumes in this range. In contrast, in 1997 and 1998 (when total season catches were similar to 2002 and 2003), the competitive fishery used an average of 46 boats to catch similar daily volumes.

The Co-op's fleet manager described the dramatic change in the fishery as follows (Ross, 2002b): "(U)nder former fishery circumstances, with more than 70 boats fishing the Lagoon, there was always someone waiting to take every jumper that showed its face. . . Now, instead of making four or five sets during the flood for 200 to 300 a haul, [a Co-op harvester] could wait till the Lagoon drained out. At low tide, [a channel in the lagoon] became a slow, meandering river of concentrated sockeye. And now, fishing for the entire co-op, he could make one giant drag for 3 000 to 5 000 fish."

Estimating total cost savings attributable to the Co-op is difficult because of lack of cost data for years prior to the Co-op or for the independent fishery. We also do not know how many boats might have fished had there not been a Co-op. However, rough estimates, shown in Table 3, suggest that the Co-op may have reduced costs in the Chignik fishery by two-fifths or more of the total value of the fishery – depending on the year and which costs are included. Major cost savings were for insurance (an annual average cost of about \$8 000 a boat), fuel (about \$5000 a boat) and vessel repair and maintenance (about \$15 000 a boat) (McDowell Group, 2002). Estimating savings for crew (historically 30 percent of net value after deducting costs of taxes, fuel and groceries) is more difficult because data are not available for crew payments during the Co-op years. These estimates are only for cost savings for boats that did not fish during the co-op years. They do not address how costs may have changed for the boats that did fish (for which increased costs of catching more fish may have been offset in part by fishing fewer days).

Assuming an average of three crew a vessel, the Co-op likely reduced the number of crew jobs in the Chignik fishery by between 130 and 150. Whether the reduction in crew costs should be considered a benefit was a subject of dispute among Chignik permit holders. Some argued that the Co-op cost local youth their only employment

TABLE 3
Rough estimates of the potential magnitude of cost savings attributable to the Chignik Co-op

		2002	2003	2004
Fishery ex-vessel value (\$000)		\$4 655	\$5 738	\$3 596
Assumed number of boats which would have fished a competitive fishery		85	85	85
Number of boats which fished for the Co-op		19	19	19
Number of Co-op boats which fished		22	24	13
Reduction in boats attributable to Co-op		44	42	53
% reduction in boats attributable to Co-op		52%	49%	62%
Cost savings (\$000)	Insurance, maintenance & fuel	\$1 232	\$1 176	\$1 484
	Crew and groceries	\$920	\$1 118	\$750
Cost savings as % of ex-vessel value	Insurance, maintenance & fuel	26%	20%	41%
	Crew and groceries	20%	19%	21%

Note: Assumes average costs of \$28,000 per boat for insurance, maintenance and fuel and average cost of \$3500 a boat for groceries. Crew cost savings estimates assume that crew would have been paid a crew share of 30% of ex-vessel value net of 6% fish taxes in a competitive fishery, and that the decline in crew costs during the co-op years would have been proportional to the decline in vessels fishing so that that crew would not have been paid more for catching more fish.

opportunities, while others argued that local crew were hard to find and the lost jobs would have held by non-local residents.

5.3 Distribution of net income

By reducing costs, the Chignik Co-op substantially increased net income (revenues minus costs) from the Chignik salmon fishery. This increase in net income was not distributed equally: some permit holders' net income clearly increased; others' incomes may have decreased.

One indicator that permit holders were affected differently by the Co-op is provided by the responses of 88 Chignik permit holders to a University of Alaska Anchorage survey conducted after the 2002 season. Asked to describe their overall feelings about the Co-op and the change in management, 50 percent were "very positive," 20 percent were "somewhat positive," 11 percent were "mixed," and 15 percent were "very negative." In general, Co-op members reported that they had supported the Co-op, that it had made them better off and that they had positive feelings about the Co-op. Independent permit holders responded that they had opposed the Co-op, that it had made them worse off and that they had negative feelings about the management change (Knapp *et al.*, 2003).

The permit holders who most clearly benefited from the Co-op were those who would not have fished – and thus received no income--had the fishery remained competitive. It is likely that this number would have been comparable to the 15 permit holders who did not fish in 1998, given the low prices and catches during the four Co-op years. Assuming that these 15 permit holders received the 2002 Co-op dividend of \$28 000, the Co-op gave \$420 000 – or 9 percent of the ex-vessel value of the 2002 fishery, to permit holders who would have received no income from a competitive fishery.

Another group who clearly benefited were those who would have fished but who would have made little profit – or lost money. Assuming the same catch distribution as in 1998 (CFEC, 2007c) and lower-range costs as estimated by McDowell (2002), it is likely that most of the 36 lowest-earning permit holders would have been lucky to break even had they fished. Assuming that most of these permit holders joined the Co-op, they were clearly better off from the \$28 000 Co-op dividend in 2002 than they would have been from fishing.

Insufficient data are available on the distribution of earnings and costs to reliably estimate how net incomes of the remaining permit holders – those who would have fished a competitive fishery and made money doing so – were affected by the Co-op. For those who joined the Co-op, the answer depends on what their earnings and costs would have been in a competitive fishery, as well as whether or not they fished or tendered for the Co-op and how their costs compared with the Co-op's payments to harvesters and crew. The fact that most Co-op members supported the Co-op suggests that most thought they were better off with the Co-op.

How the Co-op might have affected independent permit holders depends on what their earnings and costs would have been in a competitive fishery. On the assumption that permit holders with historically higher catches were less likely to join the Co-op, the Board of Fisheries had allocated a proportionally greater share of the Chignik harvest to the independent fleet than to the Co-op. An analysis prepared for the Board of Fisheries after the 2002 season found that while independent permit holders' average historical catch shares were higher than average shares for Co-op members, they were not on average higher than the 2002 average independent fleet allocation of 1.40 percent (CFEC, 2002). The Board interpreted this information as an indication that independent harvesters, as a group, were not significantly harmed by the Co-op. However, individual independent harvesters may have been affected in different ways.

The average allocation per independent permit holder was affected by how many permit holders joined the Co-op (Table 1). The allocation declined from 1.40 percent

in 2002 to 1.28 percent in 2003 and 1.00 percent in 2004 and then rose to 1.37 percent in 2005. It seems likely that average independent fleet allocations were lower than their historical averages in 2003 and, in particular, in 2004.

Independent permit holders were affected in several ways by the fact that they fished far fewer days than they had during the competitive fishery. Fishing fewer days likely lowered costs. However, financial risks were higher, because an engine breakdown or a bad choice about where to fish on a given day could cost a vessel a much greater relative share of its annual catch. Shorter fishery openings, as well as changes in tendering services, may have negatively affected the catch shares of harvesters who had traditionally fished outside the lagoon (as discussed below).

Clearly, the Co-op changed the relative distribution of benefits in favour of historically less successful harvesters. This effect was perceived in widely different ways by harvesters. To Co-op supporters, it represented an opportunity for permit holders who had participated in the fishery for many years to continue to benefit from the fishery despite the downturn in catches and prices – rather than losing all of the return on their investment in boats and permits. As one permit holder put it, “I invested my whole life in fishing (50 years). I’m 58 years old. I love to fish but not to slowly die. . . I have tried very hard to stay fishing and make my crew good money to endure the long hours and weather that we fish in. But they don’t come back to fish with me any more. God bless this Co-op” (Knapp *et al.*, 2003).

In contrast, to its opponents, the Co-op redistributed income away from harvesters able and willing to work for it to those not skilled or hard-working enough to earn it for themselves. As another permit holder put it: “This Co-op is something of a welfare program for the people who have a permit but who haven’t fished. They get 9 percent of the total run. Most of those are poor harvesters or they don’t really fish their permit” (Knapp *et al.*, 2003).

5.4 Distribution of fishing effort

The Co-op changed not only who caught the salmon, but also where the salmon were caught, when they were caught and how they were caught, both for the Co-op fleet and also for the independent fleet. The share of Chignik sockeye salmon caught in Chignik Lagoon (rather than outside) increased from an average of 62 percent in the decade prior to the Co-op to 94 percent during the Co-op years. For the Co-op, this change reflected an effort to reduce harvesting costs and to improve quality by reducing tendering time (Ross, 2002a). For independent permit holders, many of whom had traditionally fished outside the lagoon, the change resulted from shorter times for fishery openings – allowing less time to search for fish, as well as a reduction by processors in tendering services outside the lagoon.

5.5 Innovation

The Co-op brought about numerous innovations in the Chignik salmon fishery. To minimize handling damage, the Co-op brailed fish directly from harvester vessels’ purse seines into tender vessels, resulting in significantly improved quality of the fish delivered to processing plants (Ross, 2002a; Norquest, 2002). The Co-op invested in and experimented with gear for transporting fish and holding fish live, adapting technology used by salmon farmers (Anderson *et al.*, 2003). The Co-op sought and received authorization from the Board of Fisheries to place fixed leads on both sides of the Chignik River where it enters Chignik Lagoon, which reduced fishing costs by channelling returning salmon towards a narrow opening between the leads.

5.6 Fish processors

With control over almost 70 percent of the Chignik harvest, the Chignik Co-op had much greater market power than Chignik harvesters had previously held. This market

power dramatically changed the relationship between processors and harvesters. There were two salmon processing plants in the Chignik area, owned by Norquest Seafoods and Trident Seafoods, major Alaska fish processing companies. Historically, each of these plants had purchased approximately half of the total Chignik salmon catch. The relationships between the Co-op and these two companies evolved in very different ways.

The Co-op sold almost all its fish to Norquest and worked progressively more closely with Norquest over the four Co-op years. The relationship included pre-season contracts specifying advance prices, a revenue-sharing formula and quality standards for fish (CSPA, 2004a). In contrast, the Co-op and Trident could not resolve differences over prices and Trident's desire to be guaranteed a share of the Co-op's catch and the Co-op sold almost no fish to Trident. Accusations were traded in the press and Trident actively supported political efforts to end the Co-op. After operating its plant in 2002 and 2003 by processing fish caught by independent harvesters, Trident closed its Chignik plant (Bundrant, 2003; Bundrant, 2004; Ross, 2004).

5.7 Fishery management

Prior to the Coop, the only tool available to Chignik fisheries managers to achieve escapement goals was to "turn on" or "turn off" fishing by a fleet of 100 salmon seiners. This on-off fishing pattern resulted in sequential "pulses" of escapement into the river and of fish deliveries to processors. Managers faced a challenging task. They did not know how many fish would return on any given day, how many would return during the balance of the season, nor how many fish the fleet would catch if allowed to fish. Allowing too long an opening and catching too many fish by any given date risked not achieving the season escapement goal, especially if the later part of the run was weak. Keeping the fishery closed for too long risked "over-escapement" and significant lost economic opportunity for harvesters and processors, as well as potential harm to future sockeye runs if too many fish spawned in the lakes.

The Co-op added the additional challenge of keeping cumulative catch shares of two separate fleets at or close to those specified by the allocation formula. However, the task of management was simplified by the fact that both fleets were smaller. More importantly, the Co-op fleet – which had by far the larger allocation – was willing and able to limit catches during any particular time period to specific numbers of fish requested by managers. This made it possible for managers to allow the Co-op to fish continuously at lower catch rates for longer openings, reducing pulses in both harvests and escapement and allowing for more efficient utilization of processing capacity (Pappas, 2003).

However, the change in the management system also raised a new concern for managers. Prior to the Co-op, catches of fish outside the lagoon had provided an early indicator of the run strength. With the concentration of fishing effort inside the lagoon, managers and harvesters would have less advance notice if very large volumes of salmon were to return within a short period of time (Pappas, 2003).

6. LEGAL CHALLENGES TO THE CO-OP

The Chignik Co-op raised numerous legal and constitutional issues over the authority of the Board of Fisheries to allocate to a co-op and the consistency of the Co-op with the Alaska Limited Entry Act. In October 2002, after the first Co-op season, an Alaska Superior Court upheld the Co-op, rejecting a challenge by two Chignik permit holders. However, in March 2005, after the third Co-op season, the Alaska Supreme Court reversed the Superior Court ruling, holding that the co-op regulation was fundamentally at odds with the Limited Entry Act's requirement that permit holders operate their own boats:

"Participation by the individual is inherent in the limited entry permit system. The Chignik cooperative fishery scheme is fundamentally at odds with this premise because

it allows people who are not actually fishing to benefit from the fishery resource... The co-op regulation...transforms the limited entry permit...into a mere ownership share in a cooperative organization...Before this regulatory scheme accomplishes such radical departure from the historical model of limited entry fisheries in Alaska and the spirit of the Limited Entry Act...the legislature must first authorize the board to approve cooperative salmon fisheries.”

Justice Carpeneti strongly dissented, arguing that the Co-op advanced the Limited Entry Act’s key goal of “economic health and stability of the commercial fishery” and lamented that “the Opinion prefers a wasteful state of affairs in which only a few fishers do better than break even and the cost of producing an inferior product is unnecessarily high” (Alaska Supreme Court, 2005).

At an emergency meeting in May 2005, the Alaska Board of Fisheries attempted to address the Court’s concern by adopting a requirement that Co-op members be on board Co-op harvesting vessels (not necessarily their own) for at least ten fish deliveries (Tkacz, 2005). Although the Court permitted the Co-op to operate a fourth season while it considered this change, in February 2006 it ruled that the Co-op was still fundamentally at odds with the Limited Entry Act, ending the Co-op (Alaska Supreme Court, 2006).

As the Court noted, the Alaska legislature has the authority to amend the Limited Entry Act to allow cooperative fisheries. However, at the time of writing, the legislature has not done so. Thus, the ultimate fate of the Co-op might be attributed not to any fundamental legal problem but rather to lack of political support.

After four years of not fishing, many Chignik permit holders faced substantial repair and maintenance costs to prepare their boats, seines and skiffs for fishing. With the prospect of continued low catches and prices, only 48 of 96 eligible permit holders fished the 2006 fishery (Stichert 2006) and a similar number fished the 2007 season (ADFG, 2007b). The number of vessels participating in the Chignik fishery increased only slightly after the Co-op ended, but the distribution of benefits from the fishery changed dramatically.

7. LESSONS FROM THE CHIGNIK CO-OP

7.1 General perspective

What lessons about fisheries self-governance may be learned from the Chignik Co-op? Below we suggest two broad types of lessons. First, the Co-op provides an example of the rapid, dramatic and far-reaching effects that self-governance can have. Second, the Co-op provides an example of a viable method by which harvesters and government can work together to achieve self-governance through an allocation to a voluntary co-op, as well as illustrating broader challenges of achieving self-governance.

7.2 Effects of fisheries self-governance

- i. *Fisheries self-governance can bring dramatic economic benefits.* The Co-op immediately and dramatically reduced costs of fuel, insurance, vessel maintenance and labour in the Chignik salmon fishery. While the total value of the fishery was the lowest in decades, most permit holders made money.
- ii. *Fisheries self-governance can improve resource management.* The Co-op made it possible for fishery managers to work with harvesters as a group to fine-tune fishing to achieve daily escapement goals much more precisely.
- iii. *Fisheries self-governance encourages innovation.* The Co-op brought about an immediate and continuing search for ways to reduce costs and to improve quality and value.
- iv. *Fisheries self-governance increases harvesters’ market power.* The Co-op exercised its power to deliver exclusively to one of two local processors. For both processors, the Co-op posed significant new challenges. One was

- able to work with the Co-op and take advantage of new opportunities that it created. The other was unable to work with the Co-op and experienced significant economic losses. Over time, the Co-op brought greater integration of harvesting and processing, more effective marketing and higher value.
- v. *Fisheries self-governance imposes new administrative costs.* While fisheries self-governance may greatly reduce fishing costs, it also adds new costs of administration. Over time, the CSPA created paid positions for managing the fleet and administering the CSPA and also had to pay new costs for accounting and legal services and office expenses.
 - vi. *Fisheries self-governance has more far-reaching effects than most people imagine or expect.* Most discussion prior to the Co-op focused on potential cost savings. There was relatively little anticipation of how the Co-op would affect resource management, innovation and markets. Even less anticipated were changes in tendering services, harvesting of sockeye outside the lagoon and harvesting of species other than sockeye.
 - vii. *Fisheries self-governance affects different people in different ways.* The effects of the Co-op differed depending on how successful permit holders were in the competitive fishery, whether or not they joined the Co-op and whether they were hired by the co-op for harvesting, tendering or administrative positions. Effects also differed depending upon permit holders' opportunity costs. For some, not fishing meant an opportunity to earn income in other jobs. For others, the effect of not fishing may have been summarized by a local woman who observed, "The problem with the Co-op is that when our men aren't fishing they're drinking."
 - viii. *Fisheries self-governance selects for different skills.* Success in the Chignik competitive fishery called for knowledge of how to find fish, before other harvesters found them. Success in the Chignik Co-op required working with other harvesters, devising new ways of catching and delivering fish and working with local processors and new markets to realize higher value. By favouring a different set of skills, fisheries self-governance may over time change who participates in fisheries and the character of fishing communities.
 - ix. *Fisheries self-governance may be divisive.* Because fisheries self-management may bring dramatic change and may affect people in different ways, it may evoke particularly strong support or opposition. Both supporters and opponents regretted that the Co-op divided Chignik permit holders, communities and even families.

7.3 Achieving fisheries self-governance

- i. *An allocation to a voluntary self-governance organization can encourage fisheries self-governance, even with large numbers of participants.* Achieving self-governance without government intervention in a competitive fishery requires agreement among all (or nearly all) persons with the right to participate in the fishery. It is difficult to achieve self-governance in fisheries with large numbers of participants without government intervention. By allocating a share of the fishery to like-minded groups, government can empower a subset of participants to establish self-governance. The allocation need not be limited to a single self-governance organization; multiple sub-groups may be created with different approaches to self-governance.
- ii. *Allocating to a self-governance organization is much simpler than creating individual fishing quotas.* The Chignik Co-op began fishing less than six months after the Board of Fisheries approved the allocation. There was no need to calculate individual quota allocations or to devise a method of recording individual catches or enforcing individual quotas.

- iii. *Sequential fishing can be a relatively simple and efficient way of allocating to a self-governance organization.* In the Chignik fishery, sequential fishing was relatively easy to enforce. It was not necessary to exactly balance catches among the Co-op and independent fleets in any given fishing opportunity. Note, however, that sequential fishing limits the number of separate allocations that are practical to at most a few and introduces inefficiencies by requiring one group to wait while the other fishes.
- iv. *Deriving a formula for allocating to a voluntary self-governance organization is not easy.* Legal constraints aside, it is impossible to devise a “fair” allocation formula which will satisfy everyone, given that self-governance affects different people in different ways.
- v. *An “equal-shares” allocation formula between a self-governance group and a residual open access fishery can create difficult choices for fishers.* This is because the relative benefits of fishing competitively depend on which other harvesters also choose to fish competitively. Thus while “equal shares” is easier for managers, it is more complex for harvesters – questions of fairness aside.
- vi. *Separate allocations divide harvesters.* Treating two groups differently may result in neither group feeling satisfied. Both Co-op and independent harvesters argued that they were treated unfairly by the allocation formula and other aspects of the Co-op. Giving permit holders an option to choose how they would fish, which was intended to reduce controversy, may in the end have aggravated it.
- vii. *The processing industry has a major stake in whether and how fisheries self-governance arises – and may support or oppose it.* The two Chignik processors were affected in very different ways by the Co-op. One was significantly harmed and helped to support the legal effort that eventually brought an end to the Co-op.
- viii. *Crisis spurs change.* The Chignik Co-op made economic sense for decades before it was implemented. It was only implemented because an economic crisis created a political consensus – among Board of Fishery members and most Chignik permit holders – that change was essential. More generally, fisheries self-governance may be easier to achieve when times are bad than when times are good.
- ix. *Latent (unfished) permits add to the political challenge of achieving fisheries self-governance.* The more latent permits, the more the benefits of self-governance may be diluted by sharing them with former non-participants. Note that the greater the economic crisis in a fishery, the more permits that are likely to be latent. Thus, while economic crisis spurs change, it may also hinder change to the extent that it increases this latent permit problem.
- x. *Leadership and hard work are important for achieving fisheries self-governance.* The establishment of the Co-op required vision and hard, effective work on the part of the Co-op organizers to formulate the co-op proposal to bring the proposal before the Board of Fisheries, to incorporate the CSPA, to elect officers and to organize the Co-op’s fishing, tendering and marketing.
- xi. *Political skill is important for achieving fisheries self-governance when government action is required.* That the Board of Fisheries approved the Chignik Co-op but approved no significant changes in the management of other Alaska salmon fisheries reflects in part the political skill of the Co-op organizers, who understood the Board process and worked hard and effectively to make their case.
- xii. *The more constrained the nature of the rights that participants have to a fishery, the greater the challenge to achieving fishery self-governance.* Only Chignik permit holders had the right to participate in the Chignik salmon fishery. But

according to the Alaska Supreme Court's interpretation of the Limited Entry Act, that right was restricted to fishing a permit in a competitive fishery and could not be the basis for membership in a co-op receiving an allocation from the total catch.

xiii. Law trumps economics, harvesters and managers. The fate of the Chignik Co-op serves as a reminder that, whatever the economic logic may be and whatever harvesters and managers may want, ultimately the law defines and limits the extent to which fisheries self-governance may arise. Nor are the legal limits to fisheries self-governance necessarily clear or predictable. Neither the opinions of legal advisors to the Alaska Board of Fisheries nor an Alaska judge correctly predicted the ultimate Alaska Supreme Court ruling that ended the Chignik Co-op.

8. LITERATURE CITED

- Alaska Department of Fish and Game (ADFG).** 2007a. Alaska Department of Fish and Game, Division of Commercial Fisheries website. <www.cf.adfg.state.ak.us>
- Alaska Department of Fish and Game (ADFG).** 2007b. In-Season Daily Catch Reports for the Chignik Salmon Fishery.
- Alaska Supreme Court.** 2005. *Decision in Michael Grunert v. State of Alaska and Chignik Seiners Association, Inc.* Supreme Court No. S-10841, Opinion No. 5880, March 17, 2005.
- Alaska Supreme Court.** 2006. *Decision in State of Alaska, Alaska Board of Fisheries, and Alaska Department of Fish and Game v. Michael Grunert et al.* Supreme Court Nos. S-11951/11991, February 9, 2006.
- Anderson, A.** 1994. Letter to Chignik Permit Holders. Unpublished. January 31, 1994.
- Anderson, G., Ross, J. Rowland, R. & Hinderer, W.** 2003. Trip report of a delegation of Chignik Co-op members to British Columbia to observe salmon farming operations. Unpublished. February 15, 2003.
- Bundrant, C.** 2003. Chignik deserves better. Letter to *Alaska Fisherman's Journal* December 2003.
- Bundrant, C.** 2004. Letter to Chignik Fishermen's United, Village of Chignik, Trident Seafood Employees in Chignik, and Affected Vendors and Suppliers regarding closure of Trident Chignik plant. January 30, 2004.
- Chignik Seafood Processors Association (CSPA).** 2004a. *Agreement for Services of Independent Contractor for Operation 2004 Chignik Salmon Harvest and Agreement for Services of Independent Contractor for Operation 2004 Chignik Salmon Tendering.*
- Chignik Seafood Producers Association (CSPA).** 2004b. *2004 Chignik Salmon Sale and Purchase Agreement.* Contract between Chignik Seafood Producers Association and Norquest Seafoods, Inc.
- Commercial Fisheries Entry Commission (CFEC).** 2007a. Basic Information Tables. Summary data tables for Alaska salmon fisheries. <www.cfec.state.ak.us>.
- Commercial Fisheries Entry Commission (CFEC).** 2007b. Permit and Vessel Databases. <www.cfec.state.ak.us>.
- Commercial Fisheries Entry Commission (CFEC).** 2007c. Quartile Tables. Summary tables for earnings of Alaska salmon permit holders by quartile group. <www.cfec.state.ak.us>.
- Commercial Fisheries Entry Commission (CFEC).** 2007d. *Changes in the Distribution of Alaska's Commercial Fisheries Entry Permits, 1975-2005.* CFEC Report Number 06-2N. <www.cfec.state.ak.us>.
- Commercial Fisheries Entry Commission (CFEC).** 2007e. Commercial Fisheries Entry Commission website <www.cfec.state.ak.us>.
- Knapp, G., Siver, D., DeRoche, P. & Hill, A.** 2003. *Effects of the 2002 Chignik Cooperative: A Survey of Chignik Salmon Permit Holders.* University of Alaska Anchorage, Institute of Social and Economic Research.

- Knapp, G., Roheim, C. & Anderson, J.L.** 2007. *The Great Salmon Run: Competition Between Wild and Farmed Salmon*. TRAFFIC North America. Washington D.C.: World Wildlife Fund.
- Kopun, A.** 2002. Letter to Chignik Seafood Producers Alliance members describing operations during the 2002 salmon season. November 4, 2002.
- McCallum, C.** 1997. Memorandum from Chuck McCallum, Executive Director of the Chignik Seiners Association to Gunnar Knapp, Professor of Economics, University of Alaska. 21 July 1997. Unpublished.
- McDowell Group, Inc.** 2002. *An Assessment of the Formation of a Joint Venture Fishery by the Chignik Limited Entry Salmon Permit Holders*. Report prepared for Chignik Seiners Association, January 2002.
- Norquest Seafoods, Inc. (Norquest).** 2002. Letter to Chignik Fishermen from officers of Norquest Seafoods, August 23, 2002.
- Pappas, G.** 2003. *2002 Chignik Management Area Salmon Season Summary, 2003*. Alaska Department of Fish and Game. November 20, 2003.
- Quimby, A. & Owen, D.** 1992. *Chignik Management Area Annual Finfish Management Report: 1992*. Alaska Department of Fish and Game, Regional Information Report 4K92-38. October 1992.
- Ross, J.** 2002a. Inside the Co-op: Part I: Radical surgery prevents slow death. *Alaska Fisherman's Journal*. November 2002.
- Ross, J.** 2002b. Inside the Co-op: Part II: The Chignik fishery and the aftermath. *Alaska Fisherman's Journal*. December 2002.
- Ross, J.** 2003. Chignik Co-op – Round three: Processor shares for salmon? *Alaska Fisherman's Journal* November 2003.
- Stichert, M.** 2006. *2006 Chignik Salmon Season Summary*. Alaska Department of Fish and Game. December 4, 2006.
- Tkacz, B.** 2005. 'Skipper Stacking' for Chignik. Fish Board struggles to make co-op legal. *Alaska Fisherman's Journal*. June 2005.